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Psychometric Properties of the Spanish Adaptation of the Indicators of Abuse (IOA) Screen

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Abstract. The objectives of this study were to replicate the analyses conducted by the creators of the Indicators of Abuse (IOA) Screen with a Spanish sample group and compare the results, to present new validity evidences, to analyze which items were more relevant in the detection of situations of risk of abuse, and to establish a cut-off point to interpret the obtained scores. The IOA was used by 46 professionals from social services teams who assessed the situation of 231 elderly individuals and their main caregivers. The obtained results advocated towards unidimensionality of the scale. It showed a high level of internal consistency (α = .94). The Confidence Interval of 99% for the alpha coefficient was between .92 and .95. The ordinal alpha coefficient reached the value of .98. The total score of the scale showed adequate temporal stability (r = .91; $p \leq .001$; N = 163). Statistically significant differences (t-test) in the mean scores of most of the items were found between cases of adequate treatment and cases of risk of abuse. The scale classified correctly 93% of all cases. The best balance between sensitivity and specificity was found at the cut-off point given by score 16 (Sensitivity = 0.94, Specificity = 0.85). The results appear to confirm the validity evidence of the instrument when used with a Spanish population. However, it is necessary to conduct further research and confirm the results with wider, more representative sample groups.

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Although many problems still exist when defining the concept of elder abuse, the proposal most commonly used in practice and in research is the definition given by the World Health Organization (WHO, 2002), which defines this abuse as follows: "Elder Abuse is a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person" (p. 2).

Another widely used definition is that offered by the National Research Council (2003), which defines this abuse as:

> (a) Intentional actions that cause harm or create serious risk of harm (whether or not harm is intended) to a vulnerable elder by a caregiver or other person who stands in a trust relationship to the elder or (b) failure by a caregiver to satisfy the elder's basic needs or to protect the elder from harm. (p. 1).

Different typologies of abuse have been defined according to who inflicts it and where it occurs (domestic abuse, institutional abuse and self-neglect) and the type of behavior used and the damage caused (physical, psychological, financial/material, negligence, abandonment and sexual abuse). The definitions proposed by the National Center on Elder Abuse (2016) on these last typologies have reached a generalized consensus among researchers and professionals.

The present study focused on the validation for the Spanish population of an instrument aimed at detecting the risk of domestic abuse by a non-professional caregiver. Achieving this goal could be a contribution towards achieving a better quality of life for many elderly people and safeguarding their rights. Elder abuse is reported as a social problem. Both, politicians and professionals/researchers recognize the need to establish the necessary mechanisms to prevent these situations, as they involve a violation of human rights and can have devastating consequences: Poor quality of life, psychological distress, loss of property and safety and an increase in morbidity and mortality (Mysyuk, Westendorp, & Lindenberg, 2013; Pillemer, Connolly, Breckman, Spreng, & Lachs, 2015; World Health Organization, 2011).

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The lack of consensus on the definitions of abuse, the different methodologies used to detect it and the types of samples used make it difficult to compare the results of prevalence studies, although there is agreement in prevalence rates of between 4 and 10% among the general population of older people (Dong, 2015; Lachs & Pillemer, 2015).

The aging of the population in Western countries suggests that the incidence and prevalence of this problem will be greater in the coming years. If Europe is taken as a reference, it can be observed that between 1994 and 2014, the rate of people aged 65 or over increased by around 4% (European Commission, 2015). This aging process is accompanied by an increase in the number of people over 85 years of age. It is important to take this into account, as this subgroup of the population will concentrate the largest number of dependent elderly people.

Although the data presented point towards a very relevant problem due to its prevalence (which may be increasing), and its consequences, the detection and notification of abuse cases is still very low (DeLiema, Navarro, Enguidanos, & Wilber, 2015). The quality of life of an elderly person cannot be guaranteed in an environment where he/she is exposed to or is at risk of suffering some kind of abuse, thus, the necessary mechanisms must be designed to prevent this situation and/or to detect it as soon as possible.

The loneliness and isolation in which some elderly people can find themselves may lead to an opportunity for professionals to end abusive situations or to prevent their aggravation. At present, there are several instruments designed to be used by professionals in the social and health care services (Moore & Browne, 2017). Most of the screening instruments designed require the professionals to be adequately trained to suspect the existence of abuse. These instruments aim to help professionals confirm that their suspicions are reasonable and need to be investigated. These instruments have different characteristics, thus, professionals can choose the instrument that best suits their objectives.

The aim of the present study was to contribute to the detection of possible situations of risk of domestic abuse, providing professionals with an instrument that allows them to confirm their suspicions and enables them to act in risk situations. Specifically, the "Indicators of Abuse (IOA) Screen" (Reis & Nahmiash, 1995, 1998) was adapted to a Spanish population. The reasons for choosing this instrument in particular were the following:

a) Care relationships are an especially favorable context for establishing interactions that give rise to abuse, due to the type of activities that are carried out, the type of skills that both parties must learn (e.g., to help and be helped), due to the feelings elicited, the increase in contact and the possibility of conflicts arising, or due to the losses that may be incurred by both parties (such as economic, of privacy, of independence). In spite of this, based on the information provided by the professionals, there is no validated instrument for Spanish populations that has been specially designed to be applied in the case of suspected abuse by the main caregiver. The validation of the IOA may cover this need.
b) The IOA will complement the instruments already validated in Spain. Recently, in Spain, detection instruments and protocols have been developed and adapted (Gobierno Vasco, 2015; Pérez-Rojo, Nuevo, Sancho, & Penhale, 2015; Touza, Prado, & Segura, 2011, 2012). These instruments have different characteristics, as they detect different types of abuse. In some cases, they are self-report tests, while in other cases, the information is provided by professionals from the social and health care services. The adaptation of the IOA would allow to assess situations of risk of domestic abuse inflicted by a caregiver who is not able or willing to report the situation. On the other hand, the adaptation of the IOA could also serve to detect the risk of various types of domestic abuse such as physical abuse, economic exploitation, emotional abuse, abandonment and neglect.
c) It is an instrument based on indicators of the elderly person and of the caregiver and not only based on one of the members of the relationship. The abuse occurs in a specific context and the assessment, without taking into account the possible abuser and the environment that surrounds them, has important limitations. The ideal situation to detect abuse would be to have information on both parties, on the characteristics of the relationship between them and on the environment in which it occurs (Fulmer, Guadagno, & Dyer, 2004; National Research Council, 2003).
d) There is a need for an instrument that can be used by social service professionals. The IOA is an instrument designed for this collective. In addition, it is relatively fast and the type of information it requires is well-known by professionals, due to their daily work.
e) The IOA has shown adequate psychometric properties. It discriminates between cases of abuse and cases of non-abuse; it correctly classifies between 78% and 84% of abuse cases and between 99.2% and 100% of non-abuse cases. It has obtained high internal consistency indices of .91 and .92. Regarding its factorial structure, using exploratory

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factor analysis, a single factor has been obtained, composed of the 27 items on the scale that assess problems (Reis & Nahmiash, 1998).

These characteristics suggest that the IOA could be a very suitable detection instrument to be used with the Spanish population if it shows psychometric properties similar to those reported by the authors of the scale. In the present study, these properties were analyzed when applied to a sample of elderly people in Spain. The analyses carried out by the authors of the IOA when they validated their instrument in Canada were taken as reference. Thus, the present study set out the following objectives:

a) To replicate the analyses carried out by the authors of the scale with the data obtained from a Spanish sample and to compare the results. Specifically, to analyze the reliability of the scale by assessing its internal consistency, examining its ability to differentiate between groups of people probably abused and groups of people not abused and to classify them.
b) To provide new evidence of validity of the scale through the analysis of the temporal stability of the scores and the confirmation of its one-dimensional structure, using confirmatory factor analysis.
c) To analyze which items are more relevant in detecting situations of risk of abuse. The results obtained by Reis and Nahmiash (1998) and by other researchers (Cohen, Halevi-Levin, Gagin, & Friedman, 2006) agree that the indicators about the abuser are better predictors of abuse than the indicators about the elderly, thus, the hypothesis set is that the items referred to the caregiver will be the most relevant in detecting risk situations.
d) To establish a cut-off point, in order to interpret the score obtained when using the scale with a Spanish population. Reis and Nahmiash (1998) defined an "area of risk" that would begin in the highest quartile of cases in which there was no abuse and found that a score equal to or greater than 16 (M = 9.2; SD = .68) would be the cut-off point, from which professionals could consider that they were facing a case of risk of abuse. The objective for the present study is to find the cut-off point that can be established when using the scale with a Spanish population and what the sensitivity and specificity indices are.

Finally, it is important to define the concept "risk of abuse", as these are the situations that the instrument intends to detect. This conceptualization is based on the consideration that interpersonal relationships established between the elderly person and their trusted person/s, such as their main caregiver, can be classified on a continuum that reflects the quality of said relationship. In this continuum, it is possible to distinguish three types of situations: Adequate treatment, inadequate treatment and abuse. In situations of adequate treatment, the actions of the caregiver guarantee the physical, psychological and/or social well-being of the elderly person. In situations of inadequate treatment, the caregiver's set of actions does not guarantee the physical, psychological and/or social well-being of the elderly person. The situations of abuse are those of more extreme inadequate treatment, since these pose a greater danger to the quality of life of the elderly person and violate their rights to a greater extent. The proposals of the National Research Council (2003) and the National Center on Elder Abuse (2016) have been used to define these situations. The definition provided by the National Research Council (2003) has been discussed above and represents the overall framework to understand what is considered as abuse, while the definitions established by the National Center on Elder Abuse (2016) have been used as operational definitions for each of the typologies of domestic abuse (physical abuse, psychological abuse, sexual abuse, economic exploitation, negligence and abandonment).

The concept of "risk of abuse" includes situations of inadequate treatment and of abuse, that is, it includes people who may be suffering from domestic abuse and others who could be said to be "on the verge", as they are living grave situations of inadequate treatment that could be confused with abuse. The reason for conceptualizing the risk of abuse in this way is due to the possibility of using detection scales to prevent situations that, over time and if not intervened, could be aggravated. On the other hand, as pointed out by Dyer, Connolly and McFeeley (2003), the highest percentage of cases occur in a gray area where abuse is not so evident, in many cases because its manifestations or sequelae can overlap with small psychological and physiological changes that are characteristic of old age.

Method

Participants

The study involved 46 professionals from the social services teams of 32 municipalities of Mallorca (Spain). All of them were social workers, with the exception of two psychologists and one occupational therapist. The professionals analyzed the situation of 231 elderly people (152 women and 79 men) and their main caregivers.

The average age of the elderly adults was 81.55 years (SD = 7.80), ranging between 63 and 101 years of age. The average age of the caregivers was 57.67 years, (SD = 13.60), ranging between 20 and 90 years of age.

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Instruments

Protocol for collecting information on the characteristics of the elderly person, the caregiver and the formal support received. A written protocol was used to collect information from the professionals on the cases studied. In relation to the elderly people, their age, sex, marital status, where and with whom they lived, the type of frequent contact they maintained and whether they received any type of professional care, indicating which (e.g.: home help, daytime center…) were reported. In relation to the caregivers, data were collected on their age, sex, marital status, type of relationship with the elderly person and length of the relationship.

The professionals also indicated the type of treatment they valued that the assessed caregiver provided (adequate treatment, inadequate treatment, abuse), the lenght of time they had been aware of the case, what was their relationship with the elderly person and if any medical and/or psychological report of the elderly person being evaluated was available to them, they would also include any data they considered relevant (information on the assessment of cognitive functioning, activities of daily life…).

Indicators of Abuse (IOA) Screen (Reis, 2000; Reis & Nahmiash, 1995, 1998**)**. The IOA is an instrument designed to identify elderly people who may be at risk of domestic abuse by their caregiver. It is a scale composed of 15 items regarding the elderly person and 12 items regarding the caregiver. These items reflect risk indicators of the elderly person, the caregiver or the interaction between both. Each item is answered on a 5-degree scale, which also includes two other response categories: "Not applicable" and "Don't know". It has been designed and validated to detect the risk situations that can occur as a result of the treatment provided by unpaid caregivers, that is, people who, because of their relationship of special trust with the elderly person (friends, relatives, neighbors…), provide them with the assistance they need in their daily lives. It does not include items regarding the presence of abusive behaviors or signs of abuse. It is not intended to confirm the existence of a case of abuse. It is applied by health care and social services professionals. In the present study, only professionals from the social services took part, thus, the data presented are restricted to the use of the IOA in this context. The translation of the instrument carried out by the Seniors and Social Services Institute (IMSERSO) of the Ministry of Health and Consumption (Government of Spain) was used.

Procedure

The study was carried out in several phases:

a) *Presentation of the study to the professionals.* The study was presented to the different social services teams in the island of Mallorca and those professionals who were interested in the study confirmed their voluntary participation.
b) *Training of the professionals.* The professionals who were going to take part in the study attended a training course on the conceptual aspects of domestic abuse, self-neglect and their detection, imparted by members of the research team.
c) *Participant selection.* The social services professionals selected among their clients the participants of the study. To do so, they followed the criteria established for the selection of the sample: the type of situations in which they considered the elderly to be (adequate treatment, inadequate treatment, domestic abuse and its different typologies), age, sex and geographical distribution. In this way, the selection was not random, but by quotas based on these criteria. The anonymity of all participants was guaranteed through the assignment of identification codes.
d) *First administration.* The elderly people were classified into three groups (abuse, inadequate treatment and adequate treatment) and each professional completed the IOA indicating whether or not there was a care relationship between the elderly person and the caregiver being assessed. Moreover, whenever possible, professionals different from those that completed the IOA were sought to carry out the classification.
e) *Second administration.* After one month from the first application had lapsed, the professionals repeated the actions carried out on the first occasion.

Data Analyses

To compare the psychometric properties obtained by the authors of the instrument with those obtained with a Spanish sample, the same types of analyses were carried out (α, *t*-test, discriminant analyses).

Missing values were imputed with the *expectation-maximization (EM) algorithm* using sex, age and the remaining variables of the questionnaire.

To confirm the unidimensionality of the scale, a confirmatory factorial analysis (CFA) was carried out, starting from the polychoric covariance matrix and using the maximum likelihood (ML) method. The one-dimensional results were compared with those of a two-factor model. In decision-making, in addition to the usual criteria, the AVE (Average Variance Extracted) criteria were calculated to establish the discriminant validity. The small size of the sample is a limitation for this type of analysis, although it can perform well with 200 cases upwards (Boomsma, 1982), yet this performance depends on many factors (Wolf, Harrington, Clark, & Miller, 2013)

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The temporal stability assessment was performed by calculating the Spearman correlation coefficients between the total scores obtained in the two administrations carried out. Given the nature of the items, in addition to the traditional Cronbach's alpha, calculated by the creators of the scale, the ordinal alpha was calculated using the Gadermann, Guhn, and Zumbo (2012) procedure.

The Receiver Operating Characteristic (ROC) Curve analyses were used to establish a cut-off point that would aid the interpretation of the score obtained when using the scale and would assess its sensitivity and specificity. The diagnostic criteria used to differentiate the people considered at risk of abuse from those who were not abused in general was that of a social worker from the team other than the one who had completed the scale, but who also knew the subjects. However, this was not possible for all cases. Possibly, this criterion was not an optimal criterion; however, it yielded a cut-off point that served as an orientation for detection in the screening.

Through discriminant analysis, the items that were most relevant to detect situations of risk of abuse were examined.

The analyzes were performed with the SPSS.22, except for the CFA analyses, which were carried out with LISREL 9.1

Results

The group at risk of abuse was composed of 141 cases considered to have inadequate treatment and abuse. Among the abused elderly people, the following percentages were found in terms of the types of suspected inadequate treatment: 24.5% physical abuse, 77.6% of psychological abuse cases, 56.7% of negligence; 29.9% of economic exploitation and 29.9% of abandonment cases. The percentage sum exceeds 100% because different types of abuse usually coexist.

The average age of the elderly people at risk of abuse was 80.96 years (SD = 7.74.). The average age of the caregivers of the at-risk group was 56.52 years (SD = 13.99).

The adequate treatment group consisted of 90 cases. The average age of the elderly participants in this group was 82.46 years (SD = 7.85). The average age of the caregivers who offered adequate treatment was 59.50 years (SD = 12.99).

No statistically significant differences were found between the mean ages of the elderly people in the at-risk group and the adequate treatment group, $t(229) = 1.42$, $p = .16$; nor between the caregivers of both groups, $t(225) = 1.61$, $p = .11$.

Regarding the sex of the participants, in the at-risk group, there were 47 elderly men and 94 elderly women. In the adequate treatment group, there were 32 elderly men and 58 elderly women. Among the caregivers, 22 men and 67 women offered adequate treatment; while 66 men and 74 women formed the risk group. No relationship was found between the sex of the elderly persons and the type of treatment received, $\chi^2(1, 231) = 0.121$, $p = .73$; but a significant relationship was found between the sex of the caregivers and the type of treatment offered, $\chi^2(1, 229) = 11.56$, $p < .001$.

Descriptive statistics and coefficients of the discriminant function

Table 1 shows the descriptive statistics of the items, as well as the structure coefficients that are analyzed later in this section.

Dimensionality of the scale

A confirmatory factor analysis was carried out from the polychoric covariance matrix of the 27 items, starting from the one-dimensional model proposed by the creators of the scale. Another model formed by two factors was also adjusted. The first factor contained the 12 items referred to the caregiver and the second factor contained the 15 items referred to the person receiving the care. The differences in the adjustment were analyzed by means of the chi-square and AVE (Average Variance Extracted) differences used to calculate the discriminant validity, following Fornell and Larcker's (1981) criterion, which states that AVE must be greater for each factor than any other correlation between factors. To determine the possible unidimensionality of the scale, other indices were obtained derived from adjusting a "bifactor" model, with a general factor and two group factors, which are independent of each other and of the general factor. Although for this type of model, less than three group factors are recommended (Reise, Moore, & Haviland, 2010), this model was analyzed to obtain other indexes that would help in making decisions regarding dimensionality: Omega (ω), hierarchical omega (ω_H), hierarchical omega of the factors (ω_{HS}), proportion of reliable variance, explained common variance (ECV) and percentage of uncontaminated correlations (PUC). These indices were calculated using the procedures presented in Reise et al. (2010) and Rodriguez, Reise and Haviland (2016). The correlation between the saturations of the 27 items in the one-dimensional model and the general factor of the bifactor model was also calculated. Given that only two dimensions were specified in the multidimensional model, it was not possible to adjust a second order model (Brown, 2015).

The solution with two factors related to the caregiver and with the person receiving the care provided good adjustment statistics: $\chi^2(323) = 296.42$, $p = .85$; χ^2 corrected by Satorra-Bentler (323, 231) = 365.18, $p = .053$; NFI = .94;

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Table 1. *Descriptive Statistics and Structure Coefficients (N = 231)*

	M	*SD*	Asymmetry	Kurtosis	Structure Coefficients
Has behavior problem (C)	0.84	1.22	1.29	0.44	.436
Is financially dependent (C)	1.04	1.47	1.10	–0.34	.067
Has mental/emotional difficulties (C)	0.90	1.22	1.16	0.14	.373
Has alcohol/substance abuse problem (C)	0.44	1.08	2.52	5.02	.202
Has unrealistic expectations (C)	0.78	1.19	1.32	0.54	.336
Lacks understanding of medical condition (C)	1.24	1.43	0.69	–0.98	.498
Caregiving reluctancy (C)	1.53	1.59	0.45	–1.39	.737
Has marital/family conflict (C)	1.45	1.56	0.50	–1.33	.576
Has poor current relationship (C)	1.38	1.57	0.60	–1.23	.546
Caregiving inexperience (C)	1.51	1.61	0.47	–1.42	.493
Is a blamer (C)	1.22	1.48	0.76	–0.94	.504
Had poor past relationship (C)	1.31	1.55	0.67	–1.16	.543
Has been abused in the past (CR)	0.75	1.25	1.54	1.04	.317
Has marital/family conflict (CR)	1.38	1.65	0.65	–1.21	.524
Lacks understanding of medical condition (CR)	1.26	1.45	0.75	–0.88	.267
Is socially isolated (CR)	1.54	1.48	0.44	–1.22	.495
Lacks social support (CR)	1.25	1.46	0.72	–0.95	.443
Has behavior problems (CR)	0.88	1.26	1.15	–0.03	.303
Is financially dependent (CR)	0.93	1.46	1.25	–0.05	.131
Has unrealistic expectations (CR)	0.97	1.29	1.13	0.06	.229
Has alcohol/medication problem (CR)	0.21	0.77	4.01	15.48	.148
Has poor current relationship (CR)	1.24	1.53	0.79	–0.94	.541
Has suspicious falls/injuries (CR)	0.44	0.93	2.24	4.23	.243
Has mental/emotional difficulties (CR)	1.16	1.43	0.89	–0.62	.297
Is a blamer (CR)	0.60	1.06	1.80	2.25	.280
Is emotionally dependent (CR)	1.25	1.43	0.75	–0.85	.277
No regular doctor (CR)	0.40	1.08	2.72	5.91	.091

Note: C = caregiver; CR = care receiver.

CFI = 1; RMSEA = .026, 90% IC [.000, .058]. All saturations were statistically significant ($p < .001$). The single factor proposed by the creators of the scale also provided good adjustments: $\chi^2(324) = 307.32$, $p = .74$; χ^2corrected by Satorra-Bentler (324) = 383.99, $p = .012$; NFI = .94; CFI = 1; RMSEA = .030, 90% IC [.015, .042.] All saturations were statistically significant ($p < .001$). The chi-squared differences test of the two models showed a statistically significant difference that could support bidimensionality; however, the remaining indexes showed values that support unidimensionality. The CFI increase between both models was 0 and the AIC of the two-dimensional model was 475.18, slightly lower than that of the one-dimensional model (491.99). The bifactor model introduced a slight improvement in some of the global adjustment statistics: $\chi^2(297) = 211.36$, $p = .99$; χ^2 corrected by Satorra-Bentler (297, 231) = 232.83, $p = .99$; NFI = .96; CFI = 1; RMSEA = .002, 90% IC [.000, .012]. The AIC criterion was reduced to 394.83. All saturations in the general factor were statistically significant ($p < .01$), but in the subfactor 1, only eight of the twelve possible were significant and in subfactor 2, only nine of the possible fifteen. This result, together with those shown below, advocate towards unidimensionality. The value of ω for the total of the dimensions was .91 and the ωH was .83, with a quotient of .91, which indicates that the general factor represents 91% of the reliable variance. The corresponding hierarchical omega of the specific factors (ωHS) were .002 and .006, these low values indicate that the subscales are not reliable indicators of the specific factors. The value reached for the ECV was .78, which suggests the presence of a strong general factor. The PUC value was .51, a moderate size; however, this value depends on the number of group factors, being higher with more group factors. Finally, the correlation between the saturations of the items in the one-dimensional model with those of the general factor was .98.

The AVE were calculated for each of the two factors, with values of 0.1604 and 0.1557 for factors 1 and 2, with square roots 0.40 and 0.39, which are much lower than the value of the correlation between the two factors ($r = .93$). These results indicate that the two factors would not exhibit discriminant validity.

Table 2 shows the saturations and R^2 for each of the items under the one-dimensional solution that was

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Table 2. *Factor Saturations Matrix. Standardized Solution (Lambda) One-Factor Model*

	λ	R^2
Has behavior problem (C)	.57	.32
Is financially dependent (C)	.20	.04
Has mental/emotional difficulties (C)	.57	.32
Has alcohol/substance abuse problem (C)	.43	.18
Has unrealistic expectations (C)	.56	.31
Lacks understanding of medical condition (C)	.55	.30
Caregiving reluctancy (C)	.61	.37
Has marital/family conflict (C)	.63	.40
Has poor current relationship (C)	.61	.37
Caregiving inexperience (C)	.55	.30
Is a blamer (C)	.59	.35
Had poor past relationship (C)	.61	.37
Has been abused in the past (CR)	.54	.29
Has marital/family conflict (CR)	.60	.36
Lacks understanding of medical condition (CR)	.38	.14
Is socially isolated (CR)	.55	.30
Lacks social support (CR)	.56	.31
Has behavior problems (CR)	.49	.24
Is financially dependent (CR)	.39	.15
Has unrealistic expectations (CR)	.42	.18
Has alcohol/medication problem (CR)	.33	.11
Has poor current relationship (CR)	.60	.36
Has suffered suspicious falls/injuries (CR)	.49	.24
Has mental/emotional difficulties (CR)	.43	.18
Is a blamer (CR)	.51	.26
Is emotionally dependent (CR)	.44	.19
No regular doctor (CR)	.33	.11

Note: C = caregiver; CR = care receiver.

selected for the reasons explained above through different procedures.

Internal consistency and temporal stability

The scale showed a high level of internal consistency calculated with Cronbach's alpha coefficient (α = .94). The Confidence Interval of 99% for the alpha coefficient was between .92 and .95. The result does not differ significantly from that found by its creators (Reis & Nahmiash, 1998) (α = .91; α = .92; according to the samples) in the second sample. The ordinal alpha coefficient calculated by the aforementioned procedure reached the value of .98. The discrimination indexes for all the items were higher than .40, except the items "Is financially dependent (caregiver-C)", "Has alcohol/medication problem (care receiver-CR)" and "No regular doctor (CR)". In these cases, the discrimination indices were .19, .26 and .26, respectively.

The results obtained with the correlation between the total scores of the two administrations of the test (r = .91; $p \leq .001$; N = 163) also lead to the conclusion that the total score of the scale has shown adequate temporal stability during the one-month period in those cases in which there was no circumstance that could justify a change in the scores obtained when administering the scale.

Ability to discriminate between groups

Reis and Nahmiash (1998) found significant differences in the average scores reached in the IOA between a group of probable abuse cases and another group of cases in which there was probably no abuse. In the present study, *t*-tests were used to analyze whether there were significant differences in the mean scores of each IOA item between the adequate treatment group and the risk of abuse group. The choice of this statistic despite the ordinality of the items was due to the need to compare it with the original results. Table 3 shows the results obtained. Statistically significant differences were found for all the items, except for "Is financially dependent (C)". Effect sizes were medium or high, except for four items that were low: "Has alcohol/substance abuse problem (C)", "Is financially dependent (CR)"; "Has alcohol/medication problem (CR)" and "No regular doctor (CR)".

Ability to correctly identify cases

Through discriminant analysis, the ability of the IOA to classify the cases into groups of adequate treatment and at-risk of abuse was assessed. The 27 items of the scale were used as independent variables, as the creators of the scale used them. Authors such as Tabachnick and Fidell (2012) have reported that the violation of the normality assumption, which happens for most of the items, is not fatal for the results, provided that it is only due to bias or asymmetry, as is the case, and not to the presence of outliers.

The results showed that the constructed function discriminated between cases of adequate treatment and cases at-risk of abuse. The value shown by the canonical correlation was high (.85) and the centroids of both groups (adequate treatment = –1.84, risk of abuse = 1.37) were widely separated from each other. It classified correctly 93% of all cases, 94.2% of cases of adequate treatment and 92.2% of cases of risk of abuse.

Items that contributed the most to the discrimination between groups

The results presented in Table 1 show that the items that contributed the most to the discrimination between groups and that are more relevant for detection were the following: "Caregiving reluctancy (C)", "Has marital/family conflict (C)", "Has poor current relationship (C)", "Had poor past relationship (C)", "Has poor current relationship (CR)", "Has marital/family conflict (CR)",

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Table 3. *Difference between Persons Being Adequately Treated and Persons at Risk in the Items of the IOA*

		M	*SD*	*df*	*t*	η^2
Has behavior problems (C)	AT	0.03	0.18	119.71	11.19*	.32
	R	1.44	1.33			
Is financially dependent (C)	AT	0.85	1.49	181.58	–1.58**	.01
	R	1.18	1.47			
Has mental/emotional difficulties (C)	AT	0.16	0.53	159.12	–9.59*	.27
	R	1.45	1.31			
Has alcohol/substance abuse problem (C)	AT	0.08	0.47	149.72	–4.76*	.08
	R	0.71	1.32			
Has unrealistic expectations (C)	AT	0.12	0.42	8.74	142.29*	.23
	R	1.28	1.34			
Lacks understanding of medical condition (C)	AT	0.21	0.65	12.39	171.85*	.39
	R	2.03	1.38			
Caregiving reluctancy (C)	AT	0.14	0.44	145.64	–18.47*	.57
	R	2.58	1.32			
Has marital/family conflict (C)	AT	0.22	0.68	172.79	14.37*	.46
	R	2.38	1.41			
Has poor current relationship (C)	AT	0.16	0.57	14.11	155.60*	.44
	R	2.30	1.48			
Caregiving inexperience (C)	AT	0.36	0.75	173.26	12.10*	.38
	R	2.37	1.56			
Is a blamer (C)	AT	0.13	0.50	13.07	148.21*	.41
	R	2.04	1.46			
Had poor past relationship (C)	AT	0.13	0.53	149.53	13.77*	.43
	R	2.20	1.49			
Has been abused in the past (CR)	AT	0.09	0.42	138.57	–7.74*	.19
	R	1.21	1.47			
Has marital/family conflict (CR)	AT	0.14	0.41	132.90	13.82*	.43
	R	2.32	1.62			
Lacks understanding of medical condition (CR)	AT	0.64	1.04	196.83	–6.01*	.14
	R	1.74	1.55			
Is socially isolated (CR)	AT	0.48	0.90	197.16	11.77*	.38
	R	2.34	1.34			
Lacks social support (CR)	AT	0.29	0.84	189.28	10.45*	.32
	R		1.43			
Has behavior problems (CR)	AT	1.97	0.61	164.34	–7.79*	.20
	R	0.23	1.40			
Is financially dependent (CR)	AT	1.37	1.23	198.38	–3.44*	.05
	R	0.55	1.56			
Has unrealistic expectations (CR)	AT	1.23	0.86	190.94	–5.28*	.11
	R	0.48	1.44			
Has alcohol/medication problem (CR)	AT	1.34	0.11	117.51	–3.84*	.05
	R	0.01	1.00			
Has poor current relationship (CR)	AT	0.37	0.38	132.07	13.48*	.41
	R	2.19	1.53			
Has suffered suspicious falls/injuries (CR)	AT	0.02	0.15	119.40	–6.84*	.15
	R	0.76	1.14			
Has mental/emotional difficulties (CR)	AT	0.44	0.96	195.07	–7.25*	.19
	R	1.70	1.50			
Is a blamer (CR)	AT	0.09	0.39	143.07	–7.17*	.17
	R	0.98	1.25			
Is emotionally dependent (CR)	AT	0.56	1.08	198.99	–6.79*	.18
	R	1.77	1.46			
No regular doctor (CR)	AT	0.19	0.80	195.56	–2.63*	.03
	R	0.57	1.24			

Note: AT = Adequate treatment (n = 86); R = Risk (n = 115); C = caregiver; CR = care receiver.
*p < .001: **p = .11

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"Is a blamer (C)", "Lacks understanding of medical condition (C)", "Is socially isolated (CR)", "Caregiving inexperience (C)", "Lacks social support (CR)" and "Has behavior problem (C)".

Of these twelve items that resulted to be the most discriminating, eight were related to the caregiver and four were related to the care recipient. These results allow to partially confirm our hypothesis about the greater importance of the characteristics of the caregiver for the detection of abuse, compared to those of the elderly person, despite the fact that the item with a higher coefficient was the one that raises the caregiver's reluctance with regard to the care of the elderly.

Sensitivity and specificity

The value reached by the area below the ROC curve was high (Area Under the Curve = .96; $p \leq .00$), which indicates an adequate ability of the instrument to discriminate the cases of risk of abuse against those of adequate treatment. In addition, the results of the ROC curves allowed to establish the sensitivity and specificity indices for each total score of the instrument and to be able to choose as cut-off point the one that was considered to be more appropriate. The best balance between sensitivity and specificity was found at the cut-off point given by score 16 (Sensitivity = 0.94, Specificity = 0.85). A similar result was obtained with the score 15 (Sensitivity = 0.95, Specificity = 0.84).

Discussion

The purpose of the present research was to contribute to improving the quality of life of the elderly and to guarantee their rights, through the early detection of possible situations of domestic abuse inflicted by caregivers. As previously mentioned, abuse is a frequent problem, with very serious consequences and which will affect more and more people due to the aging of the population. Given this reality, it is necessary that the professionals of the social and health care services have access to instruments that allow them to confirm their suspicions in order to investigate the cases and implement the most appropriate intervention plans. The situations they may have to face are very varied. The alleged abuser is not always a caregiver, although caregiving relationships seem especially conducive to the establishment of conflicting relationships. Furthermore, not in all cases are the people involved willing or able to report their situation. Therefore, it is very positive that professionals have different types of detection instruments that can be used depending on the characteristics of each situation. Moreover, it is very important that these instruments report their psychometric properties and their sensitivity and specificity indexes. Only if the professionals have this information can they use them correctly, being aware of their potential and their limitations.

Taking into account the characteristics of the detection instruments that have reported their psychometric properties with Spanish populations and the characteristics of the "Indicators of Abuse (IOA) Screen", it was decided to check whether this instrument showed validity evidences similar to those found when it was created (Reis & Nahmiash, 1998). If so, then it could be used by the social services professionals in Spain.

The results obtained in the present study confirm the one-dimensional structure of the IOA, its ability to distinguish between groups of people at risk of domestic abuse and people who receive adequate treatment from their caregivers and to classify them according to the type of treatment received. This instrument correctly classified 93% of the cases. It adequately classified cases in the group of risk of abuse (92.2%), as well as in the group of adequate treatment (94.2%). In terms of reliability, the results showed internal consistency indices very similar to those obtained by the creators of the scale, which are adequate, while providing new evidence on the temporal stability of the total score of the scale.

The knowledge of the sensitivity and specificity indices associated with the possible values of the overall score of the scale can allow to choose a cut-off point that is considered most appropriate. For the creators of the instrument, it is preferable to reduce the probability of false negatives due to the possible consequences and they propose a score of 16 as the cut-off point. According to the results of the ROC curves, choosing this score or a score of 15 as the cut-off point is adequate. It is very interesting that, in the sample of this study, the scores obtained good sensitivity indexes, but also good specificity indexes. Demonstrating this balance between sensitivity and specificity is important, because the scale was used with cases considered as cases of abuse and inadequate treatment and thus, it is sensitive enough to detect many of those cases that can sometimes go unnoticed by being in the "gray area" described by Dyer et al., (2003). Moreover, it does so without a high percentage of false positives.

All these results confirmed the validity evidence obtained by the creators of the scale when it was used with a Spanish population. However, it is also necessary to point out that some of the results obtained show the need to continue researching and to confirm them with broader and more representative samples of the elderly population. We refer to the results shown by some of the items.

The items "Is financially dependent (C)" and "Has alcohol/substance abuse problem (C)" reflect very relevant risk factors, according to the research (National Research Council, 2003), but also yield

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unexpected results. The first one obtained a low saturation in the dimension that conforms the scale, a discrimination index lower than .40 in the internal consistency analysis and it did not differentiate between the group of adequate treatment and the group at-risk of abuse. The second item established significant differences between the groups, but the effect size was small. These results may be due, to a large extent, to the type of sample used in the study. It was a small sample in which it was possible that underrepresented problems of low prevalence such as the abuse of alcohol or other drugs could appear. At the same time, the families with whom social services tend to work are not usually families with excessive economic resources and thus, it is difficult to be financially dependent of any of its members. It is likely that many of them will require financial assistance from the services.

In the case of the items referred to the elderly person, a similar situation can be observed. The items "Has alcohol/medication problem (CR)" and "No regular doctor (CR)" exhibited a high kurtosis, as most of the cases were concentrated in the null score. They achieved a discrimination index lower than .40 and although they established significant differences between the groups, the effect size was small. The item "Is financially dependent (CR)" distinguished between the at-risk group and the adequate treatment group, but also with a small effect size. The explanation for these results could be the same as in the case of the items referred to the caregiver. In addition, they are items that measure the same type of variables (economic dependence and drug abuse), which would support that this is the most likely explanation. In the case of the item referred to the doctor, the results could be due to the fact that, in Spain, healthcare is universal and everyone is entitled to a doctor. This same result was obtained in another study conducted in Israel and the authors considered that this could also be the most likely explanation (Cohen et al., 2006).

Regarding the analysis of the items that most contributed to the differentiation between the group at risk of abuse and that of adequate treatment, the results obtained showed similarities and differences with those found by the creators of the scale (Reis, 2000; Reis & Nahmiash, 1995, 1998). In both studies, certain characteristics of the caregiver, such as behavior problems, showing reluctance to care for the elderly, not understanding the extent of the disease and the lack of experience in care, are among the items that most contributed to the differentiation, although with different order of importance. However, other characteristics of the caregiver, such as having problems with alcohol or other drugs and being financially dependent, turned out to be less relevant in the present study.

In relation to the characteristics of the recipient of the care, the results of both investigations indicated the ability to discriminate between groups of marital/family conflicts and the lack of social support. However, in the present study, the relevance shown by other items that reflect the conflicts and the present and past relationship problems between the caregiver and the care receiver, between them and their partners and with other relatives was greater than in the creators' study.

It would be important to be able to confirm the results found in the present study, since this information could point out to professionals what indicators of suspicion may be especially relevant for detection. According to the results obtained, the situation of an elderly person with family conflicts, socially isolated and cared for by a caregiver who is reluctant to do so and who has maintained and maintains conflicting relationships with the care receiver and/or with other people in their environment would lead to suspicion on behalf of the professional.

Finally, it is necessary to indicate the main limitations of the research carried out. The first limitation to be noted is related to the characteristics and size of the sample used. As indicated above, the participants were clients of the community social services, with scarce economic resources and among whom were individuals with high levels of dependency. Although these characteristics define a very frequent profile within the social services in Spain, they are not necessarily representative of the general population of elderly people and thus, could explain some of the results obtained. The size of the sample could have influenced some risk factors, such as possible problems with the abuse of alcohol or other drugs. The size of the sample could also have influenced the fact that there were no cases of suspected sexual abuse within the sample, although the rest of the typologies of domestic abuse were found. For all these reasons, it would be interesting to be able to compare the results obtained in the present study with those obtained in future studies with larger and more representative samples of the general population.

Another limitation of the present study is not having been able to obtain for all cases, professionals who completed the scale that were different from those who differentiated between those considered at risk of abuse and those who were not abused. This limitation implies that the results obtained in relation to the cut-off point and the sensitivity and specificity indexes should only be considered as an orientation for detection through screening.

The present study shows the difficulty of being able to carry out research in the field of elder abuse. Most of the research, with the exception of some surveys on prevalence carried out on the general population, has been performed with users of social or health care

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services or adult protection services in countries where this type of service is available. In the case of Spain, it is only now that the need to create services that address the problem is being taken into account, but, in general, we lack data and infrastructure to obtain these services. This circumstance is closely related to some of the limitations of the present study, as it increases the difficulty to obtain adequate samples or the availability of professionals who can meet the methodological requirements of the investigations, taking into account the conditions in which they carry out their job. In spite of these difficulties, it is essential to be able to continue advancing in the design and analysis of detection instruments that facilitate the work of these professionals and that allow for the early detection of the greatest possible number of risk situations. There are very few instruments that have reported on their psychometric properties with Spanish populations and that have shown adequate evidence of validity. For these reasons, it is necessary to highlight the possibilities that the use of an instrument such as the IOA can have on the early detection of situations at risk of domestic abuse inflicted by a caregiver. This instrument can complement the range of detection instruments that are slowly becoming available to the professionals in social services, which they can use according to their needs, the information they can access and the characteristics of each case. It is also an easy-to-use tool for social service professionals, as they have access to much of the information necessary to complete it and because it is made up of a very small number of items. This number could be further reduced if the results found with some of these items in the present study were confirmed. However, as mentioned above, the limitations of the present study suggest further analyses of its psychometric properties with the Spanish population and the possibility of improving the scale, through the weighting of items that could be particularly relevant in terms of detection.

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