

PSYCHIATRY

Applicability of the Spanish Translation of the Zung Self-Rating Depression Scale in a General Puerto Rican Population

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Voluntary screening has shown to be an effective way to identify depressive symptoms and to provide adequate treatment. If a screening tool was to be used in a general Puerto Rican population, it should be validated in Spanish and be consistent with the particular response style of this group. The main objective of this research study is to assess if the Spanish translation of the Zung SDS is adequate to screen for depression in Puerto Ricans, and if the translation considers the sociocultural peculiarities of this group. Although the Zung SDS is presented as a self-report scale and was found to be reliable by *Alpha*

coefficient and manageable by both the questioner and the participant, the Spanish version used in this activity presented interpretation difficulties. It is recommendable that a Spanish translation of this scale should be developed taking into consideration the particularities of the Puerto Rican population. The use of other screening tools that have already been validated as being culturally sensitive to Puerto Ricans could also be considered.

Key words: Zung self-rating depression scale, Depression screening, Depression in Puerto Rico, Depression screening in Puerto Rico

Depression is one of the most frequently diagnosed psychiatric disorders in today's society, having an effect on multiple social and medical aspects. The lifetime rate of depression in the United States has been estimated to be 5.2 for the general population and could be as high as 7.4 for women. In Puerto Rico, the lifetime rate of depression is 4.3 for the general population and 5.5 for women (1). Studies using inventories to assess depression in primary care facilities have found prevalence rates of 12% to 48% (2). There is a high incidence of depression in medical inpatients, in which it approaches 14% (3).

Research has shown that depression represents significant annual costs on society (4). To illustrate this economic burden, Greenberg et al presented the total annual cost associated with depression to be \$44 billions in 1990 (4). In a study by Judd et al, it was found that "subjects with depressive symptoms reported higher levels of household and financial strains, social irritability,

as well as limitations in physical or job functioning, restricted activity days, bed days and poor health status"(5).

A long-standing observation from epidemiological studies reveals that Puerto Ricans suffer from unusual higher rates of mental illness, when compared with other ethnic groups, due to elevated report of psychiatric symptoms in surveys and interviews. This observation has been made in mainland Puerto Ricans (6), but in Island Puerto Ricans rates have not been found to be significantly different from the general population of the United States (7). It has been argued that these increased rates could be attributed to cultural particularities of response style (6). Cross-cultural studies have demonstrated, that in particular social groups, such as minorities and the elderly, there is a tendency to agree with the statements provided on surveys and questionnaires, regardless of its content, which may be considered an adaptive strategy to be socially accepted (8). Research has shown that in numerous screening activities and interviews, Hispanics preferred extreme responses and also showed a tendency to agree more with a specific item than non-Hispanics(9). Among this group, Puerto Ricans have also been found to possess a more "acquiescent response style" which leads to positive responses on a symptom checklist on those items considered as less socially undesirable (10).

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Depression is often unrecognized and under diagnosed in the general population. An important contribution to this fact was revealed in a study that demonstrated that a great majority of depressed patients, between 70% and 90%, go to their primary care physicians for evaluation and treatment of their concerns and symptoms (11). More worrisome is the fact that, according to some studies, primary care practitioners diagnose only 33% to 50% of individuals with major depressive disorder (12).

The prevalence rate for this diagnosis, the annual cost of health care delivery services, and the difficulties on appropriate recognition of this syndrome, reveal the need to develop diagnostic instruments and tools for its assessment. Depressive symptoms could be easily screened in a general population. It is a prevalent illness, with defined diagnostic characteristics, that when early detected and diagnosed, could significantly improve patients' outcome (13). An adequate screening tool for depression should assess all symptoms described in the diagnostic criteria (affective, somatic, psychomotor and psychological), and should be easily administered, requiring little time and low costs.

Voluntary screening has shown to be an effective way to identify depressive symptoms and to provide adequate treatment (14). The use of self-rating depression scales in the general population, has been useful to recognize the symptoms. The Zung Self-Rating Depression Scale (Zung SDS) is a well-known self-rated instrument, in which the participant answers without the intervention of an interviewer. A self-report reduces the probability of bias interpretation, while it allows the participant to answer the questions in private at their own pace. Self-rating depression scales have also been found to be less dependent on hearing ability (which is particularly important in the elderly), less expensive to administer (no trained interviewers are required), and more comparable between studies (because the lack of dependence on interviewer's style) (15). Studies that have used self-rating depression scales in general populations, have found that its use provides the opportunity to identify, previously unidentified and untreated depressed individuals (16). In a study done by Magruder et al., the sample and results from the National Depression Screening Day were analyzed to conclude that the positive predictive value of the screening test was high (88.7%-95.5%) (16). In a research paper by Colón et al., the same screening was used in a general population from Puerto Rico, and similar results were found when compared the results of three consecutive years (17).

If a screening tool was to be used in a Puerto Rican general population, it should be validated in Spanish and be consistent with the particular response style of this

group since cross-cultural studies have demonstrated that the roles of culturally meaningful expressions of distress should be central concerns in developing research in cross-cultural psychiatry (10). It is important to recognize that the translation of screening tools in Spanish should be developed using the language and syntax that best represents the cultural peculiarities of the population being studied, or else, the instrument jeopardizes the validity of results.

The sociological and anthropological studies of mental illness have provided many theories about the importance of culture on symptoms' manifestation. The interaction hypothesis proposes: "Sociocultural background factors interact with mental disorders to produce dissimilar behavioral expressions of the same disorder among members of different ethnic groups" (18). It has also been stated that there is a distinction between disease and illness: disease is the biological malfunction but illness is the personal interpretation and reaction to that disease, which is socially and culturally bound (19). Thus, it could be said that, although the disease of depression may be universally described using the same symptoms, the illness manifested by each individual may be particular, depending on sociocultural background.

Several studies about cultural manifestations of psychiatric illnesses have indeed identified in Puerto Ricans characteristic behavioral expressions. The most studied has been "ataques de nervios", which is a "culturally sanctioned response to acute stressful experiences" (20). This "cultural response" is manifested with anxiety symptoms, which are similar to those frequently observed in patients with panic attacks. This socially accepted reaction should be observed in particular social context. It has also been observed by researchers, that Puerto Ricans, when given a structured diagnostic instrument, had the tendency to give positive answers on questions related to perceptual experiences. The cases were evaluated and it was found that on a given social context, those cultural expressions were falsely reported as psychotic symptoms (21). Another consideration is the fact that in epidemiological studies it has been found that Puerto Ricans have higher rates of somatization disorders, so it is important to consider physical symptoms as possible manifestations of psychiatric disease (22). These are important considerations when using diagnostic instruments that are not culturally sensitive, not only with Puerto Ricans, but with other ethnic groups (20).

Since previous research projects have demonstrated the need to have screening tools for depression, and the Zung's translation in Spanish has been used in Puerto Ricans (Colón et al) (17), it has been considered important to evaluate this screening tool. The main objective of this

research study is to assess if the Spanish translation of the Zung SDS is adequate to screen for depression in Puerto Ricans, and if the translation considers the sociocultural peculiarities of this group. The two samples were obtained on a voluntary basis, of general Puerto Rican population visiting a public multi store center, on two different days, one day of the "Mental Health Awareness Week" and another day of a psychiatry residency service promotion to the community.

Instrumentation

Although there are various standardized scales and inventories for assessing depression, the Zung SDS has been well known for its easy application, high sensitivity, and accuracy to detect the diagnosis (3).

This scale was developed and published in 1965 by William W.K. Zung, M.D., as part of a psychiatric research project, which pretended to assess depression in a simple and meaningful way for patients. The sample used in this study were patients already diagnosed with depression. The scale was designed considering the diagnostic criteria, including the most important symptoms of the illness, while being easy and self-administered (23).

The Zung SDS was developed using the clinical diagnostic criteria of depression under the categories of pervasive affect and physiological and psychological equivalents. The scale consists of 20 statements taken verbatim from patients' records, which represented the particular symptoms of depression. Ten of these items were worded positively and ten negatively. Patients were asked to rate those statements in terms of application to their lives, at the moment of testing and using the following quantitative method: *little of the time, some of the time, good part of the time, or most of the time*. A value of "1", "2", "3", or "4" is assigned to each response depending whether the item is worded positive or negatively. The value "1" was given to answers that were less suggestive of depressive symptoms, while "4" was to be used for answers highly suggestive of depression. The sum of the values obtained in the 20-items was divided by the maximum possible score of 80, and expressed as a decimal. This score gives the index for the Zung SDS, which estimates the severity of depressive symptoms; and because of this scale's design and construction, patients with more depressive symptoms have a higher score (23).

According to this scale, patients symptoms are classified into the following categories of severity: *no depressive symptoms (raw score less than 50), mild depression symptoms (between 50 and 59), moderate depression symptoms (between 60 and 69), and severe to extreme depression symptoms (70 or higher)(23)*.

The Zung SDS' Spanish translation has been distributed by Eli Lilly Pharmaceuticals, but no information of the translation process was provided. There are no validity studies of this version in Spanish, although literature reports a study made in Spain, which validated another version in Spanish of this instrument (24) and there are other studies that have used other Spanish versions (25).

Methods

The study was conducted in Plaza Carolina Shopping Center in the Metropolitan Area of Carolina, Puerto Rico, during September 16, 2000 (Sample 1) and October 6, 2000 (Sample 2). The Zung SDS, Spanish translation, was administered to individuals who voluntarily approached the booth. They were offered educational materials and invited to participate of the activity. Individuals were oriented about the use and purpose of the scale once they agreed to participate. Then they were instructed on how to complete the instrument and to interpret the results. Subjects received no monetary compensation for their participation. The scale was administered by a group of third and fourth year medical students, a social worker, a psychologist, psychiatry residents, and an attending psychiatrist, as part of a community service. In addition to the 20-items, space was provided for subjects to write date and demographic data, such as name, sex, and age. Each scale was immediately scored after its administration, and the Zung SDS index was obtained for appropriate classification of symptoms severity. Individuals were given a copy of their answers, information about the results and a brief orientation regarding the diagnosis. Those subjects with moderate to significant symptoms were advised to seek treatment, either on University Puerto Rico clinics, or any other mental health facilities, public or private. Volunteers administering the Zung SDS were instructed to refer immediately to the Emergency Room of the UPR Hospital any individual who manifested suicidal intentions or plan.

The scales were grouped according to Zung SDS index in: none or minimal, mild, moderate or severe symptomatology. Incomplete scales or wrongfully marked items were not considered for analysis, though completed scales with missing demographic data were included. Data analysis was done using *Epi Info 6.04 system*, except for *alpha* reliability coefficient, which was calculated with the advantage of *SPSS*. Gender distribution, mean age and symptoms severity distribution were obtained from both samples. The scales with Zung SDS indexes indicating moderate or severe symptoms were further analyzed in terms of gender and age distribution. Bivariate analysis of gender and symptom severity, as well as age and

symptom severity was performed to determine statistical significance of results. The frequency of questions scored "4" in those scales with Zung SDS indexes indicating mild, moderate or severe symptoms was also obtained in order to establish a composite of the most prevalent symptoms in both samples. A level of significance of $p < 0.05$ was established *a priori*.

Results

The analysis of results from the Zung SDS answers provided by the participants in this study ($n=161$ in Sample 1; $n=57$ in Sample 2; total $n=218$) present a predominance of female subjects in both samples (83.5% in Sample 1 and 82.5% in Sample 2), as well as in the range of ages 41-65 years old (46.5% in Sample 1 and 35.1% in Sample 2). (Tables 1, 2). Mean age was 46.9 and 46.8 years for the first and second sample, respectively.

Table 1. Percentage of Subjects on Each Sample by Gender

Gender	Sept. 2000(n=161) (Sample 1)	Oct. 2000 (n=57) (Sample 2)
Female	83.5	82.5
Male	16.5	17.5

In both samples, most participants (47.8% in the first sample and 47.4% in the second sample) had a Zung SDS index score of less than 50, which means absence of psychopathology. (Table 3). Subjects with index scores

Table 2. Percentage of Subjects on Each Sample by Age Group

Age Group	Sept. 2000(n=161) (Sample 1)	Oct. 2000 (n=57) (Sample 2)
0-25 yrs	10.2	21.1
26-40 yrs	29.9	21.0
41-65 yrs	46.5	35.1
> 65 yrs	13.4	22.8

Table 3. Percentage of Subjects on Each Sample by Symptomatology of Depression Using the Zung SDS-Index

Sample	Symptomatology (SDS index <50)	Mild Symptomatology (SDS index 50-59)	Moderate Symptomatology (SDS index 60-69)	Severe Symptomatology (SDS index >=70)
Sept. 2000 (Sample 1)	47.8	21.1	22.4	8.7
Oct. 2000 (Sample 2)	47.4	26.3	14.0	12.3

of mild, moderate or severe depression (Zung SDS index of 50 or more), also evidenced greater distribution of female participants as seen in both samples (91.6% for Sample 1 and 93.3% for Sample 2). (Table 4). When bivariate analysis of gender and Zung SDS index score was

Table 4. Percentage of Subjects with Zung SDS-Index of 50 or more on Each Sample by Gender

Gender	Sept. 2000 (Sample 1)	Oct. 2000 (Sample 2)
Female	91.6	93.3
Male	8.4	6.7

performed, this female predominance showed to be statistically significant in both samples ($p=0.00036$, Sample 1; $p=0.0077$, Sample 2). The mean Zung SDS index score for women was 53.27 in Sample 1 and 53.19 in Sample 2; while mean index score for men was 43.23 in Sample 1 and 41.70 in Sample 2, suggesting higher index scores in women, as sustained in numerous studies reported in literature.

In terms of age, the most predominant age group among subjects with Zung SDS index score of 50 or more was found to be 41 to 65 years old in both samples (50.0% and 37.0% for first and second sample, respectively). (Table

Table 5. Percentage of Subjects with Zung SDS-Index of 50 or more on Each Sample by Age Group

Age Group	Sept. 2000 (Sample 1)	Oct. 2000 (Sample 2)
0-25 yrs	8.5	13.0
26-40 yrs	31.7	30.0
41-65 yrs	50.0	37.0
> 65 yrs	9.8	20.0

5). When linear regression was performed, there was also a statistically significant relation between age and Zung SDS index score for both samples (Sample 1 F -test=0.048 and Sample 2 F -test=0.011). In the first sample, the mean Zung SDS index score was 48.35 for the group age 0 to 25; 52.23 for the group age 26 to 40; 52.34 for the group age 41 to 65; and 49.76 for the group age older than 65. In the second sample, the mean Zung SDS index score was 45.08

for the group age 0 to 25; 56.33 for the group age 26 to 40; 52.60 for the group age 41 to 65; and 49.85 for the group age older than 65. The higher mean Zung SDS index scores was among subjects ages 26 to 65, in both samples.

The most predominant symptoms with index scores of mild, moderate or severe depression, from individuals of the first sample were: decreased appetite, 29; sleep disturbance, 25; and decreased libido, 24. The least predominant symptoms for this sample were: tachycardia, 6; suicidal ruminations,

8; and diurnal variation and weight loss, 10. In the second sample, the most predominant symptoms were: sleep disturbance, crying spells, and indecisiveness, each scored 11. The least predominant were: tachycardia, 0; weight loss, 3; and dissatisfaction, 3. The most predominant symptoms of both samples were: sleep disturbance, 36; decreased appetite, 34; and confusion, 33; while the least common were: tachycardia, 6; weight loss, 13; and suicidal ruminations and dissatisfaction, 14, each.

It is important to notice that when both samples were compared, the most commonly reported symptom was sleep disturbance, while tachycardia was the less frequent. (Table 6).

Alpha reliability coefficient, calculated with the total of 218 questionnaires, was 0.8520.

Table 6. Frequency of Answers Suggesting High Symptomatology in Subjects with Zung SDS-Index of 50 or more on Each Sample

Question Number	Sept. 2000 (Sample 1)	Oct. 2000 (Sample 2)	Total (Sample 1+Sample 2)
1	14	5	19
2	10	5	15
3	13	11	24
4	25	11	36
5	29	5	34
6	24	8	32
7	10	3	13
8	19	7	15
9	6	0	6
10	22	6	28
11	23	10	33
12	22	8	30
13	18	6	24
14	18	5	23
15	17	7	24
16	17	11	28
17	14	7	21
18	12	7	19
19	8	6	14
20	11	3	14

Discussion

The Spanish version of the Zung SDS was used in a Puerto Rican convenient sample of adults attending screening activities held at a multi store center. Screening activities were evaluated to determine if they were comparable to other similar activities using the same

instrument. Results from this study demonstrated that women are more likely to participate voluntarily of this kind of survey. This was also observed in the studies done by Magruder and Colón, where similar activities were performed (13,14). This factor may be related to the setting where screenings were conducted, or the fact that more women are willing to participate. As has been reported in this study, as well as in the studies of Magruder and Colón (13,14), a significant correlation between female and high Zung SDS index score was found. Since studies have shown that this diagnosis is more prevalent in women, one could speculate that women are more inclined to participate than men, since women could be more affected by depressive symptoms than men and could be interested to learn more about the disease.

In terms of the participants' age ratio, the sample in the study done by Magruder was predominantly younger than in our study (35 to 44) (16). This was also true in the study done by Colón, in which the group age 26 to 40 was predominant (17). But, although the sample of this study was older, a statistical significance of high Zung SDS index scores was found with the group age 26 to 65, which is similar to the findings in the studies of Magruder and Colón (16, 17). Overall, we may conclude that demographic results from our study were similar to other voluntary screening activities using the Zung SDS in terms of sex predominance, but not on group age. The statistical significance between sex and age and high Zung SDS index scores was found to be similar in the three studies. Thus, it could be said that the use of the Zung SDS, for this study, reproduced the results of similar previous activities. In addition to the reproduction of the results when using the Zung SDS, this Spanish translation presented an acceptable *Alpha* reliability coefficient.

In terms of the most predominant symptoms with index scores of mild, moderate or severe depression, when both samples were merged, these were: sleep disturbance, decreased appetite, and confusion. The least predominant symptoms were: tachycardia, weight loss, and suicidal rumination and dissatisfaction. In the original research project, Zung found that the most prevalent symptoms were: sleep disturbances, fatigue and psychomotor retardation; while the least prevalent were: constipation, crying spells, and irritability (23). In the study made by Colón, the most prevalent symptoms were: psychomotor retardation, confusion, and anhedonia (17). There is no repetition of symptoms in any of the studies, regarding the most or least prevalent. The fact that the Zung SDS scale has not been shown to be useful to characterize depression in a particular individual (27) is an important consideration for these discrepancies, since the relevance of the scale lies on the total score and combination of

possible depressive manifestations and not in individual symptoms. It is important to consider that this scale is a screening tool and its results should be considered to assess which patients will need further evaluation from a mental health professional.

The symptoms tabulation on both samples allowed to identify those more commonly reported by participants, and to assess if there was a predominance of any cultural expression of depressive symptoms among Puerto Ricans (26). Although, the sample size for this study, plus characteristics of the screening instrument, make this observation of the predominant symptoms, to be less important. Further research about the Puerto Ricans' idiosyncratic manifestations of depression, anxiety or other psychiatric symptoms, compared to other ethnic groups, should be considered.

The Zung SDS is one of the most frequently used screening tools to identify depressive symptoms, particularly among primary care physicians. However, studies have shown that it should not be used to characterize depression (27). On the other hand, there are no known validity studies using the Spanish version in Puerto Ricans. The results obtained in our study were comparable to other studies in which the Zung SDS was used at similar activities. Even though the scale is short, has brief statements and presented an acceptable reliability coefficient, the Zung SDS Spanish version, when used in this study, presented language problems for the participants. The most common complain was to understand the meaning of certain words and expressions not common to Puerto Ricans. Limitations were also seen from the fact that it was a voluntary activity and the possibility to attract participants with some knowledge or special interest in depression could be considered a bias affecting demographic findings.

Self-rating instruments also poses limitations since it depends on the participant's interpretation and there is no reliable method to assess whether it is correct or not. This issue is particularly important when screening for depressive symptoms, since other manifestation of the illness, such as psychomotor retardation and diminished concentration, could affect participant's response (27).

Other considerations that should be taken into account for future research, when voluntary screening activities that use self-rating scales are being held, is the need to obtain additional demographic information, medical and psychiatric history, and participant's consent for further and more thorough evaluation. Emphasis should be on screening rather than diagnosing depression.

The validity and cost-effectiveness of screening in primary health care facilities is especially important since it has been estimated that from 6% to 10% of all patients

visiting primary care practitioners for any reason have a major depressive syndrome, and up to 30% of all primary care patients have depressive symptoms (28). Studies on screening for depression have not been conclusive on whether these activities should be established as a standard of care for depression (29). Although, it has been shown that a systematic approach to psychiatric diagnosis as well as the use of short length tools are probably more cost-effective (29).

In Puerto Rico, the use and application of an appropriate self-rating scale in primary care setting, to detect depressive symptoms, was already a concern for researchers here in the Island. Since literature has shown that individuals with psychiatric symptoms tend to consult first with a non-psychiatric physician (30), the use of appropriate language when designing these scales should also be considered. For this reason, it is imperative to have an adequate method available for these health professionals to assess depressive symptoms in order to provide better management and referral to mental health professionals.

Conclusions

The availability of screening tools for depression in an adequate and culturally sensitive translation for Puerto Ricans is a necessity. The self-report scale method was easy to administer and well accepted by the participants. Although the Zung SDS is presented as a self-report scale and was found to be reliable by *Alpha* coefficient and manageable by both the questioner and the participant, the Spanish version used in this activity presented interpretation difficulties. The Zung SDS has been used regularly for activities of screening in Puerto Rico, but since participants of this study confronted language barriers, it is recommendable that a Spanish translation of this scale should be developed taking into consideration the particularities of the Puerto Rican population. The use of other screening tools that have already been validated as being culturally sensitive to Puerto Ricans could also be considered. The cultural and language peculiarities of Puerto Ricans should always be important when developing screening tools for this population and it is recommended that a depression scale that is validated in Spanish for a Puerto Rican population should be used in future activities of this type.

Resumen

El cernimiento voluntario de la depresión ha demostrado ser costo-efectivo. Los materiales de cernimiento utilizados en Puerto Rico deben ser validados

en español y deben ser consistentes con las particularidades del modo de respuesta de esta población. El propósito de este estudio es evaluar la traducción en español de la escala Zung para verificar si toma en consideración las peculiaridades socioculturales de este grupo. A pesar de que la escala demostró consistencia por coeficiente *Alpha* y fue bien manejada por el entrevistado y el entrevistador, presentó dificultades de lenguaje. Se recomienda que se desarrolle una traducción de esta escala que tome en consideración las particularidades de la población puertorriqueña o que se utilicen escalas ya validadas en Puerto Rico para cementamiento.

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