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Psychometric Validation of the Lubben Social Network Scale-6 (LSNS-6) in Mexican Older Adults

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Abstract

Social isolation has been identified as a determinant of health in old age associated with increased mortality. The objective of this study was to analyze the psychometric properties of the Lubben Social Network Scale-6 in older Mexican adults. A cross-sectional, instrumental study was conducted with 1,678 participants from the Mexican Older Adult Obesity, Sarcopenia, and Frailty Cohort. Internal structure was assessed using confirmatory factor analysis, internal consistency through Cronbach's alpha and McDonald's omega coefficients, and construct validity through correlations with measures of quality of life, social functioning, and depressive symptoms. Confirmatory factor analysis supported a two-factor model with correlated factors, corresponding to Family Support and Friend Support. Incremental fit indices were excellent, with a Comparative Fit Index of .998 and Tucker–Lewis Index of .997; the Root Mean Square Error of Approximation was .099, 90% confidence interval [.085, .114], a borderline value frequently observed in well-specified models with small degrees of freedom. The scale showed optimal overall reliability (omega = .85; alpha = .84). Convergent validity was demonstrated by positive associations with the Intimacy dimension ($r = .21$, $p < .001$), while discriminant validity was supported by weak correlations with Social Participation ($r = .19$, $p < .001$) and Social Functioning ($r = .08$, $p < .001$). The Lubben Social Network Scale-6 is a valid and reliable tool for assessing social network structure and identifying potential vulnerability to social isolation in older Mexican adults.

Keywords: Social isolation; psychometric validation; older adults; Lubben Social Network Scale-6; social support; Mexico

Introduction

One of the main health challenges today is healthy aging (World Health Organization [WHO], 2020). Due to the sustained increase in the number of older adults, new demands have been placed on health systems, mainly in the identification of social determinants that influence morbidity, functionality, and quality of life (Pan American Health Organization

[PAHO] & United Nations Economic Commission for Latin America and the Caribbean [ECLAC], 2023). Social isolation is a determinant that has been linked to functional disability, health risk behaviors, and increased mortality (Leigh-Hunt et al., 2017).

It is important to differentiate between social isolation and loneliness. Social isolation refers to objective structural size or density; that is, a lack of belonging to a community or group. Loneliness refers to a subjective experience derived from the discrepancy between desired and perceived relationships (National Institute for Health Research, 2014). Although both constructs are closely related, they operate through different biological and psychological mechanisms and have independent associations with health outcomes.

International studies associate social isolation with a significant increase in the risk of acute myocardial infarction, coronary artery disease, stroke, and cardiovascular death (Albasheer et al., 2024; Miao et al., 2025), as well as pulmonary diseases (Liu et al., 2025), depression (Luchetti et al., 2024), dementia (Tu et al., 2024), sarcopenia (Wang et al., 2023), and cancer (Tapia-Ramírez & Castrejón-Caballero, 2023).

In older Mexicans, social isolation have been shown to be more strongly associated with cognitive decline (Wang et al., 2023), increase cardiovascular risk and increase the risk of death from any cause (Kammar-García et al., 2023). Furthermore, in the context of developing countries like Mexico, social determinants play a significant role, as economic inequalities, low educational attainment, marital status (single, widowed), and other social factors such as pandemics or structural family/community disintegration increase the risk of isolation and loneliness (Durón-Reyes et al., 2023; Roncero & González-Rábago, 2021) Therefore, the validity of instruments that measure social isolation cannot be automatically assumed across cultures, but requires specific empirical evaluation.

The Lubben Social Network Scale-6 (LSNS-6) (Lubben et al., 2006), designed to assess social isolation in older adults, has been psychometrically validated in the Latin American context, particularly in Argentina (Granero et al., 2020). In Mexico, Vilar-Compte et al. (2018) conducted a cultural validity study of the LSNS-6, focusing specifically on assessing comprehensibility and conceptual equivalence in Mexican and Mexican-American

populations. However, psychometric validation constitutes a complementary quantitative process that goes beyond cultural adaptation and is necessary to establish the clinical utility of the instrument (Cruchinho et al., 2024). The present study aims to evaluate the psychometric properties of the LSNS-6 scale in a Mexican population. To this end, its factor structure will be analyzed using confirmatory factor analysis (CFA), its internal consistency will be determined, its convergent validity in relation to depression and quality of life will be examined.

Materials and Methods

Study Design

This study employed a quantitative, observational, and cross-sectional research design focused on the psychometric validation of the Lubben Social Network Scale-6 (LSNS-6). The data analyzed were derived from the Cohorte de Obesidad, Sarcopenia y Fragilidad en Adultos Mayores Mexicanos (COSFAMM) [Cohort of Obesity, Sarcopenia, and Frailty in Mexican Older Adults] (Instituto Mexicano del Seguro Social [IMSS], 2024).

Ethical Approval

The COSFAMM protocol has been approved by the National Scientific Research Commission of the IMSS (R2012-785-067), under the endorsement of the Research Committee (17CI09015006) and the Research Ethics Committee (COMBIOETICA09CE101520130424). The sample size was calculated using the formula for finite populations, considering a frailty prevalence of 14.1% previously reported in older adults in Mexico City.

Participants

The study was conducted with a sample of 1,678 older adults (>60 years old) participating in the sixth round (2019) of the COSFAMM.

Selection Criteria

Inclusion Criteria

For this validation study, participants were included if they met the following requirements:

Cohort Membership: Individuals belonging to the COSFAMM.

Persons aged 60 years or older at the time of data collection.

Participants who signed the informed consent form approved by the corresponding research and ethics committees.

Exclusion Criteria

Individuals were excluded from the analysis if they presented any of the following characteristics:

Persons who were not part of the COSFAMM.

Individuals who did not sign the informed consent form.

Persons under 60 years of age.

Measures

To provide evidence of construct validity, the associations between the LSNS-6 and theoretically related constructs will be analyzed. Convergent validity is hypothesized to be demonstrated by negative correlations with the Center for Epidemiological Studies Depression Scale-Revised (CESD-R) (Eaton et al., 2004; Zhang et al., 2023; Silva et al., 2024) and positive correlations with the Intimacy domain of the World Health Organization Quality of Life Scale for Older Adults (WHOQOL-OLD). Conversely, discriminant (divergent) validity is hypothesized by expecting weak correlations with the Social

Functioning domain of the SF-36 Health Survey (Ware & Sherbourne, 1992) and the Social Participation domain of the WHOQOL-OLD (Acosta-Quiroz et al., 2013; Díaz de León-Castañeda et al., 2024), since the functional capacity for social interaction is conceptually distinct from the objective structural size of a social network.

LSNS-6: This is a six-item instrument designed by Lubben et al. (1988) that measures the size and quality of social networks in older adults. The scale comprises two dimensions: family network (3 items) and friend network (3 items). Each item is scored on an ordinal response scale of 0 to 5 points, where: 0 = none, 1 = one, 2 = two, 3 = three or four, 4 = five to eight, and 5 = nine or more contacts or frequency of interaction (Lubben, 1988). The total score ranges from 0 to 30 points, where higher scores indicate stronger social networks. Clinical interpretation states that a score of 12 or lower denotes "risk of social isolation." Its abbreviated format retains the psychometric properties of the original version while offering greater practicality for use in clinical and community settings (Lubben & Gironda, 2003).

CESD-R: The Center for Epidemiologic Studies Depression Scale-Revised (CESD-R) (Eaton et al., 2004) is a 35-item Likert-scale instrument that assesses depressive symptoms according to DSM-IV criteria, with scores ranging from 1 to 5 per item and a total range of 35–175 points. It includes nine key dimensions: depressed mood, anhedonia, changes in weight/appetite, sleep disturbances, psychomotor agitation/retardation, fatigue, feelings of guilt, suicidal ideation, and interpersonal difficulties. It has been validated for the Mexican elderly population (Sánchez-García et al., 2008).

SF-36: The SF-36 Health Survey (Ware & Sherbourne, 1992) is a self-administered instrument that assesses eight dimensions of health-related quality of life: physical functioning, role in physical health, bodily pain, general health, vitality, social functioning, role in emotional health, and mental health. It consists of 36 items, using 1- to 5-point Likert scales, with an average administration time of 15 minutes and adequate psychometric properties in the Mexican population (Sánchez Aragón et al., 2017).

WHOQoL-OLD: The WHOQoL-OLD Quality of Life Questionnaire (Acosta-Quiroz et al., 2013; Díaz de León-Castañeda et al., 2024) is a 24-item Likert-type scale with scores from 1 to 5 and six dimensions, each with four items: "Sensory Abilities," "Autonomy," "Past, Present, and Future Activities," "Social Participation," "Intimacy," and "Death and Dying." The score for each dimension ranges from 5 to 20 points, while the overall score ranges from 24 to 130 points; the higher the score, the higher the quality of life.

Clinical and Functional Variables

To characterize the clinical profile of the sample and explore secondary associations with social network size, the following standardized instruments were administered:

Cognitive Status: The Mini-Mental State Examination (MMSE) was used as a global cognitive screening tool, assessing domains such as orientation, memory, and attention. Scores range from 0 to 30, with higher scores indicating better cognitive function. A cut-off of <24 was used to identify probable cognitive impairment, in accordance with parameters established for the Mexican population (Ostrosky-Solís et al., 2000).

Basic Functionality: Independence in basic activities of daily living (ADLs), such as bathing, dressing, and feeding, was evaluated using the Katz Index. The total score ranges from 0 to 6, where a score of 6 represents total independence and lower scores indicate varying degrees of functional dependence (Katz et al., 1963).

Instrumental Functionality: The Lawton and Brody Index was used to assess instrumental activities of daily living (IADLs), which require more complex skills such as managing finances, preparing meals, or using transportation. Scores range from 0 to 8, with a score of 8 indicating total independence (Lawton & Brody, 1969).

Anxiety Symptoms: The Short Anxiety Screening Test (SAST) was utilized to quantify anxious and somatic symptoms. Designed specifically for older adults, it consists of 10 items scored on a Likert scale. The total score ranges from 10 to 40, with scores ≥24 indicating clinically significant anxiety (Sinoff et al., 1999).

Statistical Analysis

The data were analyzed using JASP software version 0.95.3, performing psychometric analyses to validate the LSNS-6 in the Mexican population. Internal consistency was calculated using Cronbach's alpha coefficient and McDonald's omega, while convergent and divergent validity were analyzed using Spearman's rank correlation coefficient. The lack of normality in the distribution of scores was confirmed by the Shapiro-Wilk test ($p < .001$) for the LSNS-6, as well as for the measures of quality of life (WHOQOL-OLD), depressive symptoms (CESD-R), and social functioning (SF-36).

Given the ordinal nature of the LSNS-6 items, the Confirmatory Factor Analysis (CFA) was conducted using a polychoric correlation matrix and the Diagonally Weighted Least Squares (DWLS) estimator, which is the methodological standard for categorical data. No missing data were observed in the final analytical sample for the LSNS-6 items.

Results

Descriptive Analysis

The sample consisted of 1,678 older adults, with a mean age of 67.24 years (SD = 6.08; range = 60–97). 50.1% were women (n = 840) and 49.9% were men (n = 838). The majority were married (54.6%, n = 916), followed by single individuals (14.1%, n = 237) and widows (13.3%, n = 224).

Regarding education, 30.2% had professional studies (n = 507), 19.2% had primary education (n = 322), and 16.8% had secondary education (n = 282). The majority were literate (98.4%, n = 1,651) and able to write (98.0%, n = 1,645). 87.4% lived with someone else (n = 1,467), and 57.6% lived with their partner (n = 967). 71.5% reported at least one medical diagnosis (n = 1,199), the most frequent conditions being hypertension (40.2%, n = 675) and diabetes (22%, n = 369). Functionally, 81.7% were independent in basic activities of daily living (Katz; n = 1,368) and 77.1% in instrumental activities of daily living (Lawton and Brody; n = 1,292). According to the Barthel Index, 99.5% were either independent or had

mild dependence (n = 1,666). Regarding cognitive status, 23.4% showed probable cognitive impairment (n = 392), while 76.6% did not present impairment (n = 1,283).

The complete description of the sociodemographic, clinical, and functional variables is presented in Table 1.

Table 1

Sociodemographic and Clinical Characteristics of the Sample (N = 1,678)

Variable	n	%
Sociodemographic characteristics		
Age and Sex		
Age (Mean ± SD)	67.24 ± 6.08	
Women	840	50.1
Men	838	49.9
Marital Arrangement		
Married	916	54.6
Single	237	14.1
Widowed	224	13.3
Separated	112	6.7
Cohabiting	104	6.2
Divorced	85	5.1
Marital History		
Married by civil law	959	57.2
Married to the same person	839	50.0
Cohabiting with the same partner	55	3.3
Separated from a marriage	114	6.8
Separated from a cohabiting union	20	1.2
Educational Level		
Professional degree	507	30.2
Primary school	322	19.2
Secondary school	282	16.8
Technical degree	248	14.8
High school	206	12.3
Postgraduate	90	5.4
No formal education	23	1.4
Basic Skills		
Can read	1651	98.4
Can write	1645	98.0
Can add	1642	97.9
Can subtract	1636	97.5

Residential Arrangement		
Living accompanied	1467	87.4
Living alone	211	12.6
Co-residence Network		
Lives with spouse	967	57.6
Lives with children	924	55.1
Lives with grandchildren	325	19.4
Lives with other relatives/non-relatives	260	15.5
Lives with sons/daughters-in-law	153	9.1
Lives with mother/father	80	4.8
Lives with friends	10	0.6
Morbidity Profile		
Medical diagnosis in the last year	1199	71.5
Hypertension (with/without complications)	675	40.2
Diabetes (with/without complications)	369	22.0
Arthritis / collagen vascular disease	73	4.4
Hypothyroidism	81	4.8
Peripheral vascular disease	37	2.2
Diagnosed depression	46	2.7
Functional Status (Katz)		
Independent (Katz A)	1368	81.7
Functional limitation (Katz B–G)	307	18.3
Functional Status (Lawton & Brody)		
Independent (IADL)	1292	77.1
Dependent (IADL)	383	22.9
Functional Status (Barthel)		
Independence / mild dependence (≥ 60)	1666	99.5
Moderate to total dependence (< 60)	9	0.6
Anxiety (SAST)		
Presence of anxiety	263	15.7
Cognitive Status (MMSE)		
No cognitive impairment (> 24)	1283	76.6

Probable cognitive impairment (≤ 23)	392	23.4
MMSE Breakdown		
Orientation (Score 10)	548	32.7
Attention and calculation (Score 5)	648	38.7
Memory (Score 3)	395	23.6
Language (Score 9)	581	34.7
Registration (Score 3)	1663	99.3

Note. SD = Standard Deviation. IADL = Instrumental Activities of Daily Living. SAST = Short Anxiety Screening Test. MMSE = Mini-Mental State Examination. Percentages for comorbidities and cohabitation do not sum to 100% due to multiple-response options.

Ceiling and floor effects for the total LSNS-6 score were evaluated, neither effect was present, as the proportion of participants scoring the absolute minimum (0 points) or maximum (30 points) was well below the established 15% threshold, indicating an adequate distribution of responses across the clinical spectrum.

Confirmatory Factor Analysis

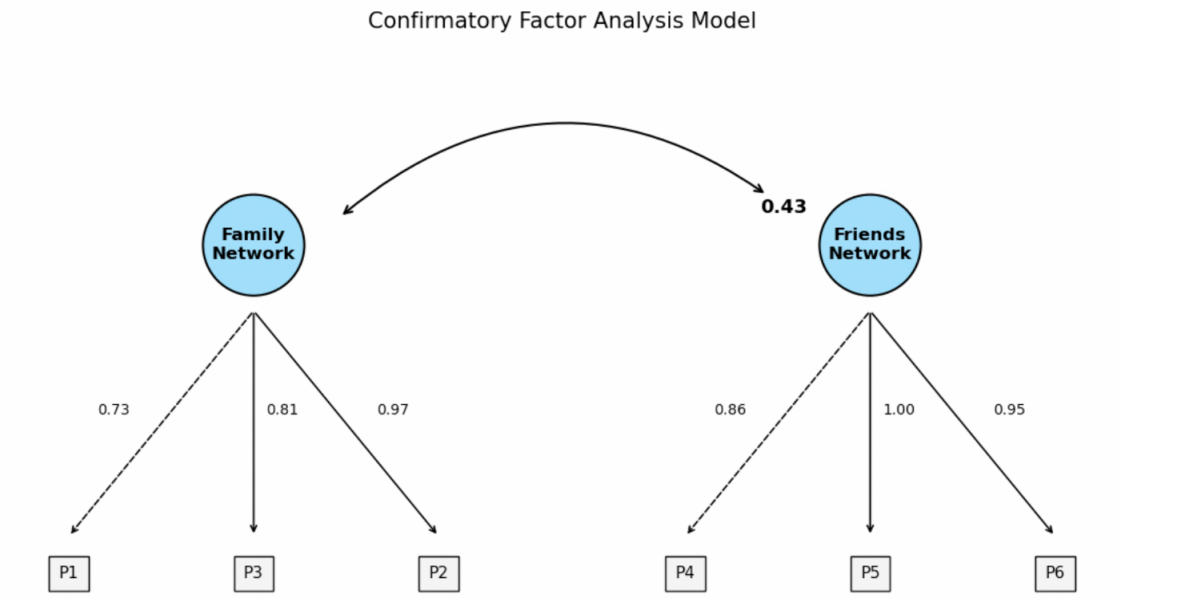
The proposed model, composed of two correlated factors (Family Support and Friends Support), showed a satisfactory overall fit based on incremental indices (CFI = .998, TLI = .997, NFI = .998, and GFI = 1.00). The Root Mean Square Error of Approximation (RMSEA) was .099 (90% CI [.085, .114]). While traditionally considered a borderline or moderate fit, RMSEA values are known to be artificially inflated in models with small degrees of freedom (df = 8), and should be interpreted cautiously alongside the excellent incremental fit indices (Kenny et al., 2014).

Regarding the local fit of the model, all parameter estimates demonstrated that the items loaded strongly and significantly onto their theoretically assigned latent factors. As illustrated in Figure 1 and detailed in Table 2, the standardized factor loadings (λ) ranged from .73 to .97 for the Family Network factor, and from .85 to 1.00 for the Friends Network factor. All estimates were highly significant ($p < .001$), confirming that the indicators are

robust and reliable reflections of their underlying constructs. Furthermore, a significant and moderate covariance was observed between the two latent factors ($r = .43$, $p < .001$), empirically supporting the theoretical distinction between family and friendship support sources.

Figure 1

Path Diagram of the Confirmatory Factor Analysis of the Lubben Social Network Scale-6 (LSNS-6)



Note. Adapted from the Lubben Social Network Scale (LSNS-6). Family Network indicators include: P1 (Contact), P2 (Intimacy), and P3 (Help). Friends Network indicators include: P4 (Contact), P5 (Intimacy), and P6 (Help). All factor loadings are standardized.

Table 2

Standardized Factor Loadings and Standard Errors for the LSNS-6 Confirmatory Factor Analysis (N = 1,678)

Factor / Item	Standardized Loading	SE	p
Family Network			
P1: Relatives seen/heard from	0.729	0.011	< .001
P2: Relatives to talk about private matters	0.966	0.013	< .001
P3: Relatives to call for help	0.805	0.011	< .001
Friends Network			
P4: Friends seen/heard from	0.855	0.006	< .001

P5: Friends to talk about private matters	0.998	0.007	< .001
P6: Friends to call for help	0.948	0.006	< .001

Note. CFA was conducted using the Diagonally Weighted Least Squares (DWLS) estimator based on a polychoric correlation matrix. All item loadings are statistically significant. SE = standard error.

Reliability

Internal consistency and construct reliability were evaluated using Cronbach's alpha (α), McDonald's omega (ω), and Composite Reliability (CR). The overall scale demonstrated excellent internal consistency (ω = .85, α = .84). Analyzed by subscales, both factors showed strong indices: the Family Support factor yielded a CR and ω of .86 (α = .84), while the Friends Support factor demonstrated excellent reliability with a CR and ω of .94 (α = .93).

To formally assess convergent validity at the construct level, the Average Variance Extracted (AVE) was calculated. Both factors exceeded the recommended threshold of .50 (AVE = .70 for Family Support; AVE = .88 for Friends Support), indicating that the latent constructs account for a substantial majority of the variance in their respective indicators.

Finally, formal discriminant validity was established using the Fornell–Larcker criterion. The square root of the AVE for both Family Support (0.836) and Friends Support (0.938) was strictly greater than the inter-construct correlation (r = .43). This confirms that each subscale measures a distinct facet of the social network without problematic conceptual overlap.

Convergent and Divergent Validity

The association of the LSNS-6 with theoretically relevant constructs was examined using Spearman correlations (Table 3). In terms of convergent validity, a significant negative correlation was found with total depressive symptoms (CESD-R; r = -0.204, p < .001), supporting the protective role of social networks against affective distress. Furthermore, the scale showed its strongest association with the Intimacy dimension of the WHOQOL-OLD (r = 0.216, p < .001), demonstrating that the instrument adequately captures the perception of closeness and emotional support.

Table 3

Evidence of Convergent and Divergent Validity of the LSNS-6 through Spearman Correlations

Criterion Measure	ρ	p
Convergent validity		
Total depression (CESD-R)	-0.204	< .001
Quality of life: Intimacy (WHOQOL-OLD)	0.216	< .001
Quality of life: Participation (WHOQOL-OLD)	0.190	< .001
Divergent validity		
Social functioning (SF-36)	0.089	< .001

Note. WHOQOL = World Health Organization Quality of Life; SF-36 = SF-36 Health Survey; CESD-R = Center for Epidemiologic Studies Depression Scale—Revised.

On the other hand, evidence of divergent validity was supported by comparing the LSNS-6 with the Social Functioning domain of the SF-36. Although the association reached statistical significance strictly due to the large sample size, the effect size was negligible (r = 0.089), supporting the theoretical distinction between social network structure and functional capacity for social interaction.

Discussion

The purpose of this study was to analyze the psychometric properties of the Lubben Social Network Scale-6 (LSNS-6) in a community sample of older Mexican adults. The findings provide robust evidence of the scale's construct validity, reliability, and factor structure, filling a gap in the Mexican gerontological literature (Granero et al., 2020), where, although previous cultural adaptations existed, quantitative psychometric validation was lacking.

Confirmatory Factor Analysis (CFA) corroborated the original two-dimensional structure proposed by Lubben et al. (2006), composed of two correlated latent factors: Family Support and Friends Support. This finding is consistent with recent international validations, such as those carried out in Argentina by Granero et al. (2020) and in China by Chang et al.

(2018), reaffirming that the distinction between family and friendship ties is a cross-culturally stable construct in old age.

The overall scale demonstrated optimal internal consistency (ω = .85, α = .84), surpassing the coefficients reported in the original English version (α = .83; Lubben et al., 2006) and in the Argentinian validation (α = .78; Granero et al., 2020). The performance of the Friends Network subscale is noteworthy, achieving excellent reliability (ω = .94), suggesting that the items assessing peer support in Mexico exhibit high homogeneity. This could reflect cultural patterns where friendships in old age, while perhaps less numerous than family ties, when present, fulfill highly interrelated functions of emotional support and instrumental assistance.

One of the most significant contributions of this study is the demonstration of the instrument's divergent validity, as the results showed a weak correlation between the LSNS-6 and the Social Participation dimension of the WHOQOL-OLD (r = .190) and the Social Functioning dimension of the SF-36 (r = .089). Although an association might be intuitively expected, the literature theoretically distinguishes between “structural social capital” (size and frequency of contact within the network, as measured by the LSNS-6) and “social participation” (active involvement in the community). Our results are consistent with evidence that an older adult can have a strong support network (high LSNS-6 score) but low social participation due to physical limitations, or vice versa (Cudjoe et al., 2022). This distinction is crucial for clinical practice, as it allows for the identification of specific risk profiles: social isolation (lack of network) is a distinct phenomenon from social inactivity (lack of participation), and each requires different interventions. On the other hand, convergent validity was supported by the positive correlation with the Intimacy dimension of the WHOQOL-OLD (r = .216, p < .001) and the negative correlation with depressive symptoms as measured by the CESD-R (r = -.204, p < .001). These data confirm the "buffering hypothesis," where the social network acts as a protective factor against psychological distress (Berkman et al., 2000; Santini et al., 2015)

The results reveal statistically significant interactions between social network structure and clinical variables, although the magnitude of these associations is modest. In the cognitive domain, the most prominent positive correlation in the study was observed between the LSNS-6 score and MMSE performance ($r = .187$, $p < .001$), suggesting that the preservation of higher functions is associated with more extensive social networks. Regarding functionality, the pattern varies according to task complexity. Independence in instrumental activities (Lawton & Brody) showed a positive correlation ($r = .079$, $p = .001$), while dependence in basic activities (Barthel) showed a negative correlation ($r = -.085$, $p < .001$). Finally, a weak positive correlation was found between the diagnosed illness and the social network ($r = .056$, $p = .021$), a finding that could be interpreted as a 'care mobilization' effect in response to morbidity. In contrast, living alone was confirmed as an independent structural risk factor ($r = -.055$, $p = .025$). The results are detailed in Table 4.

Table 4.

Spearman correlations between social network size (LSNS-6) and clinical variables of functionality and cognition.

Clinical Variable	ρ	p
Cognitive Performance (MMSE)	.187	<.001
Instrumental Functionality (IADL)	.079	.001
Basic Dependence (ADL)	-.085	<.001
Physical Health (Self-Report)	.056	.021
Living Arrangement (Alone)	-.055	.025

Note. MMSE = Mini-Mental State Examination; IADL = Instrumental Activities of Daily Living; ADL = Basic Activities of Daily Living. ρ = Spearman's rank correlation coefficient. All reported values reached statistical significance ($p < .05$), although the effect size is low to moderate.

Therefore, it is important to emphasize that social isolation has been linked to increased multimorbidity in countries facing significant challenges such as inequality and lack of access to social security and healthcare, as is the case in Mexico (Beard et al., 2016). From an economic and public health perspective, our results are even more relevant considering that social isolation represents a considerable economic burden for healthcare systems (Engel et al., 2025). In addition to limiting older adults' access to medical care and other essential resources, it acts as a structural barrier to healthcare. Evidence suggests that

the systematic assessment of social isolation in primary care remains limited, as only a minority of studies have reported strategies for its identification. In this regard, primary healthcare professionals have an important role to play in the early identification and management of social isolation (Ding et al., 2024; Galvez-Hernandez et al., 2022). All of the above underscores the need to implement standardized and validated assessments in the Mexican population, supported by greater integration between primary care, the public sector, and the social sector.

Conclusions

This study provides the first quantitative psychometric validation of the Lubben Social Network Scale in older Mexican adults, confirming that it is a valid, reliable, and culturally appropriate instrument. The scale accurately reproduces the two-dimensional structure of family and friendship support, demonstrating superior internal consistency compared to that reported in other international contexts.

This positions the LSNS-6 as a reliable and valid instrument for structural social network assessment, making it a valuable addition to Comprehensive Geriatric Assessments in Mexico. While it effectively identifies vulnerability profiles regarding network size, future research establishing clinical cut-off scores is needed to confirm its utility as a formal diagnostic screening tool.

Limitations

It is important to acknowledge some limitations of this study. First, although the sample size was substantial (N = 1678), the participants came from a single community cohort (COSFAMM), which could limit generalizability to other geographic or population contexts in Mexico. Second, the cross-sectional nature of the current COSFAMM round precluded the evaluation of temporal stability (test-retest reliability). While the internal consistency was excellent, future longitudinal studies are required to establish the stability of

the LSNS-6 scores over time in this population. Third, assessing criterion validity would require establishing cut-off points that clinically identify older adults at risk of severe social isolation, which is beyond the scope of this study but represents an important line of future research.

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Competing Interests

The authors declare that they have no competing interests.

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