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Adaptation, reliability, and validity study of the Hwalek–Sengstock Elder Abuse Screening Test (H-S/EAST): a Turkish version

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Background/aim: The most important issues in elder abuse and neglect are lack of awareness and difficulties in determining the situation. Our aim is to determine the reliability and validity of the Turkish version of the Hwalek–Sengstock Elder Abuse Screening Test (H-S/EAST).

Materials and methods: The H-S/EAST (15-itemed, three-dimensional: direct abuse, characteristics of vulnerability, and potentially abusive situation) was translated according to the guidelines and experts evaluated it for content validity and cultural adaptation.

Participants' (n = 252) mean age was 73.4 ± 6.4 years and 58.3% were female. The World Health Organization Quality of Life Instrument-Older Adults Module (WHOQOL-OLD) and the Barthel Index were used for validity. Cronbach's alpha for internal consistency, exploratory factor analysis for content validity, t-test for construct validity, and discriminant ability were used. SPSS 15.0 was used for analysis and statistical significance was $P < 0.05$.

Results: In test–retest reliability, internal consistency coefficient values for direct abuse, characteristics of vulnerability, and potentially abusive situation were 0.88, 0.73, and 0.80, respectively. Cronbach's alpha for internal consistency of the H-S/EAST was 0.741. Exploratory factor analysis obtained 5 factors, and explained variance was 61.8%. Cut-off value was 6, and sensitivity, specificity, and area under the ROC curve were 76.9%, 96.2%, and 0.938, respectively.

Conclusion: The Turkish version of the H-S/EAST can be used as a reliable, valid clinical tool for the assessment of elder abuse.

Key words: Elder abuse, validity, reliability

1. Introduction

Elder abuse is a worldwide problem, underlined especially in recent years. It can take the form of verbal, physical, and/or psychological harm to the elderly and is a serious social problem. Elder abuse is often reported to be domestic; however, it can also be observed in healthcare or social service institutions. Additionally, it can occur across various communities, cultures, and economic levels. The most important issue in elder abuse and neglect is lack of awareness or difficulties in determining its occurrence (1–3). The reasons for and characteristics of these difficulties are listed below.

Elderly people in Turkey spend most of their time at home and rarely, if ever, leave the house. Abusive incidents are likely to be committed inside the elderly person's household. In such cases, there is a tendency to conceal the abuse from outsiders; hence, recognizing this type of abuse might not be possible.

Elderly individuals might not regard abusive situations as problematic or might not report abuse by their immediate family. They may be embarrassed about such domestic abuse and might fear further mistreatment in the case of disclosure. On the contrary, they might not tell anyone because they believe that they themselves are the cause of the abusive behavior.

Another reason for lack of reporting is inadequate ability in the health field to identify elder abuse. Bruises on an elderly person's body, malnutrition, and isolation should be comprehensively assessed instead of simply being attributed to old age. Furthermore, the insufficient number of healthcare workers available to deliver care to the elderly (in terms of screening, reporting, and recording abuse and neglect) has also been identified as a reason for lack of reporting (4–6).

Consideration of these factors related to healthcare for the elderly is crucial for recognizing elder abuse. Studies

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conducted in Turkey have reported different rates of elder abuse. Keskinoğlu et al. reported that 1.5% suffer from physical abuse and 2.5% from economic abuse. Artan found that 62.40% of the elderly aged 60 and above that are staying in care homes were exposed to neglect or abuse, and Ergönen et al. reported elder abuse in 22.6% of women who applied to gynecology clinics (7–9). Healthcare workers are reported to be reluctant to report the diagnosis of elder abuse, unlike other domestic violence cases (9–11). However, some studies (12,13) described approaches to which health care workers should be attentive, specific questions to be asked, and work-flows developed on this topic.

Although there are studies about health problems of the elderly in Turkey, few have researched abuse and neglect due to the previously noted difficulties. Moreover, different interview and evaluation methods are used in research on elder abuse and neglect (14–16). These differences make it difficult to compare study results. However, similar assessment guidelines are needed in our country, and scales have been developed in the literature for this purpose. Therefore, this study's objective is to investigate the reliability and validity of the Turkish version of the Hwalek–Sengstock Elder Abuse Screening Test (H-S/EAST), developed to determine abuse in the elderly (17).

2. Materials and methods

This research is a methodological study that aims to analyze the reliability, validity, and adaptation of the H-S/EAST to a Turkish version.

2.1. Hwalek–Sengstock Elder Abuse Screening Test

This scale, which was developed by Neale et al. (17), has 15 items and a three-dimensional structure: direct abuse, characteristics of vulnerability, and potentially abusive situation. These three dimensions were named as subscales including questions 4, 9, 10, 11, and 15 for "direct abuse"; questions 1, 3, and 6 for "characteristics of vulnerability"; and questions 2, 5, 7, 8, 12, 13, and 14 for "potentially abusive situation". This is a screening device that is useful for service providers interested in identifying people at high risk and in need of protective services. This screening device is a self-replied scale for elderly people. Questions are answered as yes/no. A response of "no" to items 1, 6, 12, and 14; a response of "someone else" to item 4; and a response of "yes" to all other items is scored in the "abused" direction. The highest score from the test is 15, the lowest is 0, and an increase in score means that the risk of abuse is increased. It has been reported that a higher score in the H-S/EAST is a valid indication of a greater probability of abuse.

2.2. Barthel Index

This scale, developed by Mahoney and Barthel, is an ordinal scale used to measure performance in daily living activities. Each performance item is rated on this scale with a given number of points assigned to each level or ranking. It uses ten variables that describe activities of daily life (ADL) and mobility. Validity and reliability for our country were studied by Küçükdeveci et al. (18). Barthel Index scores range from 0 to 100 (0 points: dependence, 100 points: independence).

2.3. WHOQOL-OLD.TR

The World Health Organization Quality of Life Instrument-Older Adults Module (WHOQOL-OLD module) consists of 24 items assigned to 6 facets (sensory abilities; autonomy; past, present, and future activities; social participation; death and dying; and intimacy) and is a supplementary module of the WHOQOL-BREF. The validity and reliability for Turkey was studied by Eser et al. (19).

2.4. Vulnerability to Abuse Screening Scale

The Vulnerability to Abuse Screening Scale (VASS) contains 12 items that identify the risk of violence against the elderly. It is a self-report measure with four factors: 10 items from the H-S/EAST (dichotomous) and 2 items from the Conflict Tactics Scale (Likert scale). It self-reports abuse in last 12 months. The VASS consists of four factors: vulnerability, dependence, dejection, and coercion. Each factor contains three subitems (20).

2.5. Study procedure

At the beginning of the study, an e-mail was sent to those who developed the H-S/EAST Scale, and the necessary permission was obtained to adapt the scale.

First, adapting the scale involved its translation into Turkish from its original language, English, by two different professional translators. These translations were then combined and converted into a single Turkish scale that was subsequently back-translated to its original language by two different professional translators. By comparing the original scale with the back-translation, equivalence was evaluated in terms of both languages. Then the scale translated into Turkish was administered to five elderly persons excluded from the study for intelligibility and cognitive inquiry, and assessment of the scale were performed. As a result of this application, no item was removed, added, modified, or corrected. The final version was created based on these results.

Test–retest reliability was then studied, and 42 subjects were enrolled for this purpose. Scale test–retest reliability for testing at two different times at intervals of 2–4 weeks was administered to participants admitted to the Clinic of Family Medicine.

The participants of the study were 252 elderly volunteers visiting family health centers. A survey was conducted through face-to-face interviews. Sample size was determined through calculating ten times the number of items for a 15-item scale, aiming to achieve a sample size of 150 people.

2.6. Data analysis

In the scale's reliability analysis, the coefficient of internal consistency, coefficient of internal consistency with items deleted, and intraclass correlation coefficient for test–retest were calculated. In validity analysis, exploratory factor analysis, univariate odds ratio (OR) in determining discrimination, and Cohen's *d* effect size with the Student t-test were calculated. Furthermore, multivariate discriminant analysis was carried out. ROC analysis was applied to determine the most appropriate cut-off point for the scores obtained. In addition, VASS dimension scores for similar scale validity, quality of life (QoL), WHOQOL-OLD dimension scores in the elderly for prediction capability, level of independence in ADL (Barthel Index), and Spearman's correlation coefficients were studied. All data were analyzed with SPSS 15.0 and Stata 13 software.

Approval was obtained from the Ethics Committee of the Faculty of Medicine of Dokuz Eylül University. The investigation conformed to the principles of the Declaration of Helsinki. Participants were informed about the purpose and nature of the study and were assured that their data would be kept confidential, their participation was voluntary, and they could withdraw from the study at any time without any effect on the care they were receiving. Older participants were not taken into consideration in the case of a scientific degree of cognitive impairment. Verbal declaration of the elderly and/or close relatives was considered sufficient.

3. Results

The demographic characteristics of the study population are given in Table 1. Among the participants, 58.3% were female with a mean age of 73.4 ± 6.4 years; 45.7% had received primary education and 54.8% were married. Of the elderly persons included, 32.5% reported that they were exposed to abuse, while 15.5% had suffered from physical, psychological, or economic abuse.

3.1. Reliability

Cronbach's alpha value of internal consistency coefficient was calculated as 0.741 for the H-S/EAST (for the three subscales of direct abuse, characteristics of vulnerability, and potentially abusive situation, Cronbach's alpha values were 0.659, 0.378, and 0.682, respectively). This obtained value is greater than the recommended value of 0.7 (21,22).

Regarding Cronbach's alpha value obtained with items deleted, the internal consistency coefficient increased when the first and second items were removed (0.780 and 0.759, respectively). These two items were defined as those influencing the internal consistency coefficient. However, other validity and reliability measures of the scale were analyzed and the findings were presented, including these two items. Another criterion used to test reliability is the invariance of responses to the scale. In test–retest reliability, intraclass correlation coefficient (ICC) values for direct abuse, characteristics of vulnerability, potentially abusive situation, and total score were found to be 0.88, 0.73, 0.80, and 0.84, respectively.

ICC was examined for test–retest correlations, and values over 0.75 were considered to indicate that the scale was consistent (23).

After exploratory factor analysis was performed, the scale was seen to form a five-dimensional structure with the percentage of variance explained at 61.8%.

3.2. Validity

When the scale was compared with VASS points for evaluation of convergent-discriminant validity, moderate and high correlation was found among its items ($P < 0.01$). This is accepted as an indicator that the scale measures concepts at similarly high rates.

Furthermore, the scale was observed to show at least low and moderately significant correlation with the QoL and the Barthel Index ($P < 0.05$). This significant correlation suggests that the scale is a good predictor of health, quality of life, and disability (Table 2).

3.3. Discriminant analysis procedure

Statistical significance tests were studied to determine the capability of the scale's items and dimensions to discriminate abuse. The significance of each item corresponding to questions determining the presence of abuse were evaluated with the OR at 95% confidence interval (CI). It was found that items 1, 2, 6, and 8 could not yield significant correlation corresponding to abuse questions. In contrast, the other items showed significant correlation with risk of abuse.

The Student t-test was used to test the significance of the dimension and total scores of the scale corresponding to abuse, and Cohen's *d* value was presented for effect size with significance level of the results. According to the t-test applied, all subdimensions and the total scale score could discriminate abuse at the level of significance and effect size (Table 3).

Discriminant analysis was conducted for test items' multivariate discrimination. Among the scale's items, numbers 1, 2, 6, and 8 were discriminated at a nonsignificant level, correlating with univariate discrimination. After the multivariate analysis, the rate of correct classification of all items was found to be 94.8%; correct discrimination of cases of abuse, 87.2%; and correct discrimination of cases of no abuse, 96.2%. The canonical coefficient was 0.824 for all items. In the Turkish version, the scale was found to discriminate cases of abuse at a sufficient level (Table 4).

ROC analysis was performed to determine the cut-off value that could be used to discriminate abuse. First, all items on the scale were analyzed and the area under the curve was found to be 0.938. The highest correct classification value for the total score obtained from all

Table 1. Demographic properties of the elderly.

	N	%
Sex		
Male	147	58.3
Female	105	41.7
Age		
65–74 years	156	61.9
75–84 years	88	34.9
≥85	8	3.2
Education		
Illiterate	64	25.4
Literate	56	22.2
Primary school	115	45.7
Secondary school	9	3.6
College	8	3.2
Marital status		
Married	138	54.8
Widowed	104	41.2
Single	10	4.0
Children		
Yes	244	96.8
No	8	3.2
Income		
Yes	210	83.3
No	42	16.7
Living with		
Single	44	17.5
Couple	137	54.4
Child	68	27.0
Relative	2	0.8
Caregiver	1	0.4
Regular drug use		
Yes	229	90.9
No	23	9.1
Have you ever been a victim of violence?		
Yes	82	32.5
No	170	67.5
Have you been abused lately (physically, psychologically, or economically)?		
Yes	39	15.5
No	213	84.5

Table 2. Correlation[#] between scores of the H-S/EAST, VASS, Barthel index. and WHOQOL-OLD scales.

Scales and subscales	H-S/EAST direct abuse score	H-S/EAST vulnerability score	H-S/EAST potentially score	H-S/EAST total score
VASS				
VASS vulnerability	0.446**	0.264**	0.502**	0.502**
VASS dependence	0.451**	0.158*	0.371**	0.415**
VASS dejection	0.507**	0.566**	0.517**	0.704**
VASS coercion	0.582**	0.207**	0.529**	0.547**
Total score	0.576**	0.488**	0.533**	0.704**
WHOQOL-OLD				
Sensory abilities	–0.387**	–0.239**	–0.300**	–0.397**
Autonomy	–0.532**	–0.377**	–0.393**	–0.551**
Past, present, and future activities	–0.411**	–0.470**	–0.378**	–0.553**
Social participation	–0.396**	–0.350**	–0.371**	–0.484**
Death and dying	–0.216**	–0.137*	–0.228**	–0.238**
Intimacy	–0.405**	–0.283**	–0.372**	–0.479**
Total score	–0.503**	–0.401**	–0.421**	–0.569**
Barthel total score	–0.352**	–0.086	–0.217**	–0.283**

[#]Presented with Spearman's rho values; *P < 0.05, **P < 0.01.

Table 3. Abuse discrimination of the H-S/EAST item and subdimensions.

Items	OR (95% CI)
A11. Has anyone taken things that belong to you without your consent?	71.2 (26.5–190.8)**
A7. Do you feel that nobody wants you around?	18.4 (8.2–41.6)**
A15. Has anyone close to you tried to hurt you or harm you recently?	25.2 (9.5–67.3)**
A14. Do you have enough privacy at home?	17.3 (7.7–38.8)**
A10. Has anyone forced you to do things you did not want to do?	26.0 (8.7–77.9)**
A13. Does anyone tell you that you give them too much trouble?	13.5 (6.0–30.0)**
A12. Do you trust most people in your family?	11.9 (5.1–27.7)**
A5. Do you feel uncomfortable with anyone in your family?	7.4 (3.5–15.5)**
A3. Are you often sad or lonely?	5.7 (2.6–12.5)**
A9. Does anyone in your family make you stay in bed or tell you are sick when you know you are not?	5.2 (1.9–14.3)**
A4. Who makes decisions about your life, how you should live, or where you should live?	2.2 (1.1–4.7)*
A1. Do you have anyone who spends time with you, taking you shopping or to the doctor?	1.8 (0.9–3.8)
A8. Does anyone in your family drink a lot?	1.8 (0.8–4.2)
A2. Are you helping to support someone?	1.6 (0.8–3.3)
A6. Can you take your own medication and get around by yourself?	2.1 (0.7-6.2)
Scales	Cohen's *d*
EAST Direct Abuse	2.323***
EAST Vulnerability	0.630***
EAST Potentially	2.877***
EAST Total	3.269***

OR (95% CI): odds ratio (95% confidence interval).
*P < 0.05, **P < 0.01, ***P < 0.001.
Criteria of effect size (Cohen's *d*): 0.3 low, 0.5 medium, 0.8 large.

Table 4. Results of discriminant analyses.

	Function	Wilks' lambda	F	Sig.
A11. Has anyone taken things that belong to you without your consent?	0.716	0.480	271.12	0.000
A7. Do you feel that nobody wants you around?	0.424	0.725	95.03	0.000
A15. Has anyone close to you tried to hurt you or harm you recently?	0.417	0.731	91.99	0.000
A14. Do you have enough privacy at home?	0.413	0.735	90.34	0.000
A10. Has anyone forced you to do things you did not want to do?	0.379	0.767	76.16	0.000
A13. Does anyone tell you that you give them too much trouble?	0.360	0.785	68.43	0.000
A12. Do you trust most people in your family?	0.317	0.825	53.13	0.000
A5. Do you feel uncomfortable with anyone in your family?	0.269	0.867	38.39	0.000
A3. Are you often sad or lonely?	0.209	0.915	23.09	0.000
A9. Does someone in your family make you stay in bed or tell you are sick when you know you are not?	0.157	0.951	12.98	0.000
A4. Who makes decisions about your life, how you should live, or where you should live?	0.093	0.982	4.59	0.033
A1. Do you have anyone who spends time with you, taking you shopping or to the doctor?	0.073	0.989	2.82	0.094
A8. Does anyone in your family drink a lot?	0.062	0.992	2.04	0.155
A2. Are you helping to support someone?	0.062	0.992	2.01	0.158
A6. Can you take your own medication and get around by yourself?	0.059	0.993	1.84	0.176
Wilks' lambda	0.321	Canonical correlation		0.824
Chi-square	275.6	Cases correctly classified		94.8%
df	15,000	True negative		96.2%
Sig.	0.000	True positive		87.2%

items was 6 points, at 93.3%. Accordingly, the sensitivity of the scale was 76.9% and specificity was 96.2%. The scale has maximal specificity and optimal sensitivity for the cut-off value of 6. When maximal specificity and optimal sensitivity are desired, a cut-off point of 4 can be used. In such a case, sensitivity of the scale is 97.4%, specificity is 78.4%, and correct classification capability is 81.4% (Figure).

According to these results, evaluation can be conducted using a cut-off point of 4 when high sensitivity (discrimination of abuse cases) is desired and a cut-off of 6 when high specificity (discrimination of cases without abuse) is desired.

In our sample, frequency of abuse was found at 97.4% according to the cut-off point of 4 and 76.9% according to the cut-off point of 6. Frequencies of cases without abuse were 78.4% and 96.2% according to the cut-off points of 4 and 6, respectively. In this study's sample, frequency of the total score to discriminate cases without abuse was found to be higher than frequency to discriminate cases with abuse (Table 5).

4. Discussion

Abuse and neglect are preventable problems that hurt the elderly, leading to many complications. Studies conducted on this issue in Turkey have been investigated and systematically reviewed. All the studies reviewed are descriptive and cross-sectional research; however, their reports are insufficient, as they generally reveal similar results. In this review, we tackled the problem by using different sets of survey questions (12). There are a few scales in the literature on this topic and a few studies have used these scales. These studies have been compared, and the H-S/EAST is one of the scales that can be used in this field (14,15,17,24). Fulmer et al. demonstrated the strengths and weaknesses of various scales and reported that their validity should be determined according to country (25). Additionally, this study found instruments with good psychometric characteristics. However, they reported that there were still gaps in the process of design, validation, and adaptation, both in Brazil and abroad (26). In a validity and reliability study conducted in Brasilia, three subdimensions were shown, as in the original scale.

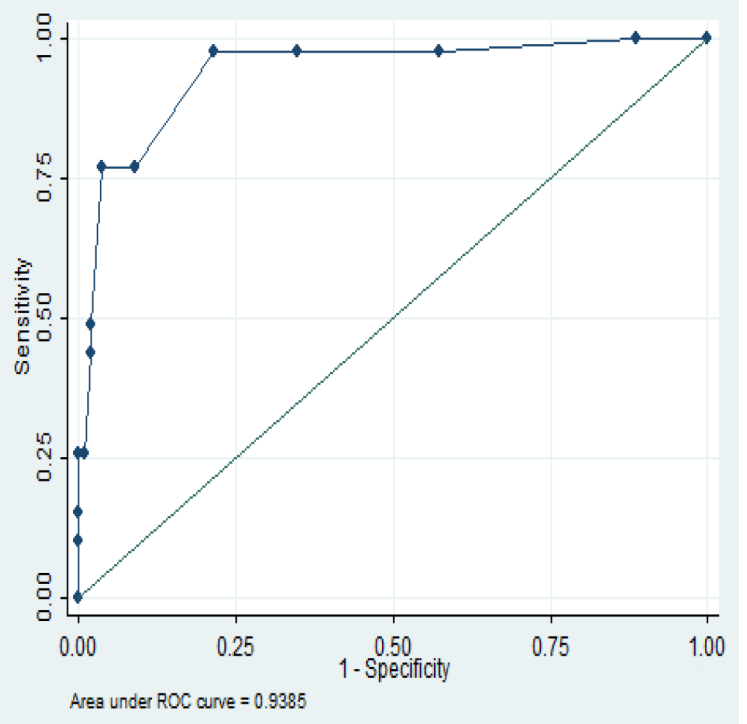

Figure. ROC curve for H-S/EAST score.

Table 5. Sensitivity and specificity values for the H-S/EAST.

Cut-off point	Sensitivity	Specificity	Correctly classified	LR+	LR–
(≥3)	97.44%	65.26%	70.24%	2.8046	0.0393
(≥4)	97.44%	78.40%	81.35%	4.5117	0.0327
(≥5)	76.92%	91.08%	88.89%	8.6235	0.2534
(≥6)	76.92%	96.24%	93.25%	20.4808	0.2398
(≥7)	48.72%	98.12%	90.48%	25.9423	0.5226

LR+: Likelihood ratio positive.
LR–: Likelihood ratio negative.

"Characteristics of vulnerability" did not perform similarly to the other two dimensions. The conclusion was that even without demonstrating complete equivalence, the H-S/EAST can be recommended, at least in part, in the Brazilian context (27).

The analysis in this study was carried out as in the scale's original version. When the findings were evaluated, the items in the Turkish version of the scale were able to discriminate abuse as determined in the original version (17). These similarities can be seen in both the univariate and multivariate analysis.

The Cronbach alpha value was found to be 0.74 in our study, which was above the acceptable values. For subscales, Cronbach alpha values were below 0.7. In the Brazilian version, the Cronbach alpha value of 0.64 was lower than in our study (27). For the original version of this scale, the value was reported as 0.29 (17).

In the reliability analysis of the scale, internal consistency coefficients were examined. Whereas Cronbach's alpha value for the sum of the scale is above the acceptable limit, this value is lower in the subdimensions. One reason is that there are fewer numerical items in the subscales of the scale, and the response options consist of binary options in yes/no form. Another reason is that the scale consists of evaluating the abuse of different conceptual contents as a whole under the same factors. At this point, when one

reliability indicator of the scale is repeated, the same result is obtained. For this test–retest application, the ICC values are above the accepted 0.7 level. In other words, when the scale is repeated, it decisively gives the same results.

An important feature of the scale is that it was created to assess the presence of abuse as a whole. For this reason, the answers are in the form of yes/no, and it is important that the number of abusive incidents is scored rather than the severity of the score obtained from the scale. In the validity analysis, the distinction of each scale item against the abuse was analyzed in terms of accepted external criteria. A solution to this is the level of correlation between the VASS scale and the H-S/EAST questioning the similarity. Both measurements show moderate and good association of correlation levels. The other analysis is univariate and multivariable discriminant analysis. The discriminant analysis results were found to be significantly related to the four items of the scale. Similar results can be seen in the original article about the scale (17).

In a study by Schofield et al., using the H-S/EAST, Short-Form 36 (SF-36), and Duke Social Support Index, assessment results similar to ours were reported in terms of abuse, neglect, and individual differences (28). In our study, after multivariate analysis, the rates of the correct classification of all items, correct discrimination of cases of abuse, and correct discrimination of noncases were found to be higher than the results reported by the researchers who developed the scale.

A score of 3 or above was found to have the highest sensitivity value in our study.

Scale scores of 4 and over indicate maximum sensitivity and optimum specificity value. The recommended cut-off point in the original version of the scale was 3 and above (19). Our study findings suggest that the best score was 6 as the cut-off point giving priority to the specificity value in addition.

It has been determined that scale discrimination is sufficient for many measures. The questions are simple and the answer options are dichotomous. In this form, regardless of their level of education, the elderly can understand. On the contrary, it is not possible to identify the existence of abuse by verbal notification only. The elderly should be carefully examined medically and findings based on observation should be identified. For this, the scale can produce useful results for making a preliminary diagnosis and as a screening program, because quick decision is possible.

In conclusion, the Turkish version of the H-S/EAST can be used as a reliable and valid clinical tool for assessing elder abuse. Further studies using this screening test would contribute to this important field.

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