Detection of maltreatment of people with dementia in Spain: usefulness of the Caregiver Abuse Screen (CASE)

Jesús Rivera-Navarro¹ · Rosa Sepúlveda² · Israel Contador³ · Bernardino Fernández-Calvo⁴ · Francisco Ramos⁵ · Miguel Ángel Tola-Arribas⁶ · Miguel Goñi⁷

Published online: 20 April 2017
© Springer-Verlag Berlin Heidelberg 2017

Abstract The objective of our study is to validate the Caregiver Abuse Screen (CASE) as an instrument for detecting the maltreatment of people with dementia in Spain. In total, 326 informal caregivers of people with different types of dementia were interviewed in several cities in northwest Spain. The caregivers were selected from outpatient neurology clinics and associations of relatives of people with Alzheimer's disease and other dementias. A comprehensive sociodemographic questionnaire was administered to all participants, and several standardized scales were used to assess burden, anxiety, depression, social support and resilience. The "Psychological Aggression" and "Physical Assault" dimensions of the Revised Conflicts Tactics Scale were used as risk factors of caregivers' maltreatment for the construct

validation. To establish the probability of maltreatment, a latent class analysis was carried out according to the item responses obtained from the CASE. The internal consistency (Cronbach's alpha) of the CASE was 0.71. The construct validity was explored through factorial analysis, and we found that two dimensions of CASE—i.e., interpersonal abuse and neglect/dependency—explained 62.5% of the variability. According to the latent class probabilities, 20.4% of participants were categorized as possible abusers and 21.4% as non-abusers. The optimal maltreatment cutoff point was six points on the CASE. The validation of the CASE provides us a brief and easy instrument for detecting possible cases of maltreatment of Spanish people with dementia.

Keywords Dementia · Psychosocial assessment · Detection · Maltreatment · Informal caregiving

Responsible editor: H.-W. Wahl.

✉ Jesús Rivera-Navarro
jrivera@usal.es

¹ Faculty of Social Sciences, Department of Sociology and Communication, University of Salamanca, Salamanca, Spain

² Department of Statistics, University of Salamanca, Salamanca, Spain

³ Department of Basic Psychology, Psychobiology and Methodology of Behavioral Sciences, University of Salamanca, Salamanca, Spain

⁴ Department of Psychology, The Federal University of Paraíba, Joao Pessoa, Paraíba, Brazil

⁵ Department of Personality, Assessment and Psychological Treatment, University of Salamanca, Salamanca, Spain

⁶ Department of Neurology, University Hospital Río Hortega, Valladolid, Spain

⁷ Department of Neurology, Hospital Divino Valles, Burgos, Spain

Introduction

Family maltreatment in older adults is understood as any act committed by a family member that by action or omission causes physical or psychological harm to an older adult (Quinn and Tomita 1997). Such types of family violence against older adults are various (Lachs and Pillemer 2004) and include physical violence (actions that cause physical harm), psychological violence (acts that cause emotional harm), sexual violence (acts of sexual abuse), economic violence (inappropriate use of older adults' assets) and negligence (neglect of older adults' basic and emotional needs). In this study, we are focused on the violent treatment of older adults who suffer from dementia, specifically violence inflicted by informal caregivers.

Maltreatment is common in the context of informal care provided to people with dementia, who are particularly vulnerable (Coyne et al. 1993; Dong et al. 2014a). Essentially, abuse of people with dementia is defined as a hidden offense that is perpetrated against vulnerable people with cognitive impairment by the people on whom they depend (Selwood et al. 2009). In this context, important risk factors of family maltreatment of older adults include the caregiver's subjective burden, the dementia patient's cognitive and behavioral disturbances, and the patient's inability to communicate the existence of the maltreatment (Cooper et al. 2009).

The prevalence of the maltreatment of older adults varies depending on the definition criteria, the assessment methodology and the country (De Donder et al. 2011). For people with dementia, the abuse varies from 15 to 50% (Coyne et al. 1993; Compton et al. 1997; Cooper et al. 2006; Wigglesworth et al. 2010). However, this figure is possibly underestimated, as many maltreated older adults are unable to report maltreatment (Cooper et al. 2006), and there is a lack of measures to determine the presence of maltreatment accurately. The prevalence of maltreatment in Spanish people with dementia is currently unknown.

A variety of scales have been used in the scientific literature to detect the maltreatment of older adults (Cooper et al. 2006; Wigglesworth et al. 2010). However, these scales are not valid for people with cognitive impairment because they obtain information from the patient (Reichenheim et al. 2009). Moreover, most instruments that measure the maltreatment of older adults were developed in the USA, which may raise problems in terms of cultural validity. For instance, the social construction of truth and falsehood in Spain differs from that in Anglo-Saxon countries (Hardin 2010). This is an important factor to take into account because it implies a high likelihood that individuals in the Spanish culture would inaccurately answer a questionnaire with direct questions about maltreatment.

In the current study, we selected the Caregiver Abuse Screen (CASE), which uses caregivers as the sole source of information (Reis and Nahmiash 1995). The CASE is based on an indirect question approach, as we feel that asking direct questions related to maltreatment will not help to give us accurate results. The two main reasons being the following: (1) the different view of truth and falsehood in Spain (Hardin 2010) and (2) the risk of interviewed persons may consider the questions which form a maltreatment's scale as items that blame them as abuser. Therefore, indirect questions prevent caregivers from feeling accused of abuse and consequently prevent them from answering inaccurately in self-defense. Also, all items from CASE do not directly ask about maltreatment through carefully constructed questions such as "do you

often feel...". However, the authors assume the caregiver's lack of control of the aggressive behavior shown by people with dementia and the difficulty the caregiver has in managing this behavior leads to maltreatment. This strong relationship between maltreatment and lack of control has been confirmed in several studies (Cooper et al. 2010; Kishimoto et al. 2013; Vandeweerd et al. 2013; Yan and Kwok 2011). The CASE is the only tool for detecting the abuse of people with dementia that has been validated for the Spanish population. A study by Perez-Rojo et al. (2014) found that the CASE is a reliable scale (Cronbach's $\alpha = 0.84$) comprising two main factors—i.e., interpersonal abuse and neglect—that account for 62.5% of the total variance. Nevertheless, due to sociocultural differences, an optimal cutoff point for the detection of maltreatment is needed, and factorial validity should be confirmed in the Spanish population.

The main objective of the current study is to analyze the psychometric properties of the CASE in the Spanish population. According to the previous data, we hypothesize that the CASE may be a reliable instrument to measure different components of maltreatment (i.e., interpersonal abuse and neglect) in Spain. We can make the assumption that we will find a positive and statistically significant relationship between risk factors of maltreatment (e.g., burden, anxiety and depression in caregivers, functional dependence and cognitive impairment in people with dementia) and CASE scores, whereas caregiver resilience and caregiver social support, as protective factors, will show a negative association. Moreover, we report the discriminative utility of the scale to detect maltreatment of old people with dementia.

Method

Participants

All main caregivers who were living in a home with an older adult with dementia were eligible for this study. Caregivers of institutionalized people or those living in cities far from their relatives with dementia were excluded. A final sample of 326 informal caregivers was selected from various institutions in Castile and Leon (northwest Spain). The sources of recruitment were associations of relatives of people with AD and other dementias (in Valladolid, Burgos, Aranda del Duero, Zamora and Árevalo) and neurology outpatient clinics (Hospital Divino Vallés in Burgos and University Hospital Rio Hortega in Valladolid). Of the 326 caregivers, 167 were service users of the associations of relatives of people with AD and other dementias, and 159 were consecutive referrals to neurology outpatient clinics. All persons receiving care had been

diagnosed with dementia by experts. All participants contributed to this study voluntarily and provided their written informant consent prior to the study. This research was approved by the Bioethics Committee of the University of Salamanca.

Table 1 depicts the characteristics of the sample. Most caregivers were women (67.2%) and offspring or spouses (93.9%), with an average age of 60.1 years. The distribution of CASE scores did not differ significantly by the caregiver's sex ($p = 0.227$), and there was no significant correlation between the caregiver's age and CASE scores ($p = 0.611$).

Instruments

All individuals underwent an evaluation protocol divided into two parts: (1) a questionnaire on participants' sociodemographic information, care-related variables and information about the patient (i.e., dementia subtype, severity) and (2) a group of standardized scales, such as the Zarit Burden Interview (ZBI; Higginson et al. 2010) and the Connor–Davidson Resilience Scale (CD-RSIC; Connor and Davidson 2003; Serrano-Parra et al. 2013). The informant and functional questionnaires were applied to assess patients' recent cognitive changes and daily life activities, respectively (Del-Ser et al. 1997; Pfeffer et al. 1982). The Hospital Anxiety and Depression Scale (HADS-A and HADS-D; Herrero et al. 2003) was used to measure the symptoms of anxiety and depression in caregivers. The Duke–UNC Functional Social Support Questionnaire (FSSQ; Broadhead et al. 1988) was used to evaluate the social support of the informal caregivers. Responses to each question are scored on a scale of 1–5, “as much as I would like” receives a score of 1 and “much less than I would like” receives a score of 5. In relation to anxiety, depression and social support, different studies have shown that caregivers with higher anxiety and depression (Beach et al. 2005; Wigglesworth et al. 2010) and lower social support (Pillemer et al. 2016) show a higher possibility of maltreatment. Meanwhile, cognitive and functional impairment in people with dementia are also positively associated with maltreatment (Dong et al. 2014b; Johannesen and Logiudice 2013).

In addition, the following two instruments were used to detect maltreatment:

- (1) CASE (Reis and Nahmiash 1995). The original study, conducted in Canada, established a dichotomous eight-item scale (Yes = 1; No = 0). The higher the score, the higher the risk of abuse against the older adult. Accordingly, those who answer 4 or

Table 1 Characteristics of the sample

Informal caregiver ($N = 326$)	
Age	60.1 (14.5)
Sex, female ^a (%)	219 (67.2%)
Relationship ^a (%)	
Son/daughter	171 (52.5%)
Spouse	135 (41.4%)
Son-/daughter-in-law	8 (2.5%)
Sibling	3 (0.9%)
Other relatives	8 (2.5%)
Educational level ^a (%)	
Without formal education	8 (2.5%)
Primary school	105 (32.2%)
Secondary/high School	67 (20.5%)
Technical/professional studies	52 (16.0%)
University	94 (28.8%)
Marital status ^a (%)	
Married	194 (59.5%)
Single	6 (1.8%)
Separated	2 (0.6%)
Widower	124 (38.0%)
Living arrangement ^a (%)	
Alone	32 (9.8%)
Several persons (one home)	284 (87.1%)
Several homes (rotation)	10 (10.1%)
Length of care time (years)	3.7 (3.2)
Care per day (hours)	12.1 (8.2)
Zarit Burden Interview	16.3 (6.7)
Connor–Davidson Resilience Scale (CD-RSIC)	73.6 (13.4)
Revised Conflict Tactics Scale (RCTS) subscales	
Psychological Aggression	18.4 (34.2)
Physical Assault	6.1 (22.0)
Caregiver Abuse Screen (CASE) ^b	3.6 (2.1)
People with dementia ($N = 326$)	
Age, mean (SD)	84 (6.4)
Sex, female (%)	223 (68.8%)
Type of dementia ^a (%) ^c	
Alzheimer's disease	250 (16.6%)
Vascular dementia	25 (7.7%)
Other types ^d	46 (4.9%)
Informant Questionnaire (S-IQCODE)	96.6 (21.1)
Functional Assessment Questionnaire (FAQ)	23.8 (9.5)

Numbers indicate the means, and the standard deviations (SD) are between parentheses

^a Frequencies and percentages are shown for nominal variables

^b Three interviewed caregivers showed missing values in the CASE

^c Three subjects showed missing values

^d This category includes frontotemporal, secondary dementia and those cases with unknown etiology

more items affirmatively are suspected abusers. In the original study, the following two factors were found (see Tables 9, 11 in “Appendix”): abuse (items 1, 2, 3, 4, 6 and 8) and neglect/dependency (items 5 and 7). However, other studies have suggested that the CASE measures only one joint dimension (Reichenheim et al. 2009).

- (2) Revised Conflict Tactics Scale (RCTS; Connelly et al. 2005; Loinaz et al. 2012). This instrument is composed of 78 items (the primary caregiver and the person with dementia each would have to respond to 39 items). The items are divided into five independent components, as follows: Physical Assault, Sexual Coercion, Psychological Aggression, Negotiation and Injury (Connelly et al. 2005; Loinaz et al. 2012). We only used Physical Assault and Psychological Aggression because both dimensions are the most frequent types of maltreatment of people with dementia (Dong et al. 2014a; Wiglesworth et al. 2010). RCTS is characterized by asking both the possible abuser (the informal caregivers) and the possible victim (the older adult with dementia). Nevertheless, we only asked informal caregivers about older adults’ physical and psychological aggression toward them because we felt that people with dementia were not able to give accurate answers due to cognitive decline. This specific use of RCTS is focused on the possibility of caregivers’ maltreatment as a reaction to the care recipient’s aggression. (Cooney et al. 2006; Coyne et al. 1993; Vandeweerd and Paveza 2005; Vandeweerd et al. 2013; Wilks et al. 2011). Therefore, higher scores in RCTS are considered as a risk factor of caregiver maltreatment against the older adults, so we considered this scale for as reference for the construct validity. There are 8 possible answers, according to the frequency of occurrence of each item. The items are coded according to the following transformations: answer 1 = 1 point; answer 2 = 2 points; answer 3 = 4 points; answer 4 = 8 points; answer 5 = 15 points; answer 6 = 25 points; answers 7 and 8 = 0 points. The presence or absence of any behavior is calculated by assigning answers 1–7 a value of 1 and answer 8 a value of 0. However, answer 7, “never in the last year, but it has happened before”, is valued as 0 when the annual prevalence is measured (Loinaz et al. 2012; Straus and Douglas 2004). Further information about the Psychological Aggression and Physical Assault dimensions of this scale (items and scores) is shown in Tables 10 and 12 in “Appendix”.

Procedure

All informal caregivers completed a questionnaire that collected the main sociodemographic data of the sample. Then, standardized scales were applied by health science students who had been trained in the application of the instruments. The interviews were carried out either in the caregiver’s home or in available rooms in the centers that participated in the study. The interviews were conducted in one session, and their duration was approximately 45 min. In this study, only informant caregivers answered the protocol questions. All data analyzed in this study are based on information reported by caregivers.

The original CASE scale was translated into Spanish according to experts’ recommendations for the adaptation of tests (Biering-Sørensen et al. 2011). First, the scale was translated from English into Spanish by two people who were experts in psychosocial scales applied to older adults and were familiar with the concepts of maltreatment. Once the two independent translations were completed, they were compared by three experts (a neurologist, a nurse and a psychologist met “ad hoc” for this task), and discrepancies were discussed to select the best option. Subsequently, the back-translation from Spanish to English was performed by an English linguistic expert who had expertise in psychology and was blind to the original English CASE. The final text was compared with the original version, and no differences were found.

Data analysis

A descriptive analysis (mean and standard deviation) of the sample’s characteristics was performed. To determine whether the distribution of the CASE scores varied according to the caregiver’s age or sex, we compared the mean scores of men and women (Student’s *t* test) and calculated the Pearson’s correlation coefficient between age and CASE score. The correlation between the CASE items and subscales was measured through Spearman’s correlation. Factorial validity was assessed by exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA was performed using tetrachoric correlations, considering the main components and varimax rotation, whereas CFA was performed using multiple measures of absolute and comparative fit. In CFA, we considered the standardized parameter estimates because they were compared throughout the model. Several statistics were used to evaluate the goodness of fit of CFA. A ratio of the χ^2 goodness-of-fit statistic (χ^2) to its degrees of freedom (χ^2/df) less than 2 indicates an adequate fit. Values for the goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI) and comparative fit index (CFI) greater than 0.95 indicate a good fit. Similarly, values of 0.05 or less for the

root-mean-square residual (RMR) and the root-mean-square error of approximation (RMSEA) suggest that the model adequately fits the data. Hoelter's index (CN) indicates the sample size at which the χ^2 statistic would be just significant. Values of at least 200 for CN indicate an adequate fit of the model to the data.

The internal consistency reliability of the CASE was calculated using Cronbach's alpha, and Pearson's correlation was used to analyze the convergence of CASE scores with other variables, such as burden or resilience.

Considering RCTS for the construct validation of CASE, specific cutoff points of the Psychological Aggression and Physical Assault RCTS subscales were taken as references to distinguish between possible abusers and non-abusers. We determined the existence of maltreatment considering as a cutoff the lower limit of a confidence interval at 95% applied for each subscale (Psychological Aggression and Physical Assault) of RCTS, according to Loinaz et al. (2012). Thus, we calculated in RCTS the amount of maltreatment caused by the people with dementia toward the informal caregivers. Drawing on the scoring of abusers indicated by Loinaz et al. (2012), for each subscale we established a cutoff point at the lowest limit of a confidence interval (IC = 95%), namely 29.14 in "Psychological Aggression" and 6.92 in "Physical Assault." We compared the performance between the abusers' group and the non-abusers' group in the CASE according to the previous cutoffs points.

Taking into account cultural differences discussed in the introductory section, we analyzed whether the cutoff proposed by Reis and Nahmias (1995) was suitable for the Spanish population. For this purpose, we applied latent class analysis (LCA) (Goodman, 1974), considering the 8 items of CASE with the aim of dividing the interviewees into homogeneous groups regarding maltreatment and being able to characterize those groups according to the answers to each CASE item. Participants were assigned to the latent class to which they had the highest a posteriori probability (modal assignment). Therefore, we determined the typologies of abusers and non-abusers because LCA is particularly appropriate for data that reflect the presence or absence of symptoms. The model parameters were (1) the prevalence (P_j) of each of the C case subpopulations or latent classes (called "latent" because a case's class membership is not directly observed) and (2) conditional response probabilities (P_{ij}), i.e., the probability that the i th case item is positive given that this interviewed person belongs to latent class j (Jung and Wickrama 2008). Therefore, the interviewees were divided into groups according to the tendency of CASE item answers and the pattern of conditional probabilities of certain abusive behaviors. LCA was applied to the matrix data of 323 participants (rows) $\times$ 8 CASE items (columns). We fit a

one-class solution, a two-class solution and so on until we reached the "best" solution. The final number of classes was determined by the bootstrapped Cressie–Read (CR) and Pearson χ^2 (X_2) tests following the recommendations of Von Davier (1997). WinMira (2001 version) and LEM (1.0) were used for latent class analyses.

For general statistical analyses, IBM SPSS statistics and AMOS 21.0 were utilized.

Results

Reliability

The internal consistency (Cronbach's alpha) of the total CASE score was 0.713. In addition, the reliability for the interpersonal abuse subscale (items 1, 2, 3, 4, 6 and 8) and the neglect/dependency subscale (items 5 and 7) was 0.696 and 0.458, respectively. Each item has a higher correlation with the subscale to which it theoretically belongs than with the other subscale.

Factorial validity

Rotated factor loadings of the CASE and communalities are shown in Table 2. These two factors explained 62.53% of the variability, and all the communalities (h^2) were above 0.45. The normalized varimax showed that items 5 and 7 belonged to another subscale, different from items 1, 2, 3, 4, 6 and 8 (Table 2).

The goodness-of-fit indexes for CFA are shown in Table 3. Each index taken into account showed a good fit for the data [$\chi^2/df < 2$, CFI > 0.95 , GFI > 0.95 and AGFI > 0.95 ; RMR and RMSEA values are both ≤ 0.05 ; CN indices > 200].

Figure 1 indicates that the latent dimensions of CASE were moderately correlated with each other (0.62) and the standardized parameter estimates. The standardized coefficients revealed a moderate relationship between the abuse subscale and items 1, 2, 3, 4, 6 and 8. Finally, the relationship between the neglect subscale and items 5 and 7 was moderate.

Additional facets of construct validity: relations to risk and protective factors

Table 4 shows the correlations between the CASE and other subscales. We found moderate correlations of CASE scores (sum total) with ZBI (0.486, $p < 0.01$), CD-RSIC (-0.350 , $p < 0.01$) and FSSQ (0.310, $p < 0.01$). Therefore, high CASE scores were associated with a greater burden, lower social support and resilience of caregivers. Meanwhile, correlations of CASE scores (sum total) with

Table 2 Tetrachoric factor analysis: varimax normalization

Items	Factor 1 (interpersonal abuse)	Factor 2 (neglect, dependency)	h^2	N (%)
1. Do you sometimes have trouble making him/her control his/her temper or aggression?	0.733	0.213	0.583	188 (58.2)
2. Do you often feel you are being forced to act out of character or do things you feel bad about?	0.605	0.347	0.487	165 (51.1)
3. Do you find it difficult to manage his/her behavior?	0.666	0.331	0.554	167 (51.7)
4. Do you sometimes feel that you are forced to be rough with him/her	0.676	0.276	0.659	210 (65.0)
5. Do you sometimes feel you can't do what is really necessary or what should be done for him/her?	0.152	0.865	0.773	166 (51.4)
6. Do you often feel you have to reject or ignore him/her?	0.570	0.402	0.487	72 (22.3)
7. Do you often feel so tired and exhausted that you cannot meet his/her needs?	0.197	0.813	0.701	84 (26.0)
8. Do you often feel you have to yell at him/her?	0.861	-0.127	0.757	115 (35.3)
Eigenvalue	3.835	1.1673		
% Variance	47.938	14.591		

The bold numbers in column 2 are referred to items which belong to factor 1 (Interpersonal Abuse) and the bold numbers in column 3 are referred to items which belong to factor 2 (Neglect/Dependency)

N (%) Number and percentage of subjects who replied “yes” for each item

h^2 Communality

Table 3 Goodness-of-fit index for CFA

Index	Two-dimensional model
χ^2/df	1.681
CFI	0.960
GFI	0.977
AGFI	0.957
RMR	0.009
RMSEA	0.046
CN (0.05)	304
CN (0.01)	365

CFA confirmatory factor analysis; CFI comparative fit index; GFI goodness-of-fit index; AGFI adjusted goodness of fit index; RMR root-mean-square residual; RMSEA root-mean-square error of approximation; CN Hoelter's critical N

HADS-D (0.201, $p < 0.01$), HADS-A (−0.286, $p < 0.01$), S-IQCODE (0.186, $p < 0.01$) and FAQ (0.151, $p < 0.01$) were low. Finally, CASE scores correlated more strongly with the psychological aggression dimension than with physical assault.

Table 5 displays the CASE scores of the abuser group and the non-abuser group on the RCTS psychological aggression and physical assault dimensions (see data analysis section). As observed, the abusers scored higher in CASE than non-abusers and the effect sizes were large for both dimensions: Psychological Aggression ($d = 0.91$, $p < 0.01$) and Physical Assault ($d = 0.76$, $p < 0.01$). Therefore, the CASE had the power to differentiate between caregivers with a lower risk of maltreating older adults versus a higher risk of

maltreating older adults due to having been psychologically aggressed and physically assaulted by the older adults.

Latent class analysis

LCA was conducted fitting two to three-class solutions to the CASE data. The fit in the two-class model was poor ($p < 0.01$ for both goodness-of-fit statistics). A three-class model provided a good fit ($p = 0.20$ for CR and $p = 0.275$ for X_2). As shown in Table 6, considering the conditional probabilities (P_{ij}), the three-class model illustrated meaningful differences between individuals. Class 1 consisted of individuals who tended to have low probabilities (less than 34%) of responding positively to any of the items; therefore, we labeled this group “no maltreatment.” Class 2 consisted of individuals who tended to have high probabilities (greater than 56%) of responding positively to all items; therefore, we labeled them “maltreatment.” Members of class 3 (labeled “intermediate”) had high probabilities of responding positively to items 1–4 and low probabilities of responding positively to items 5–8. According to the latent class probabilities (P_j), 20.3% of the subjects of our study belonged to the abuser group, 21.4% were non-abusers and 58.4% belonged to the intermediate class.

The analysis of a posteriori probabilities (a procedure that assigns individuals to a corresponding modal latent class) revealed an interesting distribution: Individuals who responded positively to 6, 7 or 8 items (except in two cases) were assigned to latent class 2 (maltreatment);

Table 4 Correlations between CASE and CASE subscales with other scales

Scales	CASE	Interpersonal abuse	Neglect/dependency
Interpersonal abuse	0.946**	–	0.356**
Neglect/dependency	0.639**	–	–
Minor psychological aggression	0.391**	0.381**	0.220**
Severe psychological aggression	0.352**	0.352**	0.180**
Minor physical assault	0.228**	0.224**	0.126*
Severe physical assault	0.176**	0.187**	0.063
ZBI	0.486**	0.400**	0.450**
HADS-D	0.201**	0.133*	0.266**
HADS-A	–0.286**	–0.250**	–0.226**
FSSQ	0.310**	0.232**	0.344**
CD-RSIC scoring total	–0.350**	–0.306**	–0.287**
S-IQCODE	0.186**	0.182**	0.107
FAQ	0.151**	0.160**	0.057

ZBI Zarit Burden Interview; HADS Hospital Anxiety and Depression Scale; FSSQ Duke–UNC Functional Social Support Questionnaire; CD-RSIC The Connor–Davidson Resilience Scale; S-IQCODE Spanish version of the Informant Questionnaire on Cognitive Decline in the Elderly; FAQ Functional Assessment Questionnaire

* $p < 0.05$; ** $p < 0.01$

Fig. 1 Confirmatory factor analysis for CASE. Standardized estimates

individuals who gave 3, 4 or 5 positive responses were assigned to latent class 3 (intermediate class). Of individuals who gave a positive response to 2 items, some were assigned to latent class 3, and others were assigned to latent class 1. All individuals who responded positively to 0 or 1 item were assigned to class 1 (no maltreatment). Therefore, the cutoff point to determine maltreatment was 6 items with positive responses.

RCTS as high risk of maltreatment to people with dementia

We compare the risk of maltreatment based on “classical” 4 points cutoff (Table 7) and the “new” cutoff of 6 points (Table 8). Considering 4 as point cutoff, 81% of caregivers with high risk of being abused psychologically would be abusers according to CASE and 74% of caregivers with

Table 5 Comparison of CASE scoring between abused caregivers and non-abused caregivers according to RCTS cutoff

	Abused caregivers		Non-abused caregivers		d	Z (p value)
	M	SD	M	SD		
PA (cutoff point: 29.14)	5.17	1.874	3.27	2.121	0.91	−5.953 (.001)
PhA (cutoff point: 6.92)	5.02	2.124	3.40	2.134	0.76	−4.274 (.001)

PA Psychological Aggression; PhA Physical Assault; M mean; SD standard deviation; d Cohen's d effect sizes; Z z-value for Mann–Whitney test

Table 6 Parameter estimates for the three-class model fitted to CASE

Parameter	Class 1	Class 2	Class 3
P_j	0.214	0.203	0.584
P_{1j}	0.080	0.903	0.652
P_{2j}	0.112	0.916	0.514
P_{3j}	0.067	0.880	0.553
P_{4j}	0.094	0.971	0.739
P_{5j}	0.331	0.957	0.427
P_{6j}	0.143	0.560	0.181
P_{7j}	0.092	0.626	0.194
P_{8j}	0.020	0.719	0.346

P_j estimated probability that an individual will belong to the latent class j (latent class probabilities); P_{ij} estimated conditional probability that an individual will respond positively to the question given that this individual belongs to latent class j

high risk of being abused physically would be abusers according to CASE. Considering 6 as the cutoff point, 47% of caregivers with high risk of being abused psychologically would be abusers according to CASE and 45% of

caregivers with high risk of being abused physically would be abusers according to CASE. In addition, the prevalence of maltreatment using 4 as a cutoff point was 50.8% ($n = 164$ cases), and it was 20.4% ($n = 66$ cases) using 6 as a cutoff point.

Discussion

In this study, we attempt to analyze the validity of CASE for the detection of maltreatment in informal caregivers of persons with dementia in Spain. In terms of internal consistency, the CASE's reliability was acceptable. Likewise, CASE scores showed a moderate correlation with burden, resilience and social support scales. Our findings suggest that burden is the most relevant antecedent event leading to increasing proneness to abuse of the old adult with dementia. The consistent associations of CASE scores with resilience (negative association) and social support (positive association) are also indicative of this advantageous characteristic (Dong and Simon 2010). Moreover, depression–anxiety symptoms in caregivers and cognitive–

Table 7 Classification of subjects by RCTS scores (high risk, low risk) and by CASE scores (considering 4 or more positive items)

RCTS				
	High risk for abuse PA	Low risk for abuse PA	High risk for abuse PhA	Low risk for abuse PhA
CASE				
Abusers	47	116	31	133
Non-abusers	11	148	11	148

PA Psychological Aggression; PhA Physical Assault

Table 8 Classification of subjects by RCTS scores (high risk, low risk) and by CASE scores (considering 6 or more positive items)

RCTS				
	High risk for abuse PA	Low risk abuse PA	High risk for abuse PhA	Low risk for abuse PhA
CASE				
Abusers	27	39	19	47
Non-abusers	31	225	23	234

PA Psychological Aggression; PhA Physical Assault

functional impairment in older adults are associated with the presence of maltreatment (Johannesen and Logiudice 2013; Dong et al. 2014b, Lachs et al. 1997). These correlations help us to reassure the validity of CASE for screening the suspicion of maltreatment (Cooper et al. 2010; Lee and Kolomer 2005; Yan and Kwok 2011). Finally, the factorial analysis indicates that the two factors (abuse and neglect/dependency) explain 62.5% of the variability, which suggests that neglect is distinct from other categories of abuse; this should be investigated separately.

The internal consistency of the CASE (0.71) total score is acceptable. In terms of subscales, our data are in line with those obtained by the authors of the original CASE and the Spanish validation. Reis and Nahmiash (1995) found a Cronbach's alpha of 0.71 for the abuse subscale, whereas Perez-Rojo et al. (2014) found a Cronbach's alpha of 0.59 for the neglect factor. The lower reliability in neglect subscale is potentially explained by the reduction in the number of items (Cortina 1993).

The CASE scores of the abused caregivers, for both Psychological Aggression and Physical Assault, differed from those of the non-abused caregivers, stratified by RCTS. This finding suggests that the CASE reliably distinguishes between at least two types of abusers and non-abusers. Moreover, the optimal cutoff to detect maltreatment was at least 6 items with positive responses, according to the latent class analyses. As shown in the results section, the analysis of the individual probabilities revealed that those caregivers who responded positively to at least 6 items were assigned mainly to latent class 2, i.e., maltreatment. Furthermore, considering 6 as the cutoff point decreased the risk of becoming an abuser caused by having been abused previously by an older adult with dementia. Likewise, assuming 4 to be the optimal cutoff of maltreatment in the Spanish CASE (Pérez Rojo et al. 2014), we obtained a prevalence of 50.8%, which seems an outrage data according to the literature (McCausland et al. 2016). Nevertheless, assuming 6 to be the optimal cutoff of maltreatment in the Spanish CASE, we obtained a prevalence of 20.4%, which is consistent with the interval shown in other studies (Coyne et al. 1993; Compton et al. 1997; Cooper et al. 2006; Wiglesworth et al. 2010). Consequently, we chose 6 as the optimal cutoff with a prevalence rate of 20.4%.

It is possible that the “new” cutoff point suggests cultural differences between the Spanish and Anglo-Saxon cultures in terms of attitudes toward maltreatment. In this sense, the probability of maltreatment increases when the empowerment of women is low (García-Moreno et al. 2006) and patriarchal system is assumed in the culture (Schiamberg and Gans 1999). Moreover, cultures based on familism values tend to experience increased possibilities

of abuse (Markowitz 2001) because some behaviors (e.g., economic abuse) may be perceived as relatively normal (Dakin and Pearlmutter 2009). Finally, the formal help received by informal caregivers in Spain is usually scarce, which usually implies less support and more stress (Rivera et al. 2009).

Limitations

This study has several limitations. First, because the interviewed caregivers were selected from outpatient clinics and associations of relatives of people with Alzheimer's disease (AD) and other dementias, the sample may be partially biased. Therefore, these findings should not be generalized to the informal caregiver population. Nevertheless, the sociodemographic profiles of the caregivers and the characteristics of informal care (i.e., care time) were similar to those in previous studies carried out in Spain (Rivera et al. 2009; Serrano-Aguilar et al. 2006). Second, there is not an established gold standard for maltreatment. For instance, Wiglesworth et al. (2010) combined information from medical records and home visit observations, but this information was not available in this study. In this sense, other studies should be performed with a reliable “gold standard” to verify the best cutoff for the CASE.

On the contrary, we believe that this study presents two main strengths: (a) We were able to establish an initial prevalence of maltreatment of people with dementia in Spain with a broad sample size. (b) The psychometric properties of the CASE were detailed for the Spanish population, and a new cutoff point was established to detect maltreatment behaviors in our culture. Considering the current findings and the CASE as the only brief validated measure for the detection of maltreatment in Spanish people with dementia, we recommend the application of the CASE as initial screening tool whenever professionals can communicate with family caregivers. This type of instrument, with indirect questions, may be particularly useful in the Spanish culture.

Implications for policy and practice

Despite the limitations, this study has important implications for policy and practice. In Spain, there is no specific protection agency for maltreated older people. Social services of local governments are responsible for the management of different abuse cases (e.g., gender-based violence, child abuse, older people abuse) and other social problems (e.g., poverty, addiction, lack of housing). In this regards, health professionals (and, to a lesser extent,

neighbors or relatives of victims) are often the informants who report suspected cases of maltreatment to social services (Dakin and Pearlmutter 2009). Under these conditions, maltreatment against older adults is undetected because health professionals in the primary care system generally do not use any screening tools (Coma et al. 2007).

Over the last few years, new laws have been passed and policies have been implemented to help caregivers who care for dependents in Spain. However, considerations of abuse and neglect are ignored. This study supports the use of the CASE, which is validated in Spain and other countries, for screening the maltreatment of people with dementia by informal caregivers. The CASE application may improve the detection of maltreatment of older adults by informal caregivers in Spain. In clinical practice, CASE responses may serve as a first alert, perhaps in combination with more specific measures. Further qualitative research is needed to understand caregivers' perception of maltreatment of people with dementia in Spain.

Acknowledgements We received support from two public grants: “Detección de la violencia familiar ejercida sobre el anciano con demencia” (ref: CSO2010-20721) and “Trayectorias laborales y reproductivas de la población inmigrante en tiempo de crisis. España y el contexto interno” (ref: CSO2013-41828-R). We would like to express our sincere thanks to the associations of relatives of persons with Alzheimer’s disease and other dementias from Valladolid, Zamora, Burgos, Aranda del Duero, the Merindades area and Árevalo for their collaboration in the study. We would like to extend our gratitude to all caregivers who participated in this research. We are also grateful to the neurology departments of the Hospital Divino Vallés (Burgos) and University Hospital Río Hortega (Valladolid) for facilitating access to informal caregivers of people with dementia. Finally, we thank Elizabeth Nestor, Peter Grelak and Caolán O’Cruaioich for their linguistic assistance and their useful suggestions for this manuscript.

Appendix

See Tables 9, 10, 11 and 12.

Table 9 Caregiver Abuse Screen (Reish–Nahmiash CASE). *Source* Reis and Nahmiash (1995)

Item description	Yes	No
1. Do you sometimes have trouble making him/her control his/her temper or aggression		
2. Do you often feel you are being forced to act out of character or do things you feel bad about?		
3. Do you find it difficult to manage his/her behavior?		
4. Do you sometimes feel that you are forced to be rough with him/her?		
5. Do you sometimes feel you can’t do what is really necessary or what should be done for him/her?		
6. Do you often feel you have to reject or ignore him/her?		
7. Do you often feel so tired and exhausted that you cannot meet his/her needs?		
8. Do you often feel you have to yell at him/her?		

Table 10 Revised Conflicts Tactics Scale (gold standard of the validation). *Source* Straus and Douglas (2004)

Item description	Level of severity
<i>Psychological aggression</i>	
My relative insulted or swore at me	Minor
My relative shouted at me	Minor
My relative stomped out of the room	Minor
My relative threatened me or threw something at me	Severe
My relative destroyed something that belonged to me	Severe
My relative did something to spite me	Minor
My relative called to me fat or ugly	Severe
My relative accused to me of being a very bad caregiver	Severe
<i>Physical Assault</i>	
My relative kicked, bit or punched me	Severe
My relative slapped me	Minor
My relative beat me	Severe

Table 10 continued

Item description	Level of severity
My relative hit me with something	Severe
My relative choked me	Severe
My relative slammed me against the wall	Severe
My relative grabbed me	Minor
My relative threw something at me that could hurt	Severe
My relative used a knife or gun on me	Severe
My relative pushed or shoved me	Minor
My relative twisted my arm or pulled my hair	Minor
My relative burned or scalded me on purpose	Minor

Table 11 Caregiver Abuse Screen (Reish–Nahmiash CASE) in Spanish language. *Source* Reis and Nahmiash (1995)

Item description	SI	NO
1. ¿Tiene problemas para controlar su temperamento cuando tiene que atender a su familiar?		
2. ¿Siente que, con frecuencia, se ve obligado a actuar de un modo no acorde a su carácter o a hacer cosas que siente que están mal hechas?		
3. ¿Encuentra dificultad en manejar el comportamiento de su familiar?		
4. ¿Siente que, a veces, se ve forzado a ser brusco con su familiar?		
5. ¿Siente que algunas veces usted no puede hacer lo que es realmente necesario, o lo que debería, en la atención a su familiar?		
6. ¿Siente que, frecuentemente, tiene que rechazar o ignorar a su familiar?		
7. ¿Se siente frecuentemente tan cansado y exhausto que no puede satisfacer las necesidades de su familiar?		
8. ¿Usted frecuentemente siente que debería gritar a su familiar?		

Table 12 Revised Conflicts Tactics Scale. Spanish language. *Source* Straus and Douglas (2004)

Item description
<i>Agresión psicológica</i>
Mi familiar me ha insultado o me ha dicho palabrotas
Mi familiar me gritó
Mi familiar salió dando un portazo de la habitación o de la casa durante una discusión
Mi familiar me ha llamado feo o gordo
Mi familiar hizo algo para fastidiarme
Mi familiar destrozó algo que me pertenecía
Mi familiar amenazó con golpearme o tirarme algo
Mi familiar me ha acusado de ser un cuidador muy malo o Deplorable
<i>Agresión física</i>
Mi familiar me lanzó algo que me podía herir
Mi familiar me torció el brazo o me tiró del pelo
Mi familiar me empujó
Mi familiar me agarró con fuerza
Mi familiar me dio un bofetón
Mi familiar ha usado un cuchillo o una pistola contra mí
Mi familiar me golpeó con algo que pudo haberme herido

Table 12 continued

Item description
Mi familiar me agarró por el cuello
Mi familiar me empujó contra una pared
Mi familiar me dio golpes
Mi familiar me quemó a propósito
Mi familiar me dio una patada

References

- Beach SR, Schulz R, Williamson GM, Miller LS, Weiner MF, Lance CE (2005) Risk factors for potentially harmful informal caregiver behavior. *J Am Geriatr Soc* 53:255–261. doi:[10.1111/j.1532-5415.2005.53111.x](https://doi.org/10.1111/j.1532-5415.2005.53111.x)
- Biering-Sørensen F, Alexander MS, Burns S, Charlifue S, DeVivo M, Dietz V et al (2011) Recommendations for translation and reliability testing of international spinal cord injury data sets. *Spinal Cord* 49:357–360. doi:[10.1038/sc.2010.153](https://doi.org/10.1038/sc.2010.153)
- Broadhead WE, Gehlbach SH, de Gruy FV, Kaplan BH (1988) The Duke-UNC functional social support questionnaire. Measurement of social support in family medicine patients. *Med Care* 26:709–723. doi:[10.1097/00005650-198807000-00006](https://doi.org/10.1097/00005650-198807000-00006)
- Coma M, Muñoz J, Postigo P, Ayuso M, Sierra C, Syrol T (2007) Primary care doctors' and nurses' opinion of elder abuse and neglect. *Gac Sanit* 21:235–241. doi:[10.1157/13106807](https://doi.org/10.1157/13106807)

- Compton SA, Flanagan P, Gregg W (1997) Elder abuse in people with dementia in Northern Ireland: prevalence and predictors in cases referred to a psychiatry of old age service. *Int J Geriatr Psychiatry* 12:632–635. doi:[10.1002/\(SICI\)1099-1166\(199706\)12:6<632::AID-GPS570>3.0.CO;2-9](https://doi.org/10.1002/(SICI)1099-1166(199706)12:6<632::AID-GPS570>3.0.CO;2-9)
- Connelly CD, Newton RR, Aarons GA (2005) A psychometric examination of English and Spanish versions of the Revised Conflict Tactics Scales. *J Interpers Violence* 20:1560–1579. doi:[10.1177/0886260505280341](https://doi.org/10.1177/0886260505280341)
- Connor KM, Davidson JRT (2003) Development of a new resilience scale: the Connor–Davidson Resilience Scale (CD-RISC). *Depress Anxiety* 18:76–82. doi:[10.1002/da.10113](https://doi.org/10.1002/da.10113)
- Cooney C, Howard R, Lawlor B (2006) Abuse of vulnerable people with dementia by their carers: can we identify those most at risk? *Int J Geriatr Psychiatry* 21:564–571. doi:[10.1002/gps.1525](https://doi.org/10.1002/gps.1525)
- Cooper C, Katona C, Finne-Soveri H, Topinková E, Carpenter GI, Livingston G (2006) Indicators of elder abuse: a crossnational comparison of psychiatric morbidity and other determinants in the Ad-HOC study. *Am J Geriatr Psychiatry* 14:489–497. doi:[10.1097/01.JGP.0000192498.18316.b6](https://doi.org/10.1097/01.JGP.0000192498.18316.b6)
- Cooper C, Selwood A, Blanchard M, Walker Z, Blizard R, Livingston G (2009) Abuse of people with dementia by family carers: representative cross sectional survey. *BMJ* 338:b155. doi:[10.1136/bmj.b155](https://doi.org/10.1136/bmj.b155)
- Cooper C, Selwood A, Blanchard M, Walker Z, Blizard R, Livingston G (2010) The determinants of family carers' abusive behaviour to people with dementia: results of the CARD study. *J Affect Disord* 121:136–142. doi:[10.1016/j.jad.2009.05.001](https://doi.org/10.1016/j.jad.2009.05.001)
- Cortina JM (1993) What is coefficient alpha? An examination of theory and applications. *J Appl Psychol* 78:98–104. doi:[10.1037/0021-9010.78.1.98](https://doi.org/10.1037/0021-9010.78.1.98)
- Coyne AC, Reichman WE, Berbig LJ (1993) The relationship between dementia and elder abuse. *Am J Psychiatry* 150:643–646. doi:[10.1176/ajp.150.4.643](https://doi.org/10.1176/ajp.150.4.643)
- Dakin E, Pearlmutter S (2009) Older women's perceptions of elder maltreatment and ethical dilemmas in adult protective services: a cross-cultural, exploratory study. *J Elder Abuse Negl* 21:15–57. doi:[10.1080/08946560802571896](https://doi.org/10.1080/08946560802571896)
- Davies MV (1997). Bootstrapping goodness-of-fit statistics for sparse categorical data: results of a Monte Carlo study. *MPR online* 2:29–48. <http://www.pabst-publishers.de/mpri/>. Accessed 26 Oct 2015
- De Donder L, Luoma ML, Penhale B, Lang G, Santos AJ, Tamutiene I, Koivusilta M, Schopf A, Alves JF, Reingarde J, Perttu S, Savola T, Verté D (2011) European map of prevalence rates of elder abuse and its impact for future research. *Eur J Ageing* 8:129–143. doi:[10.1007/s10433-011-0187-3](https://doi.org/10.1007/s10433-011-0187-3)
- Del-Ser T, Morales JM, Barquero MS, Cantón R, Bermejo F (1997) Application of a Spanish version of the “Informant Questionnaire on Cognitive Decline in the Elderly” in the clinical assessment of dementia. *Alzheimer Dis Assoc Disord* 11:3–8. doi:[10.1097/00002093-199703000-00002](https://doi.org/10.1097/00002093-199703000-00002)
- Dong X, Simon MA (2010) Gender variations in the levels of social support and risk of elder mistreatment in a Chinese community population. *J Appl Gerontol* 29:720–739. doi:[10.1177/0733464809348057](https://doi.org/10.1177/0733464809348057)
- Dong X, Chen R, Simon MA (2014a) Elder abuse and dementia: a review of the research and health policy. *Health Aff* 33:642–649. doi:[10.1377/hlthaff.2013.1261](https://doi.org/10.1377/hlthaff.2013.1261)
- Dong X, Simon M, Beck T, Evans D (2014b) Decline in cognitive function and elder mistreatment: findings from the Chicago health and aging project. *Am J Geriatr Psychiatry* 22:598–605. doi:[10.1016/j.jagp.2012.11.004](https://doi.org/10.1016/j.jagp.2012.11.004)
- García-Moreno C, Jansen HA, Ellsberg M, Heise L, Watts CH, WHO Multi-country Study on Women's Health and Domestic Violence against Women Study Team (2006) Prevalence of intimate partner violence: findings from the WHO multi-country study on women's health and domestic violence. *Lancet* 368:1260–1269. doi:[10.1016/S0140-6736\(06\)69523-8](https://doi.org/10.1016/S0140-6736(06)69523-8)
- Goodman LA (1974) Exploratory latent structure analysis using both identifiable and unidentifiable models. *Biometrika* 61:215–231. doi:[10.1093/biomet/61.2.215](https://doi.org/10.1093/biomet/61.2.215)
- Hardin KS (2010) The Spanish notion of lie: revisiting Coleman and Kay. *J Pragmat* 42:3199–3213. doi:[10.1016/j.pragma.2010.07.006](https://doi.org/10.1016/j.pragma.2010.07.006)
- Herrero MJ, Blanch J, Peri JM, De Pablo J, Pintor L, Bulbena A (2003) A validation study of the hospital anxiety and depression scale (HADS) in a Spanish population. *Gen Hosp Psychiatry* 25:277–283. doi:[10.1016/S0163-8343\(03\)00043-4](https://doi.org/10.1016/S0163-8343(03)00043-4)
- Higginson IJ, Gao W, Jackson D, Murray J, Harding R (2010) Short-form Zarit Caregiver Burden Interviews were valid in advanced conditions. *J Clin Epidemiol* 63:535–542. doi:[10.1016/j.jclinepi.2009.06.014](https://doi.org/10.1016/j.jclinepi.2009.06.014)
- Johannesen M, LoGiudice D (2013) Elder abuse: a systematic review of risk factors in community-dwelling elders. *Age Ageing* 42:292–298. doi:[10.1093/ageing/afs195](https://doi.org/10.1093/ageing/afs195)
- Jung T, Wickrama KAS (2008) An introduction to latent class growth analysis and growth mixture modeling. *Soc Personal Psychol Compass* 2:302–317. doi:[10.1111/j.1751-9004.2007.00054.x](https://doi.org/10.1111/j.1751-9004.2007.00054.x)
- Kishimoto Y, Terada S, Takeda N, Oshima E, Honda H, Yoshida H, Uchitomi Y (2013) Abuse of people with cognitive impairment by family caregivers in Japan (a cross-sectional study). *Psychiatry Res* 209:699–704. doi:[10.1016/j.psychres.2013.01.025](https://doi.org/10.1016/j.psychres.2013.01.025)
- Lachs MS, Pillemer K (2004) Elder abuse. *Lancet* 364:1263–1272. doi:[10.1016/S0140-6736\(04\)17144-4](https://doi.org/10.1016/S0140-6736(04)17144-4)
- Lachs MS, Williams C, O'Brien S, Hurst L, Horwitz R (1997) Risk factors for reported elder abuse and neglect: a nine-year observational cohort study. *Gerontologist* 37:469–474
- Lee M, Kolomer S (2005) Caregiver burden, dementia, and elder abuse in South Korea. *J Elder Abuse Negl* 17:61–74. doi:[10.1300/J084v17n01_04](https://doi.org/10.1300/J084v17n01_04)
- Loinaz I, Echeburúa E, Ortiz-Tallo M, Amor PJ (2012) Psychometric properties of the Conflict Tactics Scales (CTS-2) in a Spanish sample of partner-violent men. *Psicothema* 24:142–148
- Markowitz FE (2001) Attitudes and family violence: linking intergenerational and cultural theories. *J Fam Violence* 16:205–218. doi:[10.1023/A:1011115104282](https://doi.org/10.1023/A:1011115104282)
- McCausland B, Knight L, Page L, Trevillion K (2016) A systematic review of the prevalence and odds of domestic abuse victimization among people with dementia. *Int Rev Psychiatry* 28:475–484
- Pérez-Rojó G, Nuevo R, Sancho M, Penhale B (2014) Validity and reliability of the Spanish version of Caregiver Abuse Screen (CASE). *Res Aging* 37:63–81. doi:[10.1177/0164027514522275](https://doi.org/10.1177/0164027514522275)
- Pfeffer RI, Kurosaki TT, Harrah CH, Chance JM, Filos S (1982) Measurement of functional activities in older adults in the community. *J Gerontol* 37:323–329. doi:[10.1093/geronj/37.3.323](https://doi.org/10.1093/geronj/37.3.323)
- Pillemer K, Burnes D, Riffin C, Lachs MS (2016) Elder abuse: global situation, risk factors, and prevention strategies. *Gerontologist* 56:S194–S205. doi:[10.1093/geront/gnw004](https://doi.org/10.1093/geront/gnw004)
- Quinn MJ, Tomita MSW (1997) Elder abuse and neglect: causes, diagnosis, and intervention. Springer, New York
- Reichenheim ME, Paixão CM, Moraes CL (2009) Reassessing the construct validity of a Brazilian version of the instrument Caregiver Abuse Screen (CASE) used to identify risk of domestic violence against the elderly. *J Epidemiol Community Health* 63:878–883. doi:[10.1136/jech.2008.084095](https://doi.org/10.1136/jech.2008.084095)
- Reis M, Nahmias D (1995) Validation of the Caregiver Abuse Screen (CASE). *C J Aging* 14:45–60. doi:[10.1017/S0714980800005584](https://doi.org/10.1017/S0714980800005584)

- Rivera J, Bermejo F, Franco M, Morales-González JM, Benito-León J (2009) Understanding care of people with dementia in Spain: cohabitation arrangements, rotation and rejection to long term care institution. *Int J Geriatr Psychiatry* 24:142–148. doi:[10.1002/gps.2081](https://doi.org/10.1002/gps.2081)
- Schiemberg LB, Gans D (1999) An ecological framework for contextual risk factors in elder abuse by adult children. *J Elder Abuse Negl* 11:79–103. doi:[10.1300/J084v11n01_05](https://doi.org/10.1300/J084v11n01_05)
- Selwood A, Cooper C, Owens C, Blanchard M, Livingston G (2009) What would help me stop abusing? The family carer's perspective. *Int Psychogeriatr* 21:309–313. doi:[10.1017/S104161020800834X](https://doi.org/10.1017/S104161020800834X)
- Serrano-Aguilar PG, Lopez-Bastida J, Yanes-Lopez V (2006) Impact on health-related quality of life and perceived burden of informal caregivers of individuals with Alzheimer's disease. *Neuroepidemiology* 27:136–142. doi:[10.1159/000095760](https://doi.org/10.1159/000095760)
- Serrano-Parra DM, Garrido-Abejar M, Notario-Pacheco B, Bartolomé-Gutiérrez R, Solera-Martínez M, Martínez-Vizcaíno V (2013) Validity of the Connor–Davidson Resilience Scale (10 items in a population of elderly). *Enferm clin* 23:14–21. doi:[10.1016/j.enfcli.2012.11.006](https://doi.org/10.1016/j.enfcli.2012.11.006)
- Straus MA, Douglas EM (2004) A short form of the revised conflicts tactics scales, and typologies for severity and mutuality. *Violence Vict* 19:507–520. doi:[10.1891/vivi.19.5.507.63686](https://doi.org/10.1891/vivi.19.5.507.63686)
- Vandeweerd C, Paveza GJ (2005) Verbal mistreatment in older adults; a look at persons with Alzheimer's disease and their caregivers in the state of Florida. *J Elder Abuse Negl* 17:11–30. doi:[10.1300/J084v17n04_02](https://doi.org/10.1300/J084v17n04_02)
- Vandeweerd C, Paveza GJ, Walsh M, Corvin J (2013) Physical mistreatment in persons with Alzheimer's Disease. *J Aging Res* 2013:920324. doi:[10.1155/2013/920324](https://doi.org/10.1155/2013/920324)
- Wiglesworth A, Mosqueda L, Mulnard R, Liao S, Gibbs L, Fitzgerald W (2010) Screening for abuse and neglect of people with dementia. *J Am Geriatr Soc* 58:493–500. doi:[10.1111/j.1532-5415.2010.02737.x](https://doi.org/10.1111/j.1532-5415.2010.02737.x)
- Wilks SE, Littl KG, Gough HR, Spurlock WJ (2011) Alzheimer's aggression: influences on caregiver coping and resilience. *J Gerontol Soc Work* 54:260–275. doi:[10.1080/01634372.2010.544531](https://doi.org/10.1080/01634372.2010.544531)
- Yan E, Kwok T (2011) Abuse of older Chinese with dementia by family caregivers: an inquiry into the role of caregiver burden. *Int J Geriatric Psychiatry* 26:527–535. doi:[10.1001/gps.2561](https://doi.org/10.1001/gps.2561)