Validation of a Telephone-administered Geriatric Depression Scale in a Hispanic Elderly Population

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OBJECTIVE: **To develop and validate a Spanish version of the Geriatric Depression Scale (GDS) for telephone administration.**

DESIGN, SETTING, AND PATIENTS: **The original version of the GDS was translated into Spanish. A random sample of 282 ambulatory elderly individuals was contacted by phone. Those completing the phone GDS (GDS-T) were asked to schedule an appointment within two weeks in which we collected data on demographics, physical exam, functional and mental status, and a face-to-face version of the GDS (GDS-P). We estimated question-to-question κ statistics and the Pearson correlation coefficient between the GDS-T and GDS-P scores. We evaluated reliability of the GDS-T and GDS-P using the Cronbach's α coefficient. We estimated the sensitivity, specificity, and criterion validity of the GDS using the DSM IV criteria for depression as our gold standard.**

RESULTS: **Thirty patients (11%) refused to participate. Of the remaining 252 patients, 169 (67%) attended the personal interview. The Cronbach's α coefficient was 0.85 for GSD-P and 0.88 for GDS-T. Sensitivity and specificity were 88% and 82% for GDS-P and 84% and 79% for GDS-T. The prevalence of depression in the group completing both scales was 12.8% using the GDS-P and 14.9% using the GDS-T ($P > .05$). Among those who only completed the GDS-T, the prevalence was 22.7% ($P < .05$) suggesting that depressed patients kept their appointments less frequently.**

CONCLUSIONS: **The telephone GDS had high internal consistency and was highly correlated with the validated personal administration of the scale, suggesting that it could be a valid instrument for screening of depression among elderly ambulatory Spanish-speaking patients. Because the depression rate was significantly higher among those not presenting to the personal evaluation, the adoption of GDS-T may help detect and plan early interventions in patients who otherwise would not be identified.**

KEY WORDS: **elderly; depression; screening; Spanish; telephone.**
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Depression is one of the most common disorders seen in primary care. The estimated prevalence of clinically significant depressive symptoms among older persons in the community ranges between 12% and 15%.[1] Depression usually presents typical features such as depressed mood, weight loss, difficulty in concentration, frequent crying, sleep disturbances, lost of interest, etc. However, in older persons it may appear masked by atypical physical and/or psychological symptoms, which may lead to underdiagnosis or even misdiagnosis. A vague physical decline, falls, multiple somatic complaints, intellectual or memory difficulties may be the expression of a hidden depression. It is not easy to recognize its symptoms in the context of multiple physical problems. In addition to this, depression is often times considered a normal change expected as part of the aging process because of physical illnesses or socioeconomic problems. Sometimes the stigma of psychiatric illness can limit its recognition as well.

Suicide is a leading cause of death in persons older than 65 years of age and, unfortunately, the success rate of their attempts is higher than that of younger people. Recent studies of completed suicide have reinforced its close association with major depressive illness, especially in the elderly.[2]

Increased levels of functional disability and use of health care resources and decreased effectiveness of rehabilitation have been identified in depressive patients with a coexisting physical illness[3] and, in addition, depressive symptoms are a risk factor for the onset or progression of that disability.[4] It is important to remember that depressed patients do not seek psychiatric evaluation; rather they see their primary care physicians, who are in a unique position to detect and treat this problem. A majority of depressed suicide victims had seen a primary care physician in the previous months of life.[5]

The means to reducing morbidity and suicidal behavior associated with depression in elderly people is enhancing its early recognition, because appropriate and effective treatments are available. The geriatric depression scale (GDS), designed by Yesavage, has proven to be an effective tool for detecting depression in the elderly[6] in a variety of settings,[7–9] using either self- or telephone-administered versions[10]; however, language and cultural barriers have not been explored in Spanish-speaking populations.

Our objectives were to translate and validate a Spanish version of the geriatric depression scale in order to validate a version for telephone administration and to determine the prevalence of depression among elderly patients enrolled in a university-affiliated HMO.

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METHODS

This study was conducted from June to December of 1997 in a university-affiliated HMO. After the study was approved by the ethics committee of our institution, enrollees who were at least 65 years old and able to answer a telephone interview without help were eligible for participation.

The geriatric depression scale (GDS) consists of 30 simple and clear questions that can be answered in an affirmative or negative way. Total score ranges from 0 to 30. A cut-off point of 10/11 is generally used for the diagnosis of depression. We performed two forward and backward translations of the original GDS to develop the Spanish GDS, stressing conceptual and linguistic equivalence. Two bilingual primary care doctors were asked to translate the GDS from English into Spanish. Then, two other doctors translated it back into English and a public translator compared the original version against the translated ones. All participants were blind to the translation of the others. Small semantic differences were discussed and agreed upon to obtain the final version.

We estimated a sample size to detect a prevalence of depression as low as 10% with an α level of 0.05 and at least 80% power. We also performed a pilot test (n = 40) to estimate the possible response rate of the telephone GDS (GDS-T) to correct the sample size. According to this test, a random sample of 282 ambulatory elderly individuals was contacted by phone. If the person agreed to participate, he/she was asked about personal demographic information and the GDS was administered by telephone (GDS-T). No effort was made to convince those who refused to participate. Fifteen randomized participants (5%) not located after three telephone calls during different days and times were replaced by other randomized patients to achieve the calculated n. Patients unable to respond to the telephone interview (because of deafness, for example) were also replaced (n = 21). Those completing the GDS-T were asked to schedule an appointment within two weeks during which a blind investigator collected data on physical examination and mental and functional status and administered a face-to-face version of the GDS (GDS-P). History and physical examination included a thorough evaluation of the central nervous system (CNS). The mental and functional evaluation consisted of determination of activities of daily living[11] (ADL), instrumental activities of daily living[12] (IADL), mini-mental state examination (MMS),[13] and Set test.[14] All participants attending the personal interview where evaluated according the DSM IV criteria for depression by another interviewer blind to the patients' GDS-P and GDS-T scores.

Criterion validity of the GDS-P was estimated using the DSM IV criteria for depression.[15] We estimated question-to-question κ statistics and the Pearson correlation coefficient between the GDS-T and GDS-P scores. We evaluated reliability of the GDS-T and GDS-P using Cronbach's α coefficient.

RESULTS

We contacted 282 randomly selected persons. Thirty of them (11%) refused to participate. Of the remaining 252 patients who completed the GDS-T, 169 (67%) attended the personal interview. The baseline characteristics of the patients who completed only the GDS-T compared with those who completed both GDS (GDS-T and GDS-P) were similar (Table 1). Mean age was 71.7 years old; 66% were women and 50% had high school or college level education.

The Spanish version of the GDS is presented in Table 2; "Si" means affirmative (yes) and "No" means a negative answer in Spanish. Depressive answers are in capital letters. "Overall" represents the results of adding all depressive answers.

Validation

Using the DSM IV criteria for the diagnosis of depression as the gold standard and a cut-off value of 11 for the scales, the GDS-P and the GDS-T had a sensitivity of 88% and 84% and a specificity of 82% and 79% respectively. The correlation coefficient between GDS-P and GDS-T scores was 0.87 and item-item correlation varied between 0.32 and 0.85. The overall chance adjusted agreement (κ statistics) was 0.52 with a range between 0.22 and 0.85. The global percentage of agreement was 86.4 and it varied between 71.4 and 98 (Table 2).

The median score of personal GDS was 5 with an interquartile range of 3 to 8 and 5 with an interquartile range of 2.5 to 9 in the telephone version. Both versions appeared to have a high internal consistency as shown by Cronbach's α coefficient (0.85 for the GDS-P and 0.88 for

Table 1. Baseline Characteristics of Patients Who Completed Only the GDS-T Compared with Those Who Completed Both GDS-T and GDS-P

Subject characteristics	N = 282
Refused to participate, n (%)	30 (11)
Completed the GDS-T, n (%)	252 (89)
Attended the personal interview, n (%)	169 (67)

	Only GDS-T (n = 83)	GDS-T and GDS-P (n = 169)
Age, y (SD)	71.9 (±4.7)	71.7 (±3.9)
Female, %	68.1	61.2
Marital status, %		
Single, %	8.06	7.55
Married, %	53.2	50
Widowed, %	37.1	37.7
Divorced, %	1.6	4.7
Education >12 years (high school), %	12.1	8.11
Hypertension, %	36.3	48.1
Diabetes mellitus, %	1.7	6.4
History of stroke, %	3.4	3.7

Table 2. Agreement Between GDS-T and GDS-P

Question			κ	Agreement, %
1. Are you basically satisfied with your life?				
¿Está usted básicamente satisfecho con su vida?	si	NO	0.59	93
2. Have you dropped many of your activities and interests?				
¿Ha abandonado muchas de sus actividades o elementos de interés?	SI	no	0.37	73.6
3. Do you feel that your life is empty?				
¿Siente usted que su vida está vacía?	SI	no	0.55	86.8
4. Do you often get bored?				
¿Se siente aburrido a menudo?	SI	no	0.55	92
5. Are you hopeful about the future?				
¿Está usted esperanzado con respecto a su futuro?	si	NO	0.62	84.6
6. Are you bothered by thoughts you can't get out of your head?				
¿Se siente usted molesto por pensamientos que no puede quitar de su mente?	SI	no	0.49	79
7. Are you in good spirits most of the time?				
¿Se siente usted de buen ánimo la mayoria del tiempo?	si	NO	0.64	95.6
8. Are you afraid that something bad is going to happen to you?				
¿Está usted temeroso de que algo malo vaya a ocurrirle?	SI	no	0.54	83.5
9. Do you feel happy most of the time?				
¿Se siente usted feliz la mayor parte del tiempo?	si	NO	0.82	98
10. Do you feel helpless?				
¿Se siente usted abandonado?	SI	no	0.57	95.6
11. Do you often get restless and fidgety?				
¿Se siente usted inquieto y nervioso a menudo?	SI	no	0.43	71.4
12. Do you prefer to stay at home rather than going out and doing new things?				
¿Prefiere usted permanecer en su casa, más que salir o hacer cosas nuevas?	SI	no	0.50	76
13. Do you feel frequently worry about the future?				
¿Está usted frecuentemente preocupado por el futuro?	SI	no	0.38	73.6
14. Do you feel you have more problems with memory than most?				
¿Siente usted que tiene más problemas con su memoria que la mayoría de la gente?	SI	no	0.46	88
15. Do you think it is wonderful to be alive now?				
¿Piensa usted que es maravilloso estar vivo ahora?	si	NO	0.59	94.5
16. Do you feel downhearted and blue?				
¿Se siente usted descorazonado y triste a menudo?	SI	no	0.57	87
17. Do you feel pretty worthless the way you are now?				
¿Se siente usted actualmente inútil?	SI	no	0.47	93.4
18. Do you worry a lot about the past?				
¿Se preocupa usted mucho acerca del pasado?	SI	no	0.33	82.4
19. Do you find life very exciting?				
¿Encuentra usted la vida bastante estimulante?	si	NO	0.66	84.6
20. Is it hard for you to get started on new projects?				
¿Es difícil para usted encarar nuevos proyectos?	SI	no	0.48	76
21. Do you feel full of energy?				
¿Se siente usted lleno de energía?	si	NO	0.63	93.4
22. Do you feel your situation is hopeless?				
¿Siente usted que su situación es desesperante?	SI	no	0.42	94.5
23. Do you think that most people are better off than you are?				
¿Piensa que la mayoria de las personas está mejor que usted?	SI	no	0.22	93.4
24. Do you frequently get upset over little things?				
¿Se siente usted frecuentemente perturbado por pequeñas cosas?	SI	no	0.53	82.4
25. Do you frequently feel like crying?				
¿Siente frecuentemente deseos de llorar?	SI	no	0.67	86.8
26. Do you have trouble concentrating?				
¿Tiene usted problemas para concentrarse?	SI	no	0.85	95.6
27. Do you enjoy getting up in the morning?				
¿Disfruta levantándose por la mañana?	si	NO	0.32	89
28. Do you prefer to avoid social gatherings?				
¿Prefiere evitar los encuentros sociales?	SI	no	0.51	81
29. Is it easy for you to make decisions?				
¿Es fácil para usted tomar decisiones?	si	NO	0.58	84.6
30. Is your mind as clear as it used to be?				
¿Está su mente tan clara como solía estarlo?	si	NO	0.46	80.2
Overall			0.52	86.3

the GDS-T). The prevalence of patients with cognitive impairment (MMS below 23) was 5.3%. The majority of patients had functional ability according to ADL (93%) and IADL (93%). The prevalence of depression in the group completing both scales was 12.8% using the personal GDS and 14.9% using the telephone GDS.

Interestingly, in the group completing only the telephone GDS (and who did not attend the appointment), the prevalence of depression was 22.7%.

DISCUSSION

Several studies have shown that although depressive symptoms and syndromes in later life are frequent, they are both underdiagnosed and undertreated in primary care settings[16]; therefore, the utilization of an appropriate screening tool should improve diagnostic recognition.

Our objectives were to translate and validate a Spanish version of the geriatric depression scale in order to validate a version for telephone administration and to determine the prevalence of depression among elderly patients enrolled in a university-affiliated HMO.

The GDS-P was validated using the DSM IV criteria as a gold standard. Although Yesavage et al.[6] validated the English version of the GDS using the Hamilton scale, we decided to use the DSM IV criteria because that scale has not been validated for Spanish language.

According to the results, both the GDS-P and GDS-T had a satisfactory performance compared to the clinical diagnosis of depression. Both had high internal consistency and the GDS-T was highly correlated with the validated personal administration of the scale. These results agree with those found by Burke et al., who designed a similar study using the English GDS.[10] This suggests that the GDS-T could be a valid instrument for screening of depression in elderly ambulatory Spanish-speaking patients.

The prevalence of depression in the group completing both scales was 12.8% using the personal GDS and 14.9% using the telephone GDS. These numbers are similar to those reported by the literature.[1] Among those who completed the GDS-T but did not attend the personal appointment, the prevalence of depression was higher, suggesting that depressed patients kept their appointments less frequently. Hence, the adoption of GDS-T may help detect them and plan early interventions in a group of patients who otherwise would not be identified.

It is true that there may be controversies about the advantages of screening for depression and that one of the limitations may be the reluctance of practicing physicians to do it, particularly because there is not enough evidence to support it. There are no trials evaluating physical, functional, and mental outcomes of screened versus unscreened elderly depressed patients. A recently published randomized trial[17] evaluated the impact of an educational intervention among patients attending their primary care clinic. Depressed patients were identified using a face-to-face version of the GDS as a screening tool and then randomized to receive intervention or usual care. Because there were no differences in diagnosis, treatment, prognosis, and use of health care resources, the authors concluded that they could not demonstrate any benefit from case-finding for depression in elderly patients in primary care. In our opinion, this lack of response in the treated group should be explained as a lack of effect of the intervention rather than suggesting no benefit from screening. On the other hand, the study included patients who were attending their clinic appointments, whereas ours proposes the use of the telephone GDS for detecting those depressive patients who are not in contact with the health care system.

Our sample represents a group of healthy elderly individuals who can afford health insurance. People affiliated with an HMO are mainly from a middle income, urban population (those individuals older than 65 years represent approximately 14% of the total population). Perhaps the results cannot be applied to patients with a lower income or those living in rural areas, but the simplicity of the questionnaire suggests it may be helpful in a variety of settings. Given the simplicity of the questions in the scale and the lack of idiomatic expressions, we do not think that the scale might perform differently in diverse Spanish-speaking populations.

Physical illness has been proposed as an additional risk factor for depression. Our study sample came from a healthy ambulatory elderly population and, except for hypertension, the prevalence of other common chronic diseases was too low to detect meaningful differences. In the same way, the telephone version is limited to those patients who can answer the phone without help, thereby excluding those with limited mobility or deafness, nursing home residents, or, simply, those who do not have a telephone at home.

It is important to mention the high rate of response and participation that we observed in our study. The individuals answered the questions in a friendly and helpful way. Neither economic reimbursements nor special attention was offered to persuade their participation. We think that using the telephone as a way of contacting our population, inquiring for their needs, knowing their problems, following their treatments, collecting statistical information, etc. has not been explored enough, and it appears to be a good method for community work in our setting.

As we previously stated, depression is difficult to diagnose, particularly in elderly people. The validated Spanish versions of the GDS-P and GDS-T provide primary care physicians with a simple and useful tool for detecting depression among Spanish-speaking patients. This community has been steadily growing in English-speaking countries,[18,19] and the probability of depression is likely to be higher among older immigrants. For these patients, the Spanish version of the GDS will be easier to understand and the telephone version of the GDS could be a helpful

screening instrument for depression, allowing for its earlier recognition and, eventually, timely treatment.

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