

Cross-Cultural Adaptation of the *Vulnerable Elders Survey-13* (VES-13): helping in the identification of vulnerable older people*

ADAPTAÇÃO TRANSCULTURAL DO *VULNERABLE ELDERS SURVEY -13* (VES-13):
CONTRIBUINDO PARA A IDENTIFICAÇÃO DE IDOSOS VULNERÁVEIS

LA ADAPTACIÓN TRANSCULTURAL DE *LO VULNERABLE ELDERS SURVEY-13* (VES-13): AYUDANDO EN LA IDENTIFICACIÓN DE LOS ANCIANOS VULNERABLES.

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ABSTRACT

To use the VES-13 — a tool for identifying vulnerable older people — cultural adaptation was performed, a process that seeks the equivalence between the original instrument and its version in another culture. The evaluation of semantic, idiomatic, cultural and conceptual equivalence obtained a general average agreement of 78%, 78%, 97.0% and 94.0% respectively. Kappa coefficient was used to verify the agreement in test-retest reliability, where variables were significant. The analysis of internal consistency was measured by using Cronbach's alpha coefficient, where 70% of the phenomenon under study are represented in the VES-13. The VES-13, translated and adapted, is a reliable instrument with respect to stability and internal consistency of their measurements. Its simple structure and easy to use may therefore contribute to the identification of vulnerable older people, thus contributing to the prioritization of monitoring health services.

DESCRIPTORS

Aged
Aging
Vulnerability
Questionnaires
Cross-cultural adaptation

RESUMO

Para a utilização do VES-13 — instrumento que identifica idosos vulneráveis — foi realizada sua adaptação transcultural, processo que visa à equivalência entre o instrumento original e sua versão em outra cultura. A avaliação da equivalência semântica, idiomática cultural e conceitual obteve uma média geral de concordância de 78%, 78%, 97% e 94%, respectivamente. Para verificar a concordância no teste-reteste, utilizou-se o coeficiente Kappa de Cohen, onde a maioria das variáveis foram significantes. A análise de sua consistência interna foi verificada pelo uso do coeficiente alpha de Cronbach, onde 70% do fenômeno em estudo estão representados no instrumento. O VES-13, traduzido e adaptado, mostrou-se um instrumento confiável no que diz respeito à estabilidade e consistência interna de suas medidas. Sua estrutura simples e de fácil aplicabilidade pode, portanto, favorecer a identificação das pessoas idosas vulneráveis, contribuindo, assim, para a priorização do acompanhamento pelos serviços de saúde.

DESCRITORES

Idoso
Envelhecimento
Vulnerabilidade
Questionários
Adaptação transcultural

RESUMEN

Para utilizar el VES-13 — una herramienta para la identificación de las personas mayores vulnerables — la adaptación cultural se llevó a cabo, un proceso que busca la equivalencia entre el instrumento original y su versión en otra cultura. La evaluación de la equivalencia semántica, idiomática, cultural y conceptual obtuvo un acuerdo general en promedio de 78%, 78%, 97,0% y 94,0%, respectivamente. Para verificar la concordancia en la fiabilidad test-retest, se utilizó el coeficiente Kappa de Cohen, donde las variables fueron significativas. El análisis de consistencia interna se midió mediante el coeficiente alfa de Cronbach, donde están representados el 70% del fenómeno en estudio en el VES-13. El VES-13, traducida y adaptada, era un instrumento confiable con respecto a la estabilidad y la consistencia interna de sus mediciones. Su estructura simple y fácil de usar por lo tanto, puede contribuir a la identificación de las personas mayores vulnerables, contribuyendo así a la priorización de los servicios de vigilancia de la salud.

DESCRIPTORES

Anciano
Envejecimiento
Vulnerabilidad
Cuestionarios
Adaptación transcultural

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INTRODUCTION

The identification of vulnerable groups, especially older individuals, is of considerable importance to the determination of adequate public policies⁽¹⁻¹⁰⁾. However, this is not always possible due to the complexity of the concept of vulnerability and the dynamics of factors that affect the ageing process⁽¹¹⁾.

The Vulnerable Elders Survey-13 (VES-13) was developed for the identification of vulnerable community-dwelling older individuals. The criteria established by the authors for the definition of vulnerability were age 65 years or older and functional decline or death in a two-year period⁽¹¹⁾. Vulnerability defined here is more associated with bio-physiological components.

A probabilistic sample of non-institutionalized older individuals included in the Medicare Current Beneficiary Survey (USA) was used for the construction and validation of the VES-13. As the outcomes of interest were functional decline and death, the variables selected referred to basic and instrumental activities of daily living, along with a list of older individuals who died in the period considered. The following variables were also addressed: age, self-rated health, presence of an auxiliary or substitute informant (proxy respondent), diabetes, stroke, psychiatric diagnoses, acute myocardial infarction or angina, heart failure or other heart conditions, visual impairment, hearing impairment, hip fracture, cancer, arthritis and history of smoking. The variables strongly associated with the risk of functional decline and death were age, poor self-rated health and indicators related to physical limitations and functional disability, totaling 13 items to which scores were subsequently attributed. Individuals with scores of three or more points had a 4.2-fold greater risk of functional decline and death in a two-year period in comparison to those with lower scores⁽¹¹⁾.

To determine the applicability of the VES-13 as a screening tool for possible use on the Brazilian population, the aim of the present study was to perform the cross-cultural adaptation of this assessment tool to the Portuguese language and Brazilian culture. The aim of this adaptation process was to establish equivalence between the original questionnaire and its translated version following standardized protocols⁽¹²⁻¹⁴⁾.

METHODS

This study received approval from the Human Research Ethics Committee of the School of Public Health, *Universidade de São Paulo* (Brazil) under process nº 2.154. In compliance with Resolution 196/96 of the Brazilian

Board of Health, all participants signed a statement of informed consent.

Although the VES-13 is in the public domain, the main author of this questionnaire was contacted and informed regarding the objectives of the present study. The author readily encouraged the translation and cross-cultural adaptation of the questionnaire for use on the Brazilian population.

Step I: Initial translation into Portuguese

Translation from the original language into the language of the target population is the first step of the cross-cultural adaptation of an assessment tool. One translator should have knowledge on the objectives of the questionnaire and concepts involved to provide an adaptation with equivalence based on clinical perspectives. A second translator should not have knowledge on the topic, thereby being less influenced by clinical aspects, which allows a translation that reflects the language used by the general population⁽¹⁴⁾. This procedure favors simultaneous conceptual and literary translation.

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In the present study, the VES-13 was translated into Portuguese by two translators born in countries in which the native language is English, with experience in the translation of texts in the field of health. One of the translators had knowledge on the objectives and concepts involved in the questionnaire and the other received no information on the topic⁽¹⁴⁾.

Step II: Synthesis of translations

The researchers performed a synthesis of the two translated versions of the questionnaire. A consensus with the translators was established in cases of divergence or ambiguous interpretations.

Step III: Back translation

Back translation regards the conversion of the translated version of the questionnaire into the original language with the aim of improving the final version of the translated questionnaire. Each back translation should be performed independently to allow the detection of possible errors. To ensure the success of this step, two translators different from those who translated the questionnaire into Portuguese were contracted. These translators had been born in countries in which the native language is English and were fluent in Portuguese, with experience in the translation of documents in the health field. The translators did not receive any information on the original questionnaire so that no prior knowledge would affect the back-translated version.

Step IV: Review committee

The aim of the formation of a review committee is to compare the translations and produce a final, modified, adapted version that ensures the reproducibility of the translated questionnaire. Preferentially, the committee members should be bilingual, specialists in the field, should represent different areas of knowledge (multi-disciplinary) and have knowledge on what the tool is intended to measure as well as the concepts involved. The committee can suggest the replication of the instructions for filling out the questionnaire in order to minimize errors in the understanding of the questionnaire, even when the instructions are redundant. The committee may also suggest changes in or even the elimination of items considered irrelevant, inadequate and/or ambiguous and suggest other items that are culturally more appropriate. The committee may request as many versions necessary for the adaptation of the final version of the questionnaire⁽¹⁴⁾.

To ensure equivalence between the original and translated versions, the committee should consider the following:

a) semantic equivalence: equivalence in the meaning of the words in terms of vocabulary and grammar (many terms do not have an adequate translation in other languages or the translation may have different meanings depending on the context in which it is employed);

b) idiomatic equivalence: equivalence in idiomatic and colloquial expressions (equivalent expressions should be found to preserve the original meaning in cases in which the simple translation can lead to a complete loss of meaning in the other language);

c) cultural equivalence: cross-cultural equivalence of experiences of the target population (some items of the original questionnaire may need to be changed or discarded in order to maintain the coherence of the situations evoked or portrayed in the context of the different culture); and

d) conceptual equivalence: the maintenance of the concept proposed in the original questionnaire (many terms or expressions may have semantic equivalence in other languages, but may not preserve the same conceptual equivalence).

The review committee that participated in the present study was made up of seven bilingual professors/doctors and three bilingual doctors from three health fields: nurses, physicians and psychologists. Individually, the committee members analyzed the translation, performed corrections and suggested changes. The evaluation of the items was performed using the following equivalence scale: -1 = non-equivalent; zero = undecided; and +1 = equivalent. The items classified as non-equivalent (-1) or undecided (0) were revised until a consensus was reached. Thus, a synthesis was constructed as the first version of the questionnaire translated into the Portuguese language, which was presented to the committee again. Following agreement on the translated questionnaire, the pretest was carried out.

Step V: Pretest

The aim of this step is to evaluate the equivalence of the original and translated versions. The pretest consists of administering the assessment tool to a sample of the target population to determine errors and confirm the comprehension of all items. In the present study, the probe technique⁽¹²⁻¹³⁾ was used which consists of determining the understanding of the questionnaire by the target population and assessing its face validity.

The pretest was carried out with a sample of 12 older individuals who participated in a regular physical activity at the School of Public Health of the *Universidade de São Paulo*. The inclusion criteria for the composition of the sample were either gender, age 60 years or older and agreement to participate in the study. The exclusion criteria were a diagnosis of dementia or other cognitive impairment and an incapacity (for any reason) to answer the questions posed during the interview, as determined by the interviewer.

During the interview, a questionnaire was used for recording socio-demographic and the VES-13 was administered to determine the understanding of the statements and response options. It was determined that an item would be revised if 15% or more of the participants had difficulties understanding the item. However, this did not occur. The Kappa statistic was used for the determination of test-retest reliability and Cronbach's alpha coefficient was calculated to determine the internal consistency of the assessment tool.

RESULTS

Semantic and idiomatic equivalence

For the determination of semantic and idiomatic equivalence, the questionnaire was subdivided into 44 items individually evaluated by the members of the review board. Mean overall agreement in this evaluation was 78%. Among the 44 items, 25 (57%) were considered equivalent (greater than 80% agreement) and were therefore retained. Items with less than 80% agreement were individually analyzed and changed based on the suggestions of the review committee members.

Cultural and conceptual equivalence

Average agreement on the evaluations of cultural and conceptual was 97.0% and 94.0%, respectively. After performing the changes suggested by the members of the review committee, a second version of the questionnaire was produced.

Pretest

All participants in the pretest reported clearly understanding the items on the questionnaire. The response

to Question 4e - *não tomo banho*, [I don't bathe], however, was considered strange by some respondents and was therefore changed to *não tomo banho de chuveiro ou banheira* [I don't take showers or baths] following the suggestion of some members of the review committee. With this result, the questionnaire was considered to have *face validity*, which is the subjective evaluation that verifies the superficial evidence of the integrity of the measurement that the resource is intended to measure.

The final version (Appendix 1) was the submitted for the determination of its psychometric properties. Test-retest was the first measure used to assess the reliability of the VES-13, using Cohen's Kappa coefficient⁽¹⁵⁾. All variables proved significant (Table 1), except *writing or handling and grasping small objects* (Kappa -0.044; 0.624), which, however, demonstrated satisfactory agreement in the sample (83.33%).

Table 1 – Agreement among variables in test-retest evaluation, Sao Paulo – 2011

Variable	Observed agreement %	Expected agreement %	Kappa*	Standard deviation	P
Age	100.0	11.1	1.000	0.101	0.000
Self-rated health	100.0	25.0	1.000	0.160	0.000
Stooping, crouching or kneeling	66.7	21.5	0.575	0.147	0.000
Lifting or carrying objects as heavy as 10 pounds	83.3	59.0	0.593	0.206	0.002
Reaching or extending arms above shoulder level	83.3	47.2	0.684	0.168	0.000
Writing or handling and grasping small objects	83.3	84.0	-0.044	0.138	0.624
Walking a quarter of a mile	91.7	84.0	0.478	0.138	0.000
Doing heavy housework	83.3	47.2	0.684	0.219	0.001

*Kappa = Kappa agreement coefficient Source: present study

Internal consistency of the VES-13 was also tested, for which correlations are expected among the items with each other and the total, as the items measure the same phenomenon. For such, Cronbach's alpha coefficient was used, which reflects the degree of covariance of the items among each other. The α value of 0.70 obtained demonstrates that 70% of the phenomenon studied (vulnerability) is represented in the translated, adapted VES-13. The analysis revealed no negative correlations or possible changes (exclusion of variables) that could improve the alpha value (Table 2).

Table 2 – Internal consistency of translated, adapted VES-13, Sao Paulo - 2011

Variable	Alpha
Stooping, crouching or kneeling	0.7016
Lifting or carrying objects as heavy as 10 pounds	0.6659
Reaching or extending arms above shoulder level	0.7208
Writing or handling and grasping small objects	0.6091
Walking a quarter of a mile	0.6091
Doing heavy housework	0.6772
Shopping for personal items	0.6805
Walking across the room	0.6805
	0.6996

Source: present study

DISCUSSION

Considering the growing tendency toward the development of multicenter studies and the important cultural difference among countries, there has been an increasing need for the use of specific methods for the translation and adaptation of assessment tools into different

languages to allow the comparison of the object of study among countries or even among individuals of different origins within the same country. Cross-cultural adaptation is a complex process that involves language differences as well as differences in context and lifestyle⁽¹⁶⁻¹⁷⁾. The literature proposes norms to ensure the adequate cross-sectional adaptation of assessment tools. However, there is no consensus on the execution strategies, which may make the operational synthesis a variety of procedures taken from different sources⁽¹⁸⁾.

The evaluation of the measurement properties of an assessment tool is recommended. However, there are divergences stemming from two different schools of thought. Some believe that an adequately and completely performed cross-sectional equivalence offers the same measurement properties as the original questionnaire, whereas others state that a questionnaire modified by the adaptation process has unknown measurement properties regarding the culture to which it has been adapted⁽³⁻⁴⁾.

The reliability of an assessment tool regards its ability to measure the same subjects on different occasions and produce identical results in numeric terms, meaning that the correlation coefficient between the two measurements should be equal to 1. Coefficients smaller than 1 denote errors committed in the use of the test. Aspects associated with this parameter (stability, constancy, equivalence and internal consistency) are related to the techniques employed in the empirical collection of the information and data analysis⁽¹⁹⁾.

Test-retest was the first measure used to assess the reliability of the VES-13, which is a measurement of the sta-

bility or reproducibility of an assessment tool over time in the absence of changes in the evaluation procedure and psychological status of the individuals evaluated⁽¹⁹⁾. The findings revealed adequate agreement between evaluations for the majority of items analyzed, demonstrating satisfactory stability.

Internal consistency of the VES-13 was tested using Cronbach's alpha coefficient. An assessment tool is considered adequate when all its measures (items) have a coherent relationship among each other in the measurement of the phenomenon studied. Coherent measures of the same phenomenon are those that maintain a relationship with each other although addressing specific aspects of the phenomenon in each item or subscale, as they seek to measure the same phenomenon⁽²⁰⁾. A high alpha coefficient denotes a high degree of variance among the set of items as well as a small degree of specific variation within each item, thereby ensuring congruence (internal consistency) among the items on a test. If no variation is found among the individual items, the alpha coefficient would be 1, demonstrating that all the items are completely homogeneous and produce exactly the same variance. As this is unlikely to occur, the alpha coefficient demonstrates the congruence or covariance of the items and ranges from 0 (absence of congruence or internal consistency) to 1 (100% internal consistency).

The analysis of internal consistency was based on the calculation of the correlation between each item on the VES-13 with the other items as well as with the total score. In terms of reliability, the alpha result suggests the measurement of the actual impact and how this impact would be measured by a supposed (unavailable) *gold standard*. Regarding the generalization of the particular results, this coefficient represents the percentage of the universe of possible indicators of impact constituted by the same

number of items or the measures would agree the same percentage of times. In the development of health assessment tools, it has been established that the item-total correlation coefficient should not be less than 0.40 for the maintenance of an item⁽²⁰⁾. Thus, the result can indicate the need to discard inconsistent measures (items with a low degree of correlation with the other items), thereby making the assessment tool more precise for application in the new culture⁽²⁰⁾, which was not necessary in the present case.

Following this cross-cultural adaptation process, the VES-13 can be used on the Brazilian population for the early identification of more vulnerable older individuals. Other determinants of vulnerability (such as social aspects) should be detailed during the follow up of older individuals monitored with the use of this assessment tool, allowing the establishment of interventions and follow up criteria based on the needs identified.

CONCLUSION

There has been increasing interest on the part of researchers in the concept of vulnerability applied to the ageing process. Identifying vulnerable older individuals can assist in the planning and adaptation of healthcare services and policies and allow setting priorities with regard to preventive care, thereby reducing health costs and delaying adverse health outcomes. The translated, cross-culturally adapted VES-13 proved to be a reliable assessment tool in terms of the stability and internal consistency of its measures. The use of this tool does not require direct observation, laboratory data on the individual or complex operational systems. Its simple, easy-to-use structure can therefore contribute to the identification of vulnerable older Brazilians.

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APPENDIX 1 – Final version of the VES-13

1. Idade _____

PONTUAÇÃO: 1 PONTO PARA IDADE 75-84
3 PONTOS PARA IDADE ≥ 85

2. Em geral, comparando com outras pessoas de sua idade, você diria que sua saúde é:

Ruim* (1 PONTO)
Regular* (1 PONTO)
Boa
Muito Boa ou
Excelente

PONTUAÇÃO: 1 PONTO PARA REGULAR ou RUIM

3. Em média, quanta dificuldade você tem para fazer as seguintes atividades físicas:

	Nenhuma dificuldade	Pouca dificuldade	Média dificuldade	Muita dificuldade*	Incapaz de fazer*
Curvar-se, agachar ou ajoelhar-se	()	()	()	()*	()*
Levantar ou carregar objetos com peso aproximado de 5 quilos?	()	()	()	()*	()*
Elevar ou estender os braços acima do nível do ombro?	()	()	()	()*	()*
Escrever ou manusear e segurar pequenos objetos?	()	()	()	()*	()*
Andar 400 metros (aproximadamente quatro quarteirões)?	()	()	()	()*	()*
Fazer serviço doméstico pesado como esfregar o chão ou limpar janelas?	()	()	()	()*	()*

PONTUAÇÃO: 1 PONTO PARA CADA RESPOSTA "MUITA DIFICULDADE*" OU "INCAPAZ DE FAZER*" NAS QUESTÕES 3a ATÉ 3f. CONSIDERAR NO MÁXIMO DE 2 PONTOS.

4. Por causa de sua saúde ou condição física, você tem alguma dificuldade para:

a. fazer compras de itens pessoais (como produtos de higiene pessoal ou medicamentos?)

() SIM → Você recebe ajuda para fazer compras?	() SIM*	() NÃO
() NÃO		
() NÃO FAÇO COMPRAS → Isto acontece por causa de sua saúde?	() SIM*	() NÃO

b. lidar com dinheiro (como controlar suas despesas ou pagar contas)?

() SIM → Você recebe ajuda para lidar com dinheiro?	() SIM*	() NÃO
() NÃO		
() NÃO LIDO COM DINHEIRO → Isto acontece por causa de sua saúde?	() SIM*	() NÃO

c. atravessar o quarto andando? É PERMITIDO O USO DE BENGALA OU ANDADOR.

() SIM → Você recebe ajuda para andar?	() SIM*	() NÃO
() NÃO		
() NÃO ANDO → Isto acontece por causa de sua saúde?	() SIM*	() NÃO

d. realizar tarefas domésticas leves (como lavar louça ou fazer limpeza leve)?

() SIM → Você recebe ajuda para tarefas domésticas leves?	() SIM*	() NÃO
() NÃO		
() NÃO FAÇO TAREFAS DOMÉSTICAS LEVES → Isto acontece por causa de sua saúde?	() SIM*	() NÃO

e. tomar banho de chuveiro ou banheira?

() SIM → Você recebe ajuda para tomar banho de chuveiro ou banheira?	() SIM*	() NÃO
() NÃO		
() NÃO TOMO BANHO DE CHUVEIRO OU BANHEIRA → Isto acontece por causa de sua saúde?	() SIM*	() NÃO

PONTUAÇÃO: CONSIDERAR 4 PONTOS PARA UMA OU MAIS RESPOSTAS "SIM*" NAS QUESTÕES 4a ATÉ 4e

CLASSIFICAÇÃO FINAL:

NÃO VULNERÁVEL = pontuação ≤ 3
VULNERÁVEL = pontuação ≥ 3