Article

Adaptation and Validation of the Instrument for Adopting the Role of Family Caregiver for Chronic Patients

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Theme: Care processes and practices

Contribution to the field: The study provides an adapted and validated version of the Adoption of the Role of Family Caregiver of a Chronic Patient (ROLE) instrument in the Mexican context, constituting a reliable resource for identifying needs, organizing care, and evaluating caregiver responses. In addition, it reinforces the application of the specific situation theory: Adoption of the role of caregiver of the chronic patient, providing a solid framework for practice and research in this field.

Abstract

Introduction: Disability due to stroke in older adults requires a caregiver; assuming this role entails life changes, challenges, knowledge, and skills. However, the lack of culturally adapted instruments in Mexico limits the understanding of the transition process to adopting the caregiver role. **Objective:** To adapt and validate the instrument for the Adoption of the Role of Family Caregiver of a Chronic Patient (ROLE) in the Mexican context. **Methodology:** Five-stage methodological study: Validation by judges, style correction, pilot test, psychometric properties, and factor analysis. **Results:** Item validity index, 0.25; validity criterion, 16% error; content validity index, 9.32. Kendall's W coefficients: Comprehension [84.667/p= 0.000], clarity [78.693./p= 0.000], relevance [79.893 / p= 0.000], accuracy [78.693/p= 0.000]. Final version, criterion validity using Kaiser-Meyer-Olkin analysis is 0.78. Bartlett's sphericity [X2 = 592.3, gl = 205, p = 0.000]. Confirmatory factor analysis showed an adequate fit of the model: CFI = 0.70; TLI = 0.66; AIC= 732.3; RMSEA = 0.087 CI [0.079/0.095]). Final internal consistency of 0.79 by Cronbach's alpha. **Conclusion:** The adaptation of the ROL instrument in Mexico maintains the 22 items distributed across five domains and is a valid and reliable tool for measuring the adoption of the caregiving role.

Keywords (Source: DeCS)

Translations; validation study; caregiver; caregivers; stroke.

Adaptación y validación del instrumento: Adopción del rol de cuidador familiar del paciente crónico

Resumen

Introducción: la discapacidad por accidente cerebrovascular en el adulto mayor requiere de un cuidador; asumir este rol implica cambios en la vida, desafíos, conocimientos y habilidades. Sin embargo, la falta de instrumentos culturalmente adaptados en México limita la comprensión del proceso de transición a la adopción del rol cuidador. **Objetivo:** adaptar y validar el instrumento adopción del rol de cuidador familiar del paciente crónico colombiano (ROL) en el contexto mexicano. **Metodología:** estudio metodológico de cinco etapas: validación por jueces, corrección de estilo, prueba piloto, propiedades psicométricas y análisis factorial. **Resultados:** índice de validez por ítem, 0,25; criterio de validez, 16 % de error; índice de validez de contenido, 9,32. Los coeficientes de W Kendall: comprensión [84,667/*p*= 0,000], claridad [78,693./*p*= 0,000], relevancia [79,893/*p*= 0,000], precisión [78,693/p= 0,000]. Versión final, validez de criterio mediante el análisis de Kaiser-Meyer-Olkin es de 0,78. Esfericidad de Bartlett [X^2 =592,3, *gl* = 205, *p* = 0,000]. El análisis factorial confirmatorio mostró un ajuste adecuado del modelo: CFI = 0,70; TLI = 0,66; AIC= 732,3; RMSEA = 0,087 IC [0,079/0,095]). Consistencia interna final de 0,79 por Alfa de Cronbach. **Conclusión:** la adaptación del instrumento ROL en México mantiene los 22 ítems distribuidos en cinco dominios y es una herramienta válida y confiable para medir la adopción del rol cuidador.

Palabras clave (Fuente DeCS)
Traducciones; estudio de validación; cuidador; cuidadores; accidente cerebrovascular.

Adaptação e validação do instrumento Adoção do Papel de Cuidador Familiar de Paciente Crônico

Resumo

Introdução: A deficiência decorrente do acidente vascular cerebral (AVC) em idosos requer a presença de um cuidador. Assumir esse papel implica mudanças no estilo de vida, além de desafios, conhecimentos e habilidades específicos. No entanto, a escassez de instrumentos culturalmente adaptados no México limita a compreensão do processo de transição para a adoção do papel de cuidador. **Objetivo:** adaptar e validar o instrumento Adoção do Papel de Cuidador Familiar de Paciente Crônico colombiano (ROL) no contexto mexicano. **Materiais e métodos:** estudo metodológico de cinco etapas: validação por juízes, revisão de texto, teste-piloto, propriedades psicométricas e análise fatorial. **Resultados:** O índice de validade por item de 0,25; o erro do critério de validade foi de 16 %; e o índice de validade de conteúdo foi de 9,32. Os coeficientes W de Kendall foram: compreensão (84,667/p = 0,000), clareza (78,693/ p = 0,000), relevância (79,893/ p= 0,000), precisão (78,693/p = 0,000). Na versão final, a validade de critério foi analisada por meio do índice Kaiser-Meyer-Olkin, com valor de 0,78, e do teste de esfericidade de Bartlett (X^2 = 592,3; gl = 205; p = 0,000]. A análise fatorial confirmatória demonstrou um ajuste adequado do modelo (CFI = 0,70; TLI = 0,66; AIC= 732,3; RMSEA = 0,087; IC [0,079-0,095]). A consistência interna final do instrumento foi de 0,79, avaliada pelo alfa de Cronbach. **Conclusão:** A adaptação do instrumento ROL no México mantém os 22 itens distribuídos em cinco domínios, mostrando-se uma ferramenta válida e confiável para medir a adoção do papel do cuidador.

Palavras-chave (Fonte DeCS)

Tradução; estudo de validação; cuidadores; acidente vascular cerebral.

Introduction

In 2021, it was estimated that 14 million people worldwide suffered a stroke; in this sense, it is calculated that a stroke occurs every 53 seconds. As a result of these episodes, in 2024, some organizations estimated that 94 million people live with physical and/or cognitive disabilities as a result of this condition (1, 2).

In Mexico, the Ministry of Health calculated a prevalence of 170,000 stroke cases nationwide in 2021 (3). Of these cases, 20 % died within the first 30 days, and seven out of ten lived with some degree of disability and health complications, requiring prolonged hospitalization due to the frailty of older adults (OAs) (4). In light of this situation, patients require the assistance of a family caregiver (FC) to provide care and support for their basic daily needs.

The FC is defined as a member of the family unit, over the age of 18, who provides care and physical, emotional, and spiritual support to the OA with a disability and dependency in a hospital or home setting, in addition to managing their own self-care (5).

Whether the FC role is voluntarily assumed or imposed, it entails significant changes in lifestyle, social relationships, and family dynamics, and most caregivers are not prepared or trained to face the caregiving process. This fact hinders the situational transition to adopting the new role, generating ineffective responses that negatively impact the caregiver's health and well-being (6).

The transition to the FC role begins with the need to provide care to the OA, which is characterized by ambiguous feelings between the positive effects and hardships of caregiving, causing the caregiver to assume and adapt to their new reality. This transition is also affected by changes in the patient's needs, social processes, and diversity in family structures and dynamics, which can lead to emotional, economic, and organizational adjustments for the caregiver (7).

The transition is influenced by individual, social, and contextual factors that affect multiple aspects of the caregiver's life, generating changes in their daily life, family relationships, and social participation. Assuming this role is followed by emotional and physical overload due to a lack of prior preparation, resulting in high levels of stress, fatigue, and anxiety (8). In addition, the role requires acquiring skills and knowledge to respond to the needs of the care recipient. Diversity in family dynamics is related to the existence of resources and the degree of commitment of the family network that favors the transition to FC (7).

The adoption of the caregiver role and its effects on the dyad (caregiver/care recipient) emerge as a consequence of the organization, preparation (execution of the role), and responses to the role, according to each individual's personal processes. In this sense, the

adoption of the caregiver role emerges from the care recipient's need for care. This role moves through a network of interactions and evolves through the acquisition of knowledge, skills, and coping strategies; the goal is to meet the vital demands of the other, as well as the demands of the caregiver and their caregiving role, that is, to assume their role adequately (8).

Assuming the role of FC for the first time represents a transition into the unknown, followed by uncertainty and challenges. It is essential that nursing values this transition process as a phenomenon of interest to the field, from a perspective that considers the caregiver not only as a provider of care, but also as a subject of care. From the theoretical framework of Afaf Meleis' Theory of Transitions, combined with the Theory of Specific Situation (TSS), adoption of the caregiver role and the TSE on the transition of the family caregiver role for OA after a stroke, the importance of implementing comprehensive interventions that prepare caregivers to provide effective care to chronic patients at home is proposed, while facilitating the progression towards a healthy transition crystallized in the adoption of the caregiver role (5, 7-9).

Based on the above, the Adoption of the Role of Family Caregiver of a Chronic Patient (ROLE) instrument was developed. It assesses how the role is performed and the healthy practices as response patterns in three dimensions: 1) the performance (tasks) of the role and instrumental activities performed by the caregiver to maintain the patient's health, promote autonomy, and strengthen their knowledge; 2) the organization of the role, strategies for delegating care among the family network, self-care, and care efficiency; and 3) responses to the role, attitudes that the caregiver adopts to recognize that their role is important (9).

The ROLE instrument was designed and validated to measure the concept and its attributes in the Colombian context. It consists of 22 items measured on a 5-point Likert scale, ranging from 1 (Never) to 5 (Always). The cut-off points are divided into three categories, with higher scores indicating satisfactory adoption of the role (9). The indicator's simplicity and ease of self-administration make it a useful and reliable tool; however, cultural adaptation and validation are necessary for its use in FC in chronic patients in Mexico.

The ROLE is an ideal tool for cultural and linguistic adaptation in the Mexican population, in line with the methodological criteria proposed by (10) for the validation and adaptation of psychometric instruments. The instrument is available in Spanish, which facilitates comparison between the Colombian and Mexican versions, given the linguistic similarities between the two countries. In addition, the indicator is brief and easy to administer, score, and interpret. It also has adequate psychometric properties, equivalence, internal and external validity, and reliability (9).

Given this cultural reality, it is essential to conduct the processes of cross-cultural adaptation and validation of the ROLE to ensure its availability and usefulness in the target population (11); this process provides an opportunity to deepen the comprehension of the concept and phenomenon assessed by the instrument, by linguistically identifying cultural and specific words and expressions (10). This can enrich the instrument with new items or perspectives, always under the premise of ensuring conceptual and semantic equivalence with the original version (12). In addition, it strengthens the usefulness of the instrument and contributes to the validation of the TSS for Caregiver Role Adoption, significantly enriching the disciplinary development of nursing (6).

Thus, the cross-cultural adaptation of empirical indicators (EI) is key to ensuring that the tools used are valid and relevant to the sociocultural context in which they are applied. Consequently, the aim of this study is to adapt and validate the instrument for assessing the ROLE in the Mexican context.

Methodology

This was a methodological study conducted in five stages: 1) validation by judges; 2) style correction; 3) pilot test; 4) psychometric properties; and 5) factor analysis (10). The research was described based on the criteria adopted by the Consensus-Based Standards for the Selection of Health Measurement INstruments (COSMIN) checklist (13).

The sample was collected from various public health institutions in western, central, south-central, and northern Mexico. These institutions were selected to strengthen the validity, generalization, representativeness, and replicability of the adaptation of the instrument. The population consisted of FC of stroke survivors with disabilities and dependents entitled to benefit from the Instituto Mexicano del Seguro Social (IMSS) benefits.

Stage 1. Validation by Judges

The content review, evaluation, and validation were conducted by specialists simultaneously and independently. The committee was created using a snowball recruitment method (14). The inclusion criteria were holding a doctorate in nursing sciences and having experience in validation studies. Twenty-two invitations were sent (10). Upon acceptance, each specialist was sent a letter of informed consent and confidentiality regarding the material to be analyzed and evaluated. Subsequently, they were sent the corresponding theoretical material, as well as the instrument to be evaluated.

To assess quantitative face validity, the judges were provided with the technical manual for the instrument and the theoretical framework. In the operational description, they were asked to evaluate

each item of the instrument in terms of comprehension, clarity, relevance, and construct accuracy (15). The evaluation was conducted using a five-point Likert scale where: 0 = definitely not related, 1 = not related, 2 = unsure of its relationship, the items require further review, 3 = related, but minor modifications are necessary, and 4 = extremely related (10).

Regarding qualitative facial validation, judges were asked to provide qualitative remarks and suggestions for each item of the instrument in terms of wording, clarity, relevance, accuracy, etc. After compiling the judges' remarks and suggestions, the main researcher of the study sent them by mail to the review committee for analysis and evaluation. By consensus of ideas and opinions, the changes and modifications to the items were supported by empirical and theoretical evidence; thus, the first version of the ROLE-Mexico instrument was developed.

Stage 2. Style Correction

A professor with a master's degree in philosophy and literature, who is a specialist in Spanish linguistics (10, 15), from the Michoacan University of San Nicolás de Hidalgo, reviewed the syntax, coherence, clarity, and conciseness of each item in the instrument to improve the wording of the sentences. This resulted in the second version of the ROLE-Mexico.

Stage 3. Pilot test

In the pilot test (PT), the second version of the instrument was applied to an initial sample of thirty FCs at IMSS HGRN01 in the state of Michoacan, which met the inclusion criteria presented in the corresponding section. Informed consent was obtained after explaining the objective of the study, the activities to be conducted, and the voluntary nature of participation. The information collected was coded, avoiding the use of personally identifiable data in reports or analyses. The signed physical documents and the results are kept under lock and key in the institutional archive, while the digital databases are stored on servers at the University of Guanajuato, Celaya-Salvatierra Campus, protected by a password, only available to the researcher responsible for correspondence.

Field testing had a key role in stabilizing the assessment tool. This process focused on two main aspects: The feasibility of the tool in terms of response time and the clarity of the wording of the items for the subjects of interest. The goal was for participants to generate new assessments and corrections (10).

The results were sent to the committee of specialists for analysis and to propose the final modifications to the adaptation; following this process, the review committee produced a third version

of ROLE-Mexico. The original version and the version adapted to the Mexican context were sent to the intellectual authors of the instrument, who accepted the modifications and expressed their agreement to proceed to the next stage of the process: psychometric analysis and final testing.

Stage 4. Psychometric Properties

With the PT results of the second version of the ROLE-Mexico, the preliminary psychometric properties of the instrument were established. Exploratory factor analysis (EFA) was used to determine the dimensions of the instrument, including the number of items in each section; a correlation matrix greater than 0.30 was determined. The preliminary internal consistency of the PT was evaluated using Cronbach's alpha coefficient (10).

Stage 5. Factor Analysis

The third version of ROLE-Mexico, the "final version", was applied to a significant sample. The objective was to obtain an acceptable effect size, as well as valid and reliable results (10). To achieve the final version of the instrument, a confirmatory factor analysis (CFA) was performed to theoretically confirm whether rotating the items statistically grouped the sections or dimensions (hereinafter referred to as factors) (16).

Prior to CFA, the normality of the data, the homoscedasticity of the variance, the homogeneity of the sample, and the absence of collinearity were all checked. Based on these premises, the Kaiser-Meyer-Olkin (KMO) sample adequacy test was applied, with values close to unity, and Bartlett's sphericity test ($p < .05$), confirming the relevance of the factor analysis. Subsequently, CFA was performed using the AMOS Graphics 23 software (17), applying the maximum likelihood method to evaluate the psychometric properties of the instrument.

Selection criteria

FCs over the age of 18 who were caregivers of survivors of stroke with physical or cognitive disabilities were included, provided they spent a full day providing patient care, had been in the role of caregiver for more than a month, and agreed to participate voluntarily in the study by signing the informed consent form. FCs whose native language was not Spanish were excluded.

Sample

A sample size of 250 participants was established based on a significance level of 0.05, a power of 80 %, and a factor loading of 0.35 (18, 19).

Data treatment and analysis

Data collection, organization, processing, and analysis were conducted using the statistical software program for social sciences, version 26 (SPSS V26). Parametric data were expressed as mean and standard deviation (SD). Nonparametric data were expressed using descriptive statistics through measures of central tendency.

Content validity was calculated using the content validity index (CVI). The following indices were calculated: item validity index (IVI) (proportion of items < 3/total number of judges and criterion validity (CV) (= IVI/total number of items). The overall CVI was calculated using the proportion of items ≥ 3/total items. CVI values close to unity were considered acceptable. The data were calculated in Microsoft Excel for Windows®, where the measurements of quantitative variables and the frequency measurements of qualitative variables were calculated (10).

The reliability of the scale was assessed using internal consistency analysis, employing Cronbach's alpha coefficient with an acceptance criterion greater than 0.7 (10).

To determine the degree of agreement between evaluators, Kendall's W analysis was performed. Kendall's W ranges from 0 to 1, where 1 indicates total agreement; acceptable values were 0.90 and 0.74 (10). Items that did not reach the minimum score were analyzed and incorporated into the instrument as suggested by the specialists (10, 13, 19). To measure the CV of the instrument, the KMO test was applied (with values close to unity), in addition to Bartlett's sphericity test (chi-square $p < 0.05$, and 95% confidence level), which determines the absence of correlations between the variables—collinearity— (12).

To measure psychometric properties, CFA was performed using Amos Graphics 23, considering the maximum likelihood method (17). The following fit indices were established: A) The χ^2 (chi-square) index assesses the probability that the theoretical model fits the data; a low value is desirable. However, it is more common to use the ratio with the degree of freedom (χ^2/df.), where the maximum value of 3 indicates an adequate fit (12); B) Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) are two indicators that evaluate the fit of the estimated model against the null model; values close to 1 are considered satisfactory. In general, scores above 0.90 confirm that the model presents construct adequacy; C) Akaike Information Criterion (AIC), where the lower the AIC value, the better the model fit, as it is more parsimonious; these values are achieved with models that have few estimated parameters and low *X2* values; and D) Root-Mean-Square Error of Approximation (RMSEA) is an index whose values must be lower than 0.05; in cases of large samples, a value of 0.08 is acceptable (12).

Ethical aspects

Written authorization was obtained from the intellectual author of the EI, and the instrument, evaluation, and interpretation technical data sheets were received as attachments. The project was approved by the IMSS National Scientific Research Committee, with registration number R-2024-785-035. Informed consent was obtained in writing after explaining the objective of the study and the voluntary nature of the caregivers' participation in the second stage. The data was collected using a digital form on a tablet and coded to ensure confidentiality. The signed physical documents were retained by the institution, and the digital databases were stored on servers at the University of Guanajuato, protected by a password, only accessible to the main researcher.

Results

Step 1: Of the 22 invitations sent to join the Committee of Specialists, 17 doctors in nursing accepted and voluntarily signed the informed consent and confidentiality agreement. Ultimately, 16 completed the evaluation round, thus establishing the committee.

The committee conducted two rounds of analysis, one before the final pre-test of the available version and another after the final pretest. In the first round, Kendall's CVI and W values were calculated to determine the degree of agreement among the evaluators in terms of consistency, clarity, relevance, and adequacy, as shown in Table 1. Regarding content validity, which was achieved using the judge technique, the following results were obtained: the IVI was 0.25 and the CVI was 0.01, representing a 16% possibility of error; the CVI was 9.32, which is acceptable.

The Kendall coefficient (W) for consistency was 84.667 and was statistically significant (p= 0.000). For clarity, the coefficient was 78.693 (p= 0.000); for relevance, a value of 79.893 (p= 0.000) was obtained; and for sufficiency, the coefficient was 78.693 (p= 0.000). Consequently, there is agreement in the judges' measurements (Table 1).

Table 1. Kendall's W Coefficients in the Specialist Evaluation Round – Mexico, 2025

Evaluation	Kendall's W*	N	Chi-square	Significance
Coherence	0.252	16	84.667	<0.000
Clarity	0.234	16	78.693	<0.000
Relevance	0.238	16	79.893	<0.000
Sufficiency	0.234	16	78.693	<0.000

Source: Prepared by the authors.

A total of 22 related items were evaluated; as a result, consistency was found in the judges' measurements (20). Regarding the qualitative evaluation, the evaluators did not change the items. Similarly, during the style correction stage, the reviewer did not change the syntax, coherence, clarity, or consistency of the text.

Step 2: After the EI evaluation, the parsimony in syntax, coherence, clarity, and consistency of each item was determined.

Step 3: The PT was applied to 30 FCs of stroke survivors hospitalized at the IMSS HGRN01 in Michoacan, with a preliminary Cronbach's alpha of 0.822. In terms of application time, the mean response time was approximately 9 minutes. Regarding the clarity of item 4, participants 5, 8, 12, 16, and 22 stated that they did not understand the meaning of the term 'roles.' Similarly, in item 18, participants 8, 16, and 22 expressed doubts regarding the meaning of 'care needs.' In both cases, the participants suggested including examples to facilitate comprehension. The evaluators, by consensus and based on scientific evidence, added the following examples: for roles (item 4): spouse, parent, worker, student; for care needs (item 18): eating, bathing, going to the bathroom, dressing, and moving around.

The modifications were presented again to the participants, who reported they were clearer. This resulted in the third version of the ROLE-Mexico, which was sent to the intellectual authors for approval before moving on to the next steps in the validation process.

Step 4: In the sample context, the 250 participants were from three states: 56% (140) from Michoacan, 24.8% (62) from Mexico City, and 19.2% (48) from Guanajuato. In terms of demographic characteristics, 68% (170) were women and 31.6% (79) were men, with a mean age of 45.3 (SD= 13.5) years. The marital status of the participants showed that 50.4% (126) were married, 22% (55) were single, 13.6% (34) were in a common-law relationship, 6% (15) were separated, 4.8% (12) were divorced, and 3.2% (8) were widowed.

Regarding health, 58.4% (146) reported no illnesses. However, 13.6% (34) had more than two chronic noncommunicable diseases—9.2% (23) had high blood pressure, 3.6% (9) had type 2 diabetes, 2.8% (7) had depression, 6% (15) had some other illness; 2.4% (6) had anxiety, 1.6% (4) had hypercholesterolemia, 1.6% (4) had rheumatoid arthritis, and 0.8% (2) had heart failure. In terms of religious identity, 81.6% (204) were Catholic, 9.6% (24) were Christian, 4% (10) were agnostic, 1.6% (4) were evangelical, 0.6% (4) were Jehovah's Witnesses, and 0.6% (4) were atheists. In terms of education, participants had a mean of 11.8 years of education, which is roughly equivalent to a complete secondary education.

In terms of household composition, almost half (47.6%, or 119) lived with their spouse, while 14.8% (37) lived with their mother; 12.8% (32) lived with their children, 10.8% (27) lived alone, 10.4% (26) lived with a partner, and 3.6% (9) lived with their father. The occupation of caregivers varied, with one-third (32.4%, 81) being homemakers, followed by 26.8% (67) who were employees or manual workers; 17.6% (44) were professional workers in a government agency, 16% (40) were unemployed, 4% (10) were day manual workers, 1.6% were pensioners and/or retirees, and only 1.2% (3) were self-employed.

In terms of income, 22.4% (56) of caregivers earned between $3,000 and $4,999 MXN per month, while 22% (55) earned between $8,000 and $12,999 MXN; 15.2% (38) earned less than $3,000, 14.8% (37) preferred not to answer, 12.8% (32) earned between $6,000 and $7,999; 9.6% (24) earned between $4,000 and $5,999; and only 3.2% (8) did not know how to answer.

On average, caregivers devote 13.3 hours per week to this task, spread over a mean of 5.7 days per week, and the time they had been in the role of caregiver was 14.9 months. In terms of support networks, 52.2% (131) of participants received support from their immediate family, and 22.8% (57) had no support whatsoever. On the other hand, 19.6% (49) had more than two sources of help, 1.6% (4) received financial support, and 1.6% (4) had psychological support, while 1.2% had other forms of support, and only 0.8% received religious support.

Step 5: To validate the mean content of the instrument, both EFA and CFA were performed. The analysis began by applying the KMO test to measure sample adequacy, yielding a result of 0.781, which is considered acceptable. Subsequently, Bartlett's sphericity test was performed, yielding a Chi-square of 1495.378, with 231 degrees of freedom and a significance of (p=0.000). Factor analysis identified six factors, explaining 57.128% of the total variance (Table 2). The reliability of the instrument, using Cronbach's alpha coefficient, is 0.791, which is acceptable.

Table 2. Explained Variance with Varimax Rotation (n=250) – Mexico, 2025

Factor	Initial Values			Sum of the Squared Saturations of the Rotation		
	Total	% of variance	% accumulated	Total	% of variance	% accumulated
1	5.162	23.465	23.465	2.527	11.486	11.486
2	1.989	9.040	32.505	2.339	10.633	22.119
3	1.618	7.356	39.861	2.288	10.400	32.518
4	1.458	6.626	46.487	2.093	9.516	42.034
5	1.276	5.798	52.285	1.934	8.789	50.823
6	1.065	4.843	57.128	1.387	6.305	57.128

Source: Prepared by the authors.

Regarding the psychometric properties results, EFA was performed using the Varimax rotation method with Kaiser to establish the instrument factors (10, 21) (Table 3). The analysis result was satisfactory, as most items only changed to another factor on the scale. However, given that in the Mexican version the greatest explained variance was concentrated in the first five factors, it was decided to retain these, and the sixth factor, which contained a single item (12), was integrated into the fourth factor, with which it shared the highest factor loading, thus avoiding the formation of an isolated dimension with a single item.

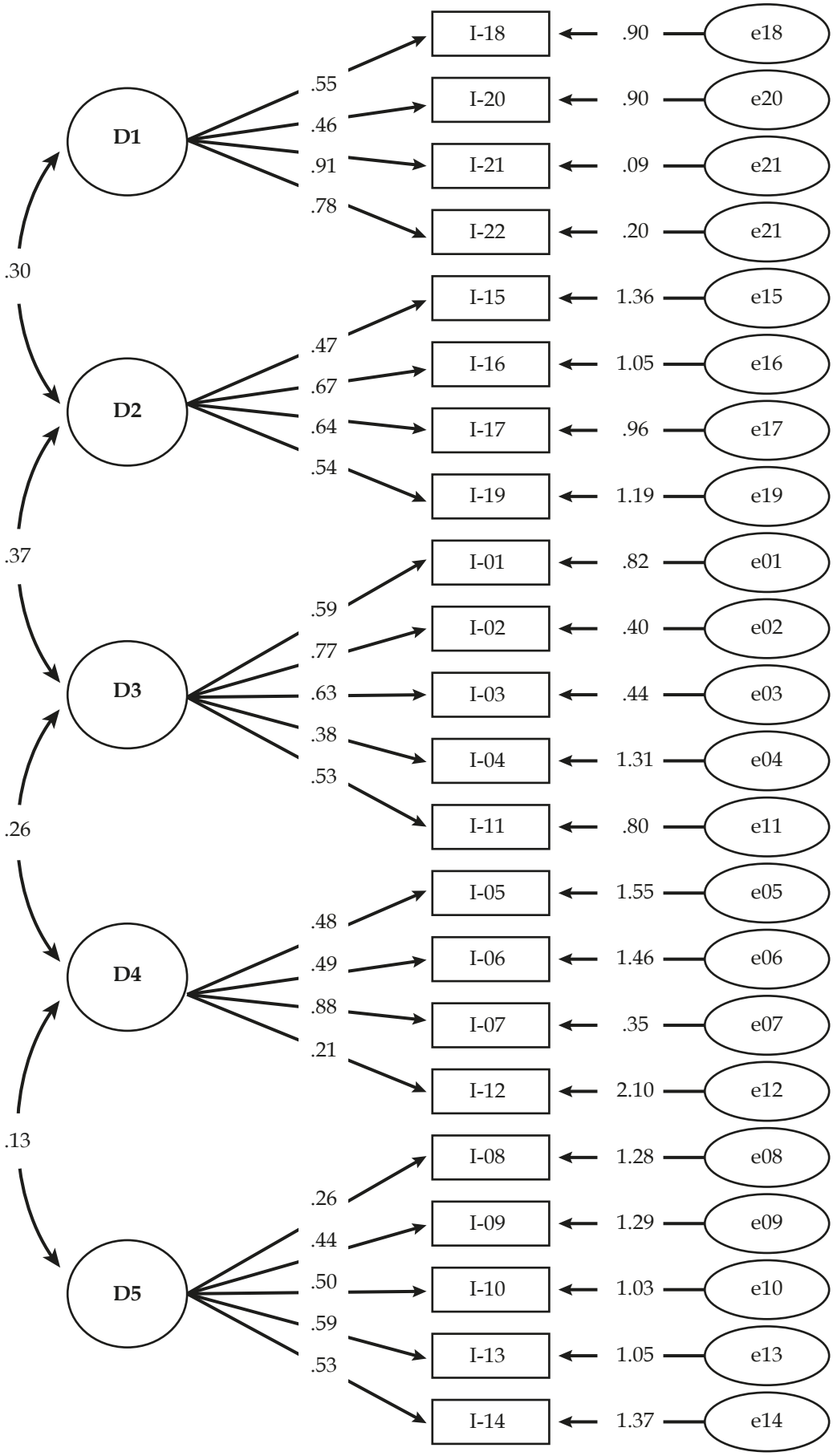
Table 3. Matrix of Rotated Components (n=250) – Mexico, 2025

Item	Factors (Dimensions)					
	1	2	3	4	5	6
1	0.183	0.179	**0.609**	0.193	0.163	0.172
2	0.168	0.167	**0.692**	0.277	0.131	0-.274
3	0.238	0.063	**0.680**	0.123	0.074	0-.118
4	0.075	0.148	**0.627**	0-.208	0-.048	0.012
5	0.159	0-.080	0.049	**0.649**	0.020	0.347
6	0-.189	0.193	0.015	**0.741**	0-.054	0-.186
7	0.054	0.091	0.148	**0.766**	0.060	0.133
8	0-.191	0-.072	0.120	0-.269	**0.538**	0-.401
9	0.318	0.172	0-.076	0.211	**0.470**	0-.241
10	0.270	0.081	0.227	0.302	**0.509**	0-.002
11	0.393	0.182	**0.411**	0.109	0.276	0.046
12	0-.065	0-.031	0-.078	0.124	0.066	**0.792**
13	0.137	0.071	0.043	0-.027	**0.698**	0.015
14	0.006	0.077	0.099	0-.036	**0.684**	0.384
15	0.048	**0.641**	0.189	0-.146	0.091	0.070
16	0.215	**0.699**	0.005	0.228	0.150	0-.023
17	0.084	**0.725**	0.051	0.218	0.046	0-.176
18	**0.469**	0.466	0.328	0-.036	0-.021	0.061
19	0.100	**0.653**	0.202	0.024	0.006	0.028
20	**0.576**	0.122	0.107	0.013	0.151	0-.207
21	**0.812**	0.132	0.258	0.045	0.112	0.021
22	**0.821**	0.115	0.188	0-.036	0.036	0.120

Source: Prepared by the authors.

Step 6: The CFA was conducted using the maximum likelihood estimation (MLE) method. The CFA results indicate a good overall fit of the proposed two-dimensional measurement model (X^2 = 592.353, df = 205, p = 0.000; CFI = 0.70; TLI = 0.66; AIC = 732.3; RMSEA = 0.087 CI [0.079/0.095]). The regression coefficients suggest that the factors explain an acceptable proportion of the variance of the items (Figure 1). The correlation between the five factors ranges from 0.13 to 0.37, indicating that they are related but without collinearity problems.

Figure 1. Variance between items and correlation between factors – Mexico, 2025



Source: Prepared by the authors.

Table 4 shows the total number of factors and the names of the dimensions, along with the number of items that comprise the final version of the instrument, specifically adapted for use in the Mexican context.

Table 4. Factors and Dimensions of the Final Version of the Instrument – Mexico, 2025

ROLE-Colombia			ROLE-Mexico		
No.	**Dimension**	**Item**	**N.°**	**Dimension**	**Item**
1	Responses to the role	1, 2, 3, 4, 5, 6, 7.	1	Execution of the role: focus on well-being and family relationships.	18, 20, 21, 22.
2	Organization of the role	8, 9, 10, 11, 12, 13, 14, 15.	2	Execution of the role: self-management and preparation for the role.	15, 16, 17, 19.
3	Tasks (Execution) of the role	16, 17, 18, 19, 20, 21, 22.	3	Responses to the role: meaning of the caregiver role.	1, 2, 3, 4, 11.
			4	Responses to the role: emotional impact.	5, 6, 7, 12.
			5	Organization of the role.	8, 9, 10, 13, 14.

Source: Prepared by the authors.

The ROLE-Colombia and ROLE-Mexico instruments are presented as annexes to the manuscript.

Discussion

The objective of this study was to adapt and culturally validate the ROLE instrument in the Mexican population. The results showed that the adapted version has adequate reliability (α=0.791) and a factorial structure consistent with the Colombian version, using the Varimax method (9). This provides an empirical indicator for measuring the execution of the role and associated healthy practices in the Mexican context (6, 22).

The cultural adaptation process followed the recommendations in the literature strictly (10, 13, 15). Among them, the COSMIN method, considered the most common and recommended for this process, with international recognition (13). Intercultural validity is one of the three types of construct, which allows measuring the degree to which the components of a translated measure have the same equivalence as the original instrument. Even if the instrument is in the same language, recommendations by various authors suggest that to achieve equivalence, cultural adaptation should be performed due to changes in colloquial expressions and differences in writing style (15, 19, 23).

During the implementation of the PT, two terms were identified as poorly understood by participants. These terms were “roles” and “care needs”, which were found in items 4 and 18. For this reason, minor changes were implemented—the addition of examples to improve readers’ comprehension and consistency of

the items. The specialized literature on the theme reports that there are two approaches to translation (asymmetric and symmetric). The approach adopted for this study was the symmetric one, as it is the most recommended methodological approach in terms of fidelity of meaning and colloquialism in both the source and target languages. The purpose was to achieve semantic equivalence between the source instrument and the adapted instrument (19, 24). These guidelines ensured parsimony in the syntax, coherence, clarity, and consistency of the instrument.

The psychometric test of the final version of the instrument requires application to a sample, which must be recruited randomly to achieve representativeness in the target population. The sample size will depend on the psychometric approach (10). Various authors recommend the item-per-person approach (1:5, 1:10, 1:50), suggesting that the most recommended for cultural adaptation (CA) studies is 1:10 (19, 25). Another approach proposes the use of factor loadings through power analysis, considering degrees of freedom, with an alpha level (0.05 or 0.01) and a statistical power ≥ 80 % (18, 25).

In general, most CA studies report the method of item-per-person and convenience selection (26), while others use a power analysis approach (27). Although determining an adequate sample size is a critical issue, no consensus or standard applies to all situations. Critics suggest using the necessary methods to achieve statistical power and adequate precision of parameter estimates in CFA studies (28).

The content validity was established and supported by a panel of specialists with extensive experience, impartiality, and the ability to evaluate content, ensuring the relevance and applicability of the instrument in the target population. However, acceptable agreement was obtained (IVI of 0.25 and CVI of 0.01), in contrast to the Colombian version, which reports high agreement (29). The CFA indicated a six-factor structure that explains 57.12 % of the total variance, with three more factors than the Colombian version. However, given that in the Mexican version the greatest explained variance is for the first five factors, these and the sixth factor were preserved, the latter being a single item, added to factor four, with which it shared the greatest load.

The items that presented relative differences to the original version were items 11, 12, and 15. The instrument showed good overall internal consistency (α = 0.791), as well as in each of its components (α = 0.724, 0.682, 0.706, 0.568, and 0.581). In comparison, the original version of the ROLE reported an overall internal consistency value of 0.816, with specific values for each component: execution of the role (α = 0.767), organization of the role (α = 0.835), and responses to the role (α = 0.801), all of which are positive and reliable (12).

In cultural adaptation studies, it is essential to evaluate factorial equivalence (dimensional, configurational, metric, scalar, and residual invariance). If any of the equivalences are not met, attributed to

response bias or moderation (extreme responses), it is suggested that a study should be conducted to directly assess invariance between groups (19, 30).

It should be noted that the fit indices obtained reflect a significant discrepancy between the theoretical model and the observed data, with a low CFI (0.70) and an equally insufficient TLI (0.66), indicating that the model fails to adequately explain the data, despite its level of complexity. One possible explanation is that it does not correctly represent the relationships between the variables in the population studied (12). It is worth noting that the theoretical model was proposed four years after the EI (6.8), suggesting that the construct of role adoption in 2018, from the perspective of the TSS of adoption in 2022, has been expanded and significantly related to more variables. In addition, the instrument in Mexico was applied to a homogeneous sample, which could have affected the model's logical explanatory power.

In light of these results, the following measures are proposed for future studies adapting the instrument to other contexts: a) conduct a second round with the same specialists to re-examine the items, providing them with feedback from the other specialists beforehand; b) review the items that received low scores, identifying possible areas for improvement in their wording to ensure greater clarity and precision; c) review any item that presents a discrepancy for at least 15% of the participants; d) ensure a thorough understanding of the theme and the main attributes or characteristics that the instrument aims to measure. With these recommendations, discrepancies between evaluators can be effectively assessed and, if necessary, controversial items or those that lack relevance can be removed (22, 29, 30).

Conclusion

The new Mexican version of ROLE retains 22 items, distributed across five domains, and is a valid and reliable tool for measuring the adoption of the role of FC of a chronic patient. The results obtained are consistent with the original version, which supports its use for future research in several regions of Mexico.

The authors declare that they have no conflict of interest.

Referências

1. Moreira LR, Torres A, Peña A, Palenzuela Y. Enfermedad cerebrovascular en pacientes ingresados en cuidados intensivos. Rev Ciencias Médicas. 2020;24(4): e4316. http://revcmpinar.sld.cu/index.php/publicaciones/article/view/4316
2. World Stroke Organization (WSO). One voice. Annual Report 2024. [Internet]; 2024. https://www.world-stroke.org/assets/downloads/Annual_Report_2024_online.pdf
3. Secretaria de Salud México. Enfermedad vascular cerebral, entre las 10 primeras causas de muerte y segunda de discapacidad; 2022. https://www.gob.mx/salud/prensa/525-enfermedad-vascular-cerebral-entre-las-10-primeras-causas-de-muerte-y-segunda-de-discapacidad
4. Novak B, Lozano D. Mortalidad en adultos mexicanos de 50 a 80 años de edad con multimorbilidad en un período de observación de 18 años. Estudios demográficos y urbanos. 2023;38(1):9-54. DOI: https://doi.org/10.24201/edu.v38i1.2108
5. Posada C, Correa L, Castañeda M, Arias-Rojas M, Tellez B. Relationship Between Adoption of the Caregiver Role and Quality of Life in Caregivers of Cancer Patients Under Active Treatment. The Open Nursing Journal. 2023;17(1). DOI: https://doi.org/10.2174/18744346-v17-e230111-2022-127
6. Im E-O. Properties of Situation-Specific Theories and Neo-pragmatism. Advances in Nursing Science. 2021;44(4):114-126. DOI: https://doi.org/10.1097/ANS.0000000000000336
7. Esquivel N, Carreño S, Chaparro L. Rol del cuidador familiar novel de adultos en situación de dependencia: scoping review. Revista Cuidarte. 2021;12(2):e1368. DOI: https://doi.org/10.15649/cuidarte.1368
8. Arias M, Carreño S, y Chaparro L. Validity and Reliability of the Scale, Role Taking in Caregivers of People with Chronic Disease, ROL. International Archives Of Medicine. 2018;11. DOI: https://doi.org/10.3823/2575
9. Carreño S, Chaparro L. Adopción del rol del cuidador familiar del paciente crónico: una herramienta para valorar la transición. Investigaciones Andina. 2018;20(36):39-54. http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0124-81462018000100039&lng=en
10. Landeros E, Morales AL, Lozada E, Galicia RM, Antonio G. Validación y adaptación de instrumentos psicométricos para el avance de la investigación en enfermería. Revista de Enfermería Neurológica. 2023;22(3):1-10. DOI: https://doi.org/10.51422/ren.v22i3.439
11. Von Dach C, Schlup N, Gschwenter S, McCormack B. German translation, cultural adaptation and validation of the Person-Centred Practice Inventory—Staff (PCPI-S). BMC Health Services Research. 2023;23:458. DOI: https://doi.org/10.1186/s12913-023-09483-8
12. Zaragoza-Salcedo A, Oroviogoicoechea C, Saracíbar-Razquin MI, Osácar E. The significance of exploring conceptual equivalence within the process of the cross-cultural adaptation of tools: The case of the Patient's Perception of Feeling Known by their Nurses Scale. J Nurs Scholarsh. 2023;55(6):1268-1279. DOI: https://doi.org/10.1111/jnu.12910
13. Gagnier JJ, Lai J, Mokkink LB, Terwee CB. COSMIN reporting guideline for studies on measurement properties of patient-reported outcome measures. Qual Life Res. 2021;30(8):2197-218. DOI: https://doi.org/10.1007/s11136-021-02822-4
14. Leighton K, Kardong-Edgren S, Schneidereith T, Foisy-Doll C. Using Social Media and Snowball Sampling asan Alternative Recruitment Strategy for Research. Clin Simul Nurs. 2021;55:37-42. DOI: https://doi.org/10.1016/j.ecns.2021.03.006
15. Hinkle JL. The Importance of Cross-Cultural Adaptation of Health Measures. J Nurs Meas. 2023;31(4):479. DOI: https://doi.org/10.1891/JNM-2023-0074
16. Ávila MM. Análisis factorial confirmatorio: un modelo de gestión del conocimiento en la universidad pública. RIDE Rev Iberoam Investig Desarro Educ. 2021;12(23). DOI: https://doi.org/10.23913/ride.v12i23.1103
17. Collier J. Applied structural equation modeling using AMOS: Basic to advanced techniques. London: Routledge; 2020.
18. Roco Á, Hernández M, Silva O. ¿Cuál es el tamaño muestral adecuado para validar un cuestionario? Nutr. Hosp. 2021;38(4):877-878. DOI: https://dx.doi.org/10.20960/nh.03633
19. Polit D, Beck CT. Essentials of Nursing Research: Appraising Evidence for Nursing Practice. 10th ed. Philadelphia: Wolters Kluwer; 2022.
20. Maskavizan AJ, Poco AN, Calzolari A. Aspectos prácticos del uso del coeficiente de concordancia W de Kendall para el jueceo de cuestionarios en enfermería. Arandu Poty. 2023;2(2):23-32.
21. Kline RB. Principles and practice of structural equation modeling, fifth edition. 5th ed. London: Guilford Press; 2023.
22. Lira MT, Caballero E. Adaptación transcultural de instrumentos de evaluación en salud: historia y reflexiones del por qué, cómo y cuándo. Rev médica Clín Las Condes. 2020;31(1):85–94. DOI: http://dx.doi.org/10.1016/j.rmclc.2019.08.003
23. Curtis AC, Keeler C. Measurement in Nursing Research. Am J Nurs. 2021;121(6):56-60. DOI: http://dx.doi.org/10.1097/01.NAJ.0000753668.78872.0f
24. Romero KP, Mora OM. Análisis factorial exploratorio mediante el uso de las medidas de adecuación muestral kmo y esfericidad de bartlett para determinar factores principales. Journal of Science and Research. 2020;5. DOI: http://dx.doi.org/10.5281/ZENODO.4453224
25. Nacci A, Barillari MR, Capobianco S, Fattori B, Berrettini S, Tonacci A, *et al*. Adaptation and validation of the Italian Singing Voice Handicap Index-10 (SVHI-10-IT). Acta Otorhinolaryngologica Italica. 2023;43(2):114–22. DOI: https://doi.org/10.14639/0392-100X-N2311.
26. Baattaiah BA, Alharbi MD, Khan F, Aldhahi MI. Translation and population-based validation of the Arabic version of the brief resilience scale. Ann Med. 2023;55(1):2230887. DOI: https://doi.org/10.1080/07853890.2023.2230887
27. Kenny DA. Principles and Practice of Structural Equation Modeling. 5th ed. THE Guilford Press; 2023.
28. Bernal-García MI, Salamanca Jiménez DR, Pérez Gutiérrez N, Quemba Mesa MP. Validez de contenido por juicio de expertos de un instrumento para medir percepciones físico-emocionales en la práctica de disección anatómica. Educación Médica. 2020;21(6):349–356. DOI: https://doi.org/10.1016/j.edumed.2018.08.008
29. Neufeld SAS, St Clair M, Brodbeck J, Wilkinson PO, Goodyer IM, Jones PB. Measurement Invariance in Longitudinal Bifactor Models: Review and Application Based on the p Factor. Assessment. 2024;31(4):774–793. DOI: https://doi.org/10.1177/10731911231182687
30. Camargo GE, Sánchez N, Riaño DM, Avila K, Castellanos R del P, González LM. Adaptación transcultural y validación de un contenido del cuestionario Texas Textbook Evaluation Tool (T-TET) de evaluación de libros de texto para ciencias de la salud. Revista Investigación en Salud Universidad de Boyacá. 2021;8(2):96–109. DOI: https://doi.org/10.24267/23897325.675

Annex 1. Adoption of the role of family caregiver of a chronic patient (ROL)—Colombia

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R	Responses to the Role
Í-1	The experience of being a caregiver brings positive things to my life.
Í-2	I feel that I do my job well as a caregiver.
Í-3	I consider my work as a caregiver to be important.
Í-4	I think that being a caregiver is just one of the roles I have.
Í-5*	I feel that I have put my life plan on hold to devote myself to caregiving.
Í-6*	I feel bad that I cannot do more for my family member.
Í-7*	I feel discouraged in my work as a caregiver.
O	Organization of the Role
Í-8	I am seeking places to take breaks from my work as a caregiver.
Í-9	I try to take care of my own needs.
Í-10	I seek to strengthen my family and social relationships in order to provide better care.
Í-11	I seek to learn every day from my experience as a caregiver.
Í-12*	I think that others cannot take care of my family member as well as I can.
Í-13	I am seeking support to resolve my family member's care issues.
Í-14	I share the responsibility of providing care for my family member with others.
Í-15	I have organized the financial resources to provide care for my family member.
L	Tasks (Execution) of the Role
Í-16	I have looked for the necessary information on how to provide care for my family member.
Í-17	I believe I have sufficient training to provide care for my family member.
Í-18	I identify the different care needs of my family member.
Í-19	I have rearranged the spaces in my home to provide care for my family member.
Í-20	I try to maintain my family member's autonomy and independence.
Í-21	I want to have a good relationship with my family member.
Í-22	I try to ensure my family member's comfort.

Note: I=Item

Annex 2. Adoption of the Role of Family Caregiver of a Chronic Patient (ROL)-Mexico

R	Responses to the Role: Meaning of the Caregiving Role
I-1	The experience of being a caregiver brings positive things to my life.
I-2	I feel I do my job well as a caregiver.
I-3	I believe that my work as a caregiver is important.
I-4	I think that being a caregiver is just one of the roles I have (examples of roles: husband/wife, parent, worker, student).
I-5	I seek to learn every day from my experience as a caregiver.
	Responses to the Role: Emotional Impact
I-6*	I feel that I have put my life plan on hold to devote myself to caregiving.
I-7*	I feel bad that I cannot do more for my family member.
I-8*	I feel discouraged in my work as a caregiver.
I-9*	I think that others cannot provide as good care for my family member as I can.
O	**Organization of the Role**
I-10	I seek spaces for breaks from my work as a caregiver.
I-11	I try to take care of my own needs.
I-12	I seek to strengthen my family and social relationships in order to provide better care.
I-13	I am seeking support to resolve my family member's care issues.
I-14	I share the responsibility of providing care for my family member with others.
L	**Execution of the Role: Self-Management and Preparation for the Role**
I-15	I have organized the financial resources to provide care for my family member.
I-16	I have searched for the necessary information on how to provide care for my family member.
I-17	I believe I have sufficient training to provide care for my family member.
I-18	I have rearranged the spaces in my home to provide care for my family member.
	Execution of the role: focus on well-being and family relationships
I-19	I identify my family member's different care needs (e.g., eating, bathing, using the toilet, dressing, and moving around).
I-20	I try to maintain my family member's autonomy and independence.
I-21	I want to have a good relationship with my family member.
I-22	I try to ensure my family member's comfort.

Note: I=Item