Check for updates

Received: 26 June 2023 | Revised: 24 August 2023 | Accepted: 9 September 2023

DOI: 10.1111/jgs.18623

Journal of the
American Geriatrics Society

BRIEF REPORT

Psychometric properties of a Spanish version of the MM-CGI-SF in caregivers of people with dementia

Miriam Sánchez-Alcón MSN | **Elena Sosa-Cordobés MSN** | **Almudena Garrido-Fernández PhD** | **José Luis Sánchez-Ramos PhD** | **Juan Diego Ramos-Pichardo PhD**

Nursing Faculty, Nursing Department, University of Huelva, Huelva, Spain

Correspondence
Miriam Sánchez-Alcón, Nursing Department, University of Huelva, Avenida Tres de Marzo, s/n, 21071 Huelva, Spain.
Email: miriam.sanchez@denf.uhu.es

Funding information
Ministerio de Universidades, Grant/Award Number: FPU19/04001; Universidad de Huelva/CBUA

Abstract

Background: Caregivers of people with dementia may experience characteristic grief linked to present and anticipated losses before the physical death of the care recipient occurs, which is related to physical and mental health problems. The Marwit–Meuser Caregiver Inventory-Short Form (MM-CGI-SF) is an instrument that assesses this type of grief. Since there are no studies on an adaptation of the MM-CGI-SF to the Spanish population, the aim of the study was to evaluate its psychometric properties in a sample of caregivers of dementia patients.

Methods: A cross-sectional study was carried out. The tool was translated and adapted into Spanish, which was administered to 250 caregivers of people with dementia in the province of Huelva, together with other related instruments. Descriptive statistics and internal consistency reliability were calculated using Cronbach's alpha, for the total questionnaire and for each subscale. A confirmatory factor analysis (CFA) was performed and the Spanish version of the MM-CGI-SF was correlated with the rest of the variables by calculating Spearman's correlation coefficient.

Results: 80.4% of the participants were female and had high levels of caregiver grief ($\bar{x} = 64.62$, SD = 14.86). Cronbach's alpha for the general questionnaire was 0.927 and between 0.822–0.854 for its subscales. The fit values of the CFA were: $x^2 = 202.033$, degrees of freedom = 121, $x^2/df = 1.670$, TLI = 0.954, CFI = 0.963, SRMR = 0.047, RMSEA = 0.052; and all the correlations were statistically significant.

Conclusions: The Spanish version of the MM-CGI-SF shows adequate psychometric properties. Thanks to this instrument, health professionals may measure caregiver grief, get closer to the reality of dementia care, and evaluate the effectiveness of interventions to manage this grief.

KEYWORDS
caregiver grief, dementia, MM-CGI-SF, psychometric, Spanish

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.
© 2023 The Authors. *Journal of the American Geriatrics Society* published by Wiley Periodicals LLC on behalf of The American Geriatrics Society.

INTRODUCTION

Caring for a person diagnosed with dementia is hard work and requires time, energy, and physical effort on the part of the caregivers, who have to bear a heavy burden. It is a situation that has adverse effects on their physical, psychological and social health, and global quality of life.[1]

In dementia care, caregivers often suffer specific grief before the physical death of the care recipient occurs. This grief called "caregiver grief"[2,3] is caused by several factors: by the prolonged time of care, the uncertainty of the illness, the disrupted communication between caregiver and patient; and by the continued losses from the illness. It is characterized by a conflict between emotional response to the losses (of partnership, intimacy, familiar "known" characteristics of the loved one, personal freedom, roles, friendships, etc.) and the need to continue to spend personal time and energy on daily care.[4–6]

Due to the negative effects that this condition has on caregivers, effective instruments that measure caregiver grief are needed. Such instruments may be used to identify caregivers at risk of inadequate grief management, to evaluate interventions, as well as to prevent a chronic grief after the death of the caregiver. The caregiver grief assessment provides valuable information for understanding and addressing the emotional impact of dementia on caregivers, as well as for developing effective interventions and coping resources within health and social care services.[3,5]

For the assessment of the caregiver grief, there is a limited number of tools available.[7] Meuser and Marwit developed the Marwit–Meuser Caregiver Grief Inventory Short Form (MM-CGI-SF),[2] which was developed in the US population, and it has been adapted in multiethnic Asian, Puerto Rican, Turkish, African-American, Chinese, Mandarin Chinese, and British populations,[8–15] showing good psychometric properties in all of them. Since there are no studies on an adaptation of the MM-CGI-SF to the Spanish population, the aim of this study was to assess its psychometric properties in a sample of caregivers of dementia patients in Spain.

Key points

- Caregivers of people with dementia suffer from caregiver grief, a characteristic bereavement grief linked to an increased risk of health problems, such as depression, and chronic or complex grief after the death of the care recipient.
- This is the first Spanish version of the Marwit–Meuser Caregiver Grief Inventory-Short Form (MM-CGI-SF) that assesses the caregiver grief and shows adequate psychometric properties.

Why does this paper matter?

Carers of people with dementia suffer from caregiver grief which is associated with physical and mental health problems. Through the Spanish version of the MM-CGI-SF health professionals will be able to identify caregivers at risk of inadequate grief management, as well as to evaluate the effectiveness of interventions in caregivers of people with dementia.

METHODS

Participants and data collection

Following the procedure described by Acquadro, Conway, and Giroudet,[16] a first Spanish version was developed in Spanish. 250 caregivers of people with dementia from the province of Huelva, Spain, were included. The inclusion criteria were: to be informal caregivers of people diagnosed with dementia living at home, aged 18 years or older, and able to read and speak Spanish.

Through the Huelva Provincial Federation of Associations of Relatives of People with Alzheimer's Disease, all those who met the inclusion criteria were contacted. Those who agreed to voluntarily participate were given the informed consent form and the set of measurements, which they completed in approximately 20 min.

Instruments

Marwit–Meuser Caregiver Grief Inventory-Short Form

The Marwit–Meuser Caregiver Grief Inventory-Short Form[3] is an instrument that assesses caregiver grief in caregivers of people with dementia. It is derived from a 50-item tool, the Marwit–Meuser Caregiver Grief Inventory (MM-CGI).[2]

This shorter version has 18 items distributed in three subscales of 6 items each: (1) Personal Sacrifice Burden, which measures individual losses experienced as a result of caregiving; (2) Heartfelt Sadness and Longing, which assesses the caregiver's emotional reactions during caregiving; and (3) Worry and Felt Isolation, which measures the feeling of losing connections and support from others. The response scale is a 5-point Likert-type scale that

15325415, 2024, 1, Downloaded from https://agsjournals.onlinelibrary.wiley.com/doi/10.1111/jgs.18623 by Readcube (Labtiva Inc.), Wiley Online Library on [08/02/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

measures agreement/disagreement. Subscale totals can be calculated, and combined for an overall score. A higher score signifies a more intense grief experience.

The Patient Health Questionnaire-9

This self-administered tool assesses the presence and severity of depressive symptomatology. It comprises 9 items, each rated on a Likert-type scale of four options. Scores are interpreted as follows: 0–4 (minimal depression), 5–9 (mild depression), 10–14 (moderate depression), 15–19 (moderately severe depression), and 20–27 (severe depression).[17,18]

Caregiver Strain Index

It is a self-report questionnaire with 13 true-false items that assess the perceived overexertion and fatigue in caregivers of severely dependent patients. A score of 7 or more suggests a high level of strain.[19,20]

Duke–UNC Functional Social Support Questionnaire

This tool assesses subjects' perceptions of the availability of help and support offered by family and friends.[21,22] With 11 items and a Likert-type response scale (1–5), the score reflects perceived social support, not actual social support. A score ≥32 indicates normal perceived social support, while <32 indicates low perceived social support.

WHOQOL–BREF

The WHOQOL-BREF is a self-administered tool, which measures a person's perception of overall quality of life and general health.[23] It has 26 items, with a Likert-type response scale (1–5) and 4 dimensions: physical health, psychological health, social relationships, and environment, which can be scored independently. Higher scores indicate a better perceived overall quality of life.

Data analysis

For the description of the sample, descriptive statistics (means, standard deviations, frequencies, ranges, and medians) were calculated. For the total questionnaire and for each subscale, internal consistency reliability was calculated using Cronbach's alpha and, when the item was removed, also using Cronbach's alpha, considering acceptable scores between 0.70 and 0.90.[24] Corrected item-test correlations were also calculated.

For construct validity, a confirmatory factor analysis (CFA) was performed, selecting the maximum likelihood estimation method for the structural equation model. The following fit indices were calculated, considering the values in brackets as values of a good model fit: comparative fit index (CFI > 0.95), Tucker-Lewis index (TLI > 0.95), standardized root mean squared residual (SRMR < 0.08), and root mean squared error of approximation (RMSEA < 0.06). The chi-squared to the degree of freedom ratio (CMIN/DF) was calculated, considering values of <2 as acceptable.[25]

To assess convergent validity, correlations were calculated between the Spanish version of the MM-CGI-SF and the rest of the related variables, expecting to obtain significant positive correlations (with a direct relationship) with PHQ-9 and CSI, and significant negative correlations (with an indirect relationship) with Duke-UNC and WHOQOL-BREF.

Kolmogorov–Smirnov test was used to assess the normal distribution of the main variables, and due to the non-normal distribution of these variables, Spearman's correlation coefficient was used, considering the association to be significant when $p < 0.05$. IBM SPSS Statistics 26[26] and IBM SPSS AMOS 26[27] software programs were used for data analysis. The study procedure followed the STROBE guidelines (Data S1).

Ethical considerations

Anonymity, confidentiality, and data processing requirements were maintained at all times, ensuring the ethical standards and principles of all research, according to the declaration of Helsinki. The study was approved by the Research Ethics Committee of the Province of Huelva.

RESULTS

Description of the sample

The sample consisted of 250 participants. The majority (80.4%) were women, with a mean age of 58.22 years (SD = 12.74). 62% percent were sons or daughters of the patients, the rest being spouses or other relatives.

The mean total score of the MM-CGI-SF was 64.62 (SD = 14.86). The MM-CGI-SF(W&FI) subscale had the lowest score (M = 18.52, SD = 5.70) and the MM-CGI-SF (HS&L) subscale the highest (M = 23.33, SD = 5.42). For the PHQ-9, the mean was 11 (SD = 7), for the CSI it was 7.05 (SD = 3.182), and for the Duke-UNC it was 37.3

15325415, 2024, 1, Downloaded from https://agsjournals.onlinelibrary.wiley.com/doi/10.1111/jgs.18623 by Readcube (Labtiva Inc.), Wiley Online Library on [08/02/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 1 Reliability of the MM-CGI-SF and its subscales.

Cronbach's alpha	MM-CGI-SF Total		MM-CGI-SF(PSB)		MM-CGI-SF(HS&L)		MM-CGI-SF(W&FI)	
	0.927		0.854		0.844		0.822	
	Corrected item-total correlation	Cronbach's alpha if the item has been removed	Corrected item-total correlation	Cronbach's alpha if the item has been removed	Corrected item-total correlation	Cronbach's alpha if the item has been removed	Corrected item-total correlation	Cronbach's alpha if the item has been removed
Item 1	0.64	0.92	0.69	0.82				
Item 2	0.65	0.92	0.67	0.82				
Item 3	0.52	0.92					0.51	0.80
Item 4	0.69	0.92			0.72	0.79		
Item 5	0.60	0.92					0.55	0.80
Item 6	0.56	0.92					0.55	0.80
Item 7	0.62	0.92					0.63	0.78
Item 8	0.55	0.92			0.58	0.82		
Item 9	0.48	0.92			0.40	0.86		
Item 10	0.62	0.92	0.55	0.84				
Item 11	0.65	0.92			0.70	0.80		
Item 12	0.65	0.92			0.68	0.81		
Item 13	0.65	0.92					0.59	0.79
Item 14	0.60	0.92					0.66	0.77
Item 15	0.68	0.92			0.67	0.80		
Item 16	0.71	0.92	0.74	0.81				
Item 17	0.53	0.92	0.58	0.84				
Item 18	0.71	0.92	0.62	0.83				

Abbreviations: MM-CGI-SF, Marwit–Meuser Caregiver Grief Inventory-Short Form; MM-CGI-SF(HS&L), Marwit–Meuser Caregiver Grief Inventory-Short Form (Subscale Heartfelt Sadness and Longing); MM-CGI-SF (PSB), Marwit–Meuser Caregiver Grief Inventory-Short Form (Subscale Personal Sacrifice Burden); MM-CGI-SF(W&FI), Marwit–Meuser Caregiver Grief Inventory-Short Form (Subscale Worry and Felt Isolation).

15325415, 2024, 1, Downloaded from https://agsjournals.onlinelibrary.wiley.com/doi/10.1111/jgs.18623 by Readcube (Labtiva Inc.), Wiley Online Library on [08/02/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

(SD = 10.43). In terms of quality of life, the WHOQOL-BREF(SR) subscale had the lowest mean, 8.94 (SD = 2.37), and the WHOQOL-BREF(E) had the highest, 25.28 (SD = 4.76).

Reliability

Internal consistency

Table 1 shows the reliability results of the MM-CGI-SF and its subscales. Cronbach's alpha for the MM-CGI-SF instrument was 0.927. For the MM-CGI-SF(PSB) subscale, it was 0.854; for the MM-CGI-SF(HS&L) subscale, it was 0.844; and for the MM-CGI-SF(W&FI), it was 0.822.

For the global questionnaire, item-total correlations ranged from 0.481 to 0.715. For the MM-CGI-SF(PSB) subscale between 0.552 and 0.743; for the MM-CGI-SF (HS&L) subscale, between 0.403 and 0.727; and for the MM-CGI-SF(W&FI) subscale, between 0.515 and 0.669.

As for Cronbach's alpha if one item was removed, for the general questionnaire, the figures ranged from 0.920 to 0.926. For the MM-CGI-SF(PSB) subscale, they ranged between 0.810 and 0.845; for the MM-CGI-SF (HS&L) dimension, between 0.798 and 0.862; and for the MM-CGI-SF(W&FI) subscale, between 0.775 and 0.808.

Validity

Confirmatory factor analysis

The fit indices of the CFA were as follows: $x^2 = 202.033$, degrees of freedom = 121, $x^2/df = 1.670$ TLI = 0.954, CFI = 0.963, SRMR = 0.047, RMSEA = 0.052.

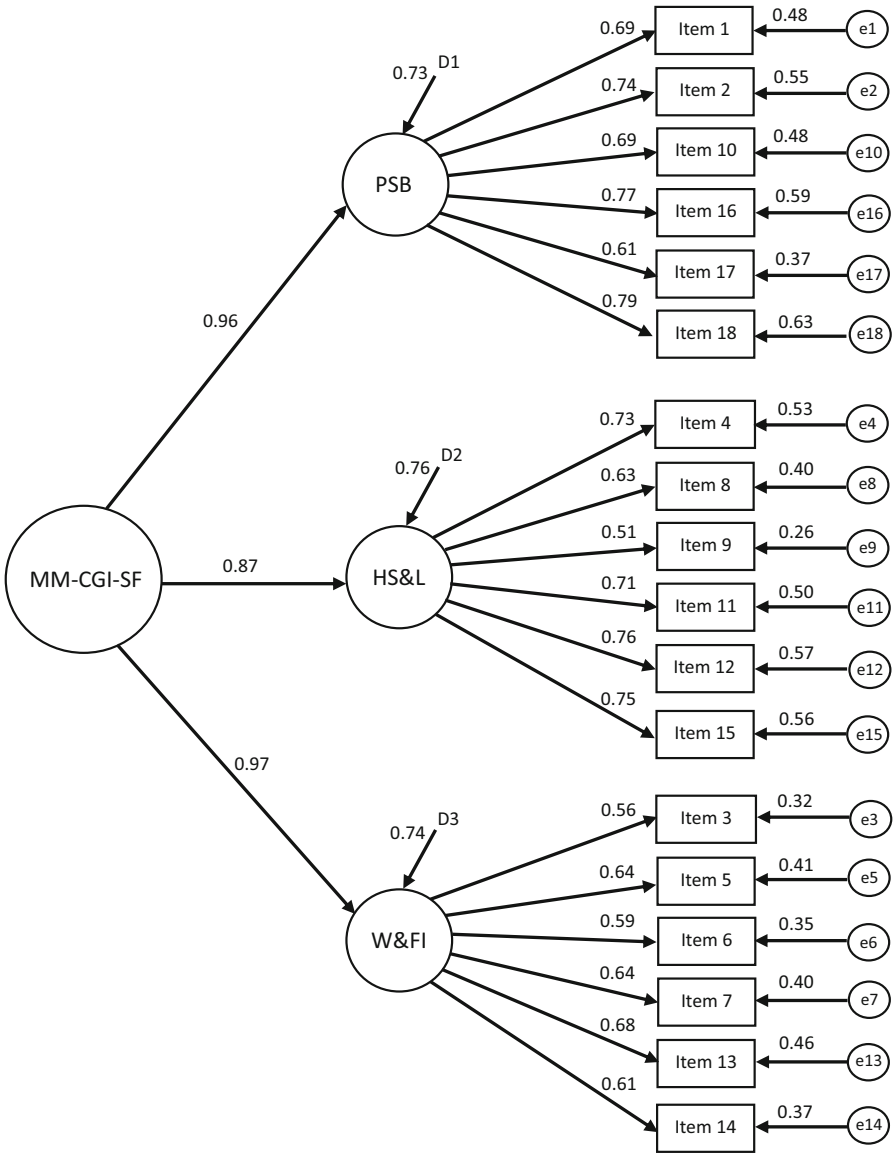

FIGURE 1 Spanish version of the Marwit–Meuser Caregiver Grief Inventory-Short Form: A model with standardized factor weight and residuals. D1-D3, residual errors for each dimension; e1-e18, residual errors of observed scores of each item; MM-CGI-SF, Marwit–Meuser Caregiver Grief Inventory-Short Form; PSB, Personal Sacrifice Burden; HS&L, Heartfelt Sadness and Longing; W&FI, Worry and Felt Isolation.

15325415, 2024, 1, Downloaded from https://agsjournals.onlinelibrary.wiley.com/doi/10.1111/jgs.18623 by Readcube (Labtiva Inc.), Wiley Online Library on [08/02/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Figure 1 shows the proposed model, with the same factors and variables as the original questionnaire.[3] Factor 1 (PSB), with items: 1, 2, 10, 16, 17, 18; Factor 2 (HS&L): 4, 8, 9, 11, 12, 15; and Factor 3 (W&FI): 3, 5, 6, 7, 13, 14. All standardized factor loadings were ≥0.5.

Convergent validity

Table 2 shows the Spearman's correlations between the total MM-CFI-SF, its subscales, and the other variables. All correlations were statistically significant and ranged between 0.900 and −0.248.

DISCUSSION

The aim of this study was to evaluate the psychometric properties of a Spanish version of the MM-CGI-SF in caregivers of dementia patients.

This is the first study on the adaptation of this tool in Spain, and although the MM-CGI-SF has already been adapted to Spanish with the Puerto Rican population,[10] for other Spanish-speaking populations, it is necessary to adapt and adjust the questionnaire due to the cultural, contextual and linguistic differences of these specific populations. In this way, comprehension, quality of responses, and validity of the results are ensured.[28]

The internal consistency reliability of the proposed Spanish version of the MM-CGI-SF was adequate, showing adequate item performance both for the overall MM-CGI-SF and for each of the dimensions. These results are in line with other adaptations of this instrument.[8–15]

Regarding the factorial structure, the multi-ethnic Asian version,[8] the Turkish version,[11] and the Spanish version of this study show a factorial structure of 3 factors (each with 6 items), reproducing the structure of the original version of the MM-CGI-SF.[3]

However, the results of the Turkish version,[11] in which correlations between residual parameters (errors) were used, should be interpreted with caution, since this practice may mask a poorly specified model by intentionally increasing the fit indices.[29] In the study conducted in the Puerto Rican population,[10] although they developed a CFA, they were unable to confirm the original structure. It may be due to a small sample size, far below the minimum 200 cases recommended for a CFA.[30] To sum up, in the Spanish population, its original structure seems to be confirmed.

As for the relationship with other variables, the results showed that they were in line with the initial hypotheses. According to these initial assumptions, there should be positive correlations with PHQ-9 and CSI and negative correlations with Duke-UNC and WHOQOL-BREF, indicating an adequate construct validity of the Spanish version of the MM-CGI-SF.

The results of this study show high levels of caregiver grief, as well as significant values for depression, perceived overexertion, perceived social support, and

TABLE 2 Spearman's correlations between the total MM-CFI-SF, its subscales and the rest of the variables.

Variables	MM-CGI-SF Total	MM-CGI-SF(PSB)	MM-CGI-SF(HS&L)	MM-CGI-SF(W&FI)
MM-CGI-SF Total	1.00			
MM-CGI-SF(PSB)	0.87*	1.00		
MM-CGI-SF(HS&L)	0.86*	0.68*	1.00	
MM-CGI-SF(W&FI)	0.90*	0.69*	0.66*	1.00
PHQ-9	0.63*	0.55*	0.46*	0.64*
CSI	0.45*	0.45*	0.32*	0.43*
Duke-UNC	−0.41*	−0.33*	−0.27*	−0.47*
WHOQOL-BREF(PH)	−0.44*	−0.38*	−0.37*	−0.42*
WHOQOL-BREF(P)	−0.49*	−0.46*	−0.31*	−0.51*
WHOQOL-BREF(SR)	−0.43*	−0.38*	−0.32*	−0.43*
WHOQOL-BREF(E)	−0.37*	−0.38*	−0.24*	−0.36*

Abbreviations: CSI, Caregiver Strain Index; Duke-UNC, Duke–UNC Functional Social Support Questionnaire; MM-CGI-SF, Marwit–Meuser Caregiver Grief Inventory-Short Form; MM-CGI-SF(HS&L), Marwit–Meuser Caregiver Grief Inventory-Short Form (Subscale Heartfelt Sadness and Longing); MM-CGI-SF (PSB), Marwit–Meuser Caregiver Grief Inventory-Short Form (Subscale Personal Sacrifice Burden); MM-CGI-SF(W&FI), Marwit–Meuser Caregiver Grief Inventory-Short Form (Subscale Worry and Felt Isolation); PHQ-9, Patient Health Questionnaire-9; WHOQOL-BREF(E), WHOQOL–BREF (Subscale Environment); WHOQOL-BREF(P), WHOQOL–BREF (Subscale Psychological); WHOQOL-BREF(PH), WHOQOL–BREF (Subscale Physical health); WHOQOL-BREF(SR), WHOQOL–BREF (Subscale Social relationships).

*$p < 0.0001$.

15325415, 2024, 1, Downloaded from https://agsjournals.onlinelibrary.wiley.com/doi/10.1111/jgs.18623 by Readcube (Labtiva Inc.), Wiley Online Library on [08/02/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

perceived quality of life. Furthermore, the results show that all these variables are related to each other.

Unlike other versions, this study evaluates caregivers' perceived overall quality of life. As expected, the higher the caregiver grief, the lower the quality of life. Thus, crucial interventions are needed to reduce the caregiver grief, aiming to enhance their quality of life.

In conclusion, the Spanish version of the MM-CGI-SF shows adequate psychometric properties in Spanish caregivers. This study will provide an instrument capable of identifying caregivers of people with dementia with inadequate grief management. In addition, it will be possible to evaluate the effectiveness of interventions aimed at managing caregiver grief, as well as to prevent complicated long-term grief, thus decreasing the need for using additional resources.

Limitations

On the one hand, the sample is geographically limited. However, there are no major cultural differences between the different regions of the country, and these results are generalized to the Spanish population. Alternatively, it was not possible to assess test–retest reliability due to difficulties in contacting the study participants.

AUTHOR CONTRIBUTIONS

Study conception and design: Miriam Sánchez-Alcón, Juan Diego Ramos-Pichardo, Elena Sosa-Cordobés, José Luis Sánchez-Ramos. *Contact with participants*: Almudena Garrido-Fernández, Miriam Sánchez-Alcón, Juan Diego Ramos-Pichardo, Elena Sosa-Cordobés. *Data collection*: Miriam Sánchez-Alcón, Juan Diego Ramos-Pichardo, José Luis Sánchez-Ramos. *Data analysis and interpretation*: Miriam Sánchez-Alcón, Juan Diego Ramos-Pichardo, Almudena Garrido-Fernández, José Luis Sánchez-Ramos. *Preparation of manuscript*: Miriam Sánchez-Alcón, Elena Sosa-Cordobés, Almudena Garrido-Fernández.

ACKNOWLEDGMENTS

We gratefully acknowledge the Huelva Provincial Federation of Associations of Relatives of People with Alzheimer's Disease for making their facilities available and for enabling contact with the caregivers who participated in the study.

FUNDING INFORMATION

The Spanish Ministry of Universities has supported the first author of this research through the University Teacher Training Programme, with reference number (FPU19/04001). Funding for open access charge: Universidad de Huelva/CBUA.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

SPONSOR'S ROLE

The sponsor had no role in the design, methods, subject recruitment, data collections, analysis or preparation of the manuscript.

ORCID

Miriam Sánchez-Alcón https://orcid.org/0000-0002-9963-9124
Elena Sosa-Cordobés https://orcid.org/0000-0003-4619-3728
Almudena Garrido-Fernández https://orcid.org/0000-0001-7940-3328
José Luis Sánchez-Ramos https://orcid.org/0000-0001-7187-9989
Juan Diego Ramos-Pichardo https://orcid.org/0000-0002-6207-8490

REFERENCES

1. Warchol-Biedermann K, Mojs E, Gregersen R, Maibom K, Millán-Calenti JC, Maseda A. What causes grief in dementia caregivers? *Arch Gerontol Geriatr*. 2014;59(2):462-467. doi:10.1016/j.archger.2014.05.013
2. Marwit SJ, Meuser TM. Development and initial validation of an inventory to assess grief in caregivers of persons with Alzheimer's disease. *Gerontologist*. 2002;42(6):751-765. doi:10.1093/geront/42.6.751
3. Marwit SJ, Meuser TM. Development of a short form inventory to assess grief in caregivers of dementia patients. *Death Stud*. 2006;29(3):191-205. doi:10.1080/07481180590916335
4. Arruda EH, Paun O. Dementia caregiver grief and bereavement: an integrative review. *West J Nurs Res*. 2016;39(6):825-851. doi:10.1177/0193945916658881
5. Blandin K, Pepin R. Dementia grief: a theoretical model of a unique grief experience. *Dementia*. 2017;16(1):67-78. doi:10.1177/1471301215581081
6. Lindauer A, Harvath TA. Pre-death grief in the context of dementia caregiving: a concept analysis. *J Adv Nurs*. 2014;70(10):2196-2207. doi:10.1111/JAN.12411
7. Dehpour T, Koffman J. Assessment of anticipatory grief in informal caregivers of dependants with dementia: a systematic review. *Aging Ment Health*. 2022;27(1):110-123. doi:10.1080/13607863.2022.2032599
8. Liew TM, Koh GCH, Gandhi M, Tan KS, Luo N, Yap P. Detecting predeath grief in family caregivers of persons with dementia: validity and utility of the Marwit-Meuser Caregiver Grief Inventory in a multiethnic Asian population. *Gerontologist*. 2018;58(2):e150-e159. doi:10.1093/geront/gnx097
9. Liew TM, Yap P, Luo N, Hia SB, Koh GCH, Tai BC. Detecting pre-death grief in family caregivers of persons with dementia: measurement equivalence of the Mandarin-Chinese version of Marwit-Meuser Caregiver Grief Inventory. *BMC Geriatr*. 2018;18(1):114. doi:10.1186/S12877-018-0804-5
10. Alvelo J, Cancio-Gonzalez RE, Collazo A. Validation of a Spanish version of the Marwit–Meuser Caregiver Grief

15325415, 2024, 1, Downloaded from https://agsjournals.onlinelibrary.wiley.com/doi/10.1111/jgs.18623 by Readcube (Labtiva Inc.), Wiley Online Library on [08/02/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Inventory Short Form in a Puerto Rican sample. *Res Soc Work Pract*. 2016;28(4):507-518. doi:10.1177/1049731516656801
11. Ar Karci Y, Karanci AN. Examination of the psychometric properties of Marwit-Meuser Caregiver Grief Inventory-Short Form. *Turk J Psychiatry*. 2019;31(3):192-200. doi:10.5080/u23501
12. Chan WCH, Wong B, Kwok T, Ho F. Assessing grief of family caregivers of people with dementia: validation of the Chinese version of the Marwit–Meuser Caregiver Grief Inventory. *Health Soc Work*. 2017;42(3):151-158. doi:10.1093/hsw/hlx022
13. Li J, Li Y, Li P. Perceived grief among caregivers of patients with dementia in China. *Clin Nurs Res*. 2021;30(1):70-81. doi:10.1177/1054773819839265
14. McLennon SM, Bakas T, Habermann B, Meuser TM. Content and face validity of the Marwit-Meuser Caregiver Grief Inventory (Short Form) in African American caregivers. *Death Stud*. 2013;38(6):365-373. doi:10.1080/07481187.2013.766657
15. Gilsenan J, Gorman C, Shevlin M. Exploratory factor analysis of the caregiver grief inventory in a large UK sample of dementia carers. *Aging Ment Health*. 2020;26(2):320-327. doi:10.1080/13607863.2020.1839856
16. Acquadro C, Conway K, Giroudet C. *Linguistic Validation Manual for Patient-Reported Outcomes (PRO) Instruments*. Mapi Research Institute; 2004.
17. Diez-Quevedo C, Rangil T, Sanchez-Planell L, Kroenke K, Spitzer RL. Validation and utility of the patient health questionnaire in diagnosing mental disorders in 1003 general hospital Spanish inpatients. *Psychosom Med*. 2001;63(4):679-686. doi:10.1097/00006842-200107000-00021
18. Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med*. 2001;16(9):606-613. doi:10.1046/J.1525-1497.2001.016009606.X
19. López Alonso S, Moral SM. Validation of the Caregiver Strain Index in Spanish population. *Enfermería comunitaria*. 2005;1:12-17. Accessed May 9, 2023. http://www.index-f.com//comunitaria/1revista/1_articulo_12-17.php
20. Robinson BC. Validation of a Caregiver Strain Index. *J Gerontol*. 1983;38(3):344-348. doi:10.1093/geronj/38.3.344
21. Broadhead WE, Gehlbach SH, de Gruy FV, Kaplan BH. The Duke-UNC Functional Social Support Questionnaire. Measurement of social support in family medicine patients. *Med Care*. 1988;26(7):707-721. doi:10.1097/00005650-198807000-00006
22. Cuéllar Flores I, Dresch V. Validation of the Duke-UNK-11 functional social support Questionnaire in caregivers. *Revista iberoamericana de diagnóstico y evaluación psicológica*. 2012;2(34):89-101.
23. World Health Organization. Spanish_Spain_WHOQOL-BREF. WHO. 2020. Accessed January 9, 2022. https://www.who.int/tools/whoqol/whoqol-bref/docs/default-source/publishing-policies/whoqol-bref/spanish-spain-whoqol-bref
24. Nunnally JC, Bernstein IH. *Teoría Psicométrica*. 3rd ed. McGraw-Hill; 1995.
25. Hu LT, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct Equ Modeling*. 2009;6(1):1-55. doi:10.1080/10705519909540118
26. IBM SPSS Statistics 25.0.0. IBM. 2021. Accessed February 15, 2023. https://www.ibm.com/docs/en/spss-statistics/25.0.0
27. IBM SPSS Amos. IBM. 2022. Accessed February 15, 2023. https://www.ibm.com/es-es/products/structural-equation-modeling-sem
28. Cardoso Ribeiro C, Gómez-Conesa A, Hidalgo Montesinos MD. Methodology for the adaptation of evaluation instruments. *Fisioterapia*. 2010;32(6):264-270. doi:10.1016/J.FT.2010.05.001
29. Brown TA. *Confirmatory Factor Analysis for Applied Research*. 2nd ed. The Guilford Press; 2006.
30. Myers ND, Ahn S, Jin Y. Sample size and power estimates for a confirmatory factor analytic model in exercise and sport. *Res Q Exerc Sport*. 2013;82(3):412-423. doi:10.1080/02701367.2011.10599773

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Data S1. STROBE Statement—Checklist of items included in this cross-sectional study.

How to cite this article: Sánchez-Alcón M, Sosa-Cordobés E, Garrido-Fernández A, Sánchez-Ramos JL, Ramos-Pichardo JD. Psychometric properties of a Spanish version of the MM-CGI-SF in caregivers of people with dementia. *J Am Geriatr Soc*. 2024;72(1):201-208. doi:10.1111/jgs.18623

15325415, 2024, 1, Downloaded from https://agsjournals.onlinelibrary.wiley.com/doi/10.1111/jgs.18623 by Readcube (Labtiva Inc.), Wiley Online Library on [08/02/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License