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Geriatric Depression Scale as a Community Screening Instrument for Elderly Chinese Immigrants

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ABSTRACT. Depression is the most prevalent mental health problem among the elderly, including Chinese-American elderly. A Chinese-language version of the popular Geriatric Depression Scale Long Form (GDS-LF) and Short Form (GDS-SF) was developed. Based on the responses of 50 elderly Chinese immigrants to the U.S. (25 women and 25 men), the GDS-LF evidenced high internal consistency but the GDS-SF did not. Factor analysis was then used to develop a new version of the GDS-SF, which was internally consistent. The revised GDS-SF is an important and easy-to-administer tool for community screening of depression among elderly Chinese immigrants.

Data from the 1990 census indicate that the population of Asian Americans and other immigrants grew by 108% from 1980 to 1990, whereas the total U.S. population grew only by 10% (U.S. Bureau of the Census, 1991). The increasing numbers of Asian and other immigrants have resulted in greater demands for research sensitive to cross-cultural methodological issues. Although depression is a common psychological problem among the elderly, few researchers have studied depression in older Chinese Americans or immigrants. In addition, the possibility of cultural effects in measuring depression has complicated the accurate assessment of depression in this population. Mui (1993) suggested that reported ethnic differences in depression may reflect different modes of expression rather than true differences in mental health status. In addition, instruments to measure depression may not be sufficiently culturally sensitive to assess the mental health of Chinese-American elderly subjects.

Brink and his colleagues (1982) developed a 30-item easy-to-administer inventory to serve as a screening test for depression among the elderly—the Geriatric Depression Scale–Long Form (GDS-LF). It was further validated (Yesavage et al., 1983) and has been shown to have excellent internal consistency (alpha = .94) and test-retest stability (r = .85), as well as good construct

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and discriminant validity. It has been used widely among community and institutionalized elderly (see Table 1 for a list of GDS validation studies).

Sheikh and Yesavage (1986) also developed a GDS-Short Form (GDS-SF) in order to make this measure a simpler screening device for depression. They selected 15 questions from the GDS-LF that had the highest correlation with depressive symptoms to their validation study. Their findings (using 18 normal elderly and 17 depressed elderly) provided support for the utility of the GDS-SF in successfully differentiating depressed from nondepressed subjects (see Table 2).

Recently, researchers have used the GDS with Chinese elderly populations. Chiu and his colleagues (1993) established the reliability and validity of the original 30-item GDS-LF (alpha = .92) among both normal and depressed Chinese elderly in Hong Kong. The GDS-SF was also validated (alpha = .90) with both depressed and nondepressed Chinese elders in Hong Kong (Lee et al., 1993). Both the GDS-LF and GDS-SF were found to be reliable instruments for the Chinese elderly. The GDS-SF later was used to assess the prevalence of depressive symptoms among Chinese elders aged 70 and over in a Hong Kong citywide random sampling survey (Woo et al., 1994). The overall prevalence of moderate to severe depression for this Hong Kong elderly Chinese sample was 29.2% for men and 41.1% for women (using a cutoff point of 8).

In the U.S., epidemiologic studies have examined the prevalence of depressive symptoms in community samples using a variety of self-rating scales and interviews. Depending on the selected cutoff points and instruments, the reported prevalence of depression among those over 65 living in the community ranged from 2% to 5% for major depressive disorders to as high as 44% to 50% for depressive symptoms (Blazer et al., 1988).

Although the GDS has been widely used among the general population of elderly in the U.S., and it has been tested with Chinese elderly in Hong Kong, it has never been tested with Chinese-American immigrants. In the present study, I assessed the cultural appropriateness, reliability, and validity of the GDS for this group. Because of the importance of having a short form of the instrument for elderly respondents who may tire easily or have difficulty concentrating, I also tested the reliability of the GDS-SF developed by Sheikh and Yesavage (1986). The long-term goal is to make the Chinese version of the GDS-SF available in community-based agencies and other human service agencies so as to facilitate screening, early detection, and early intervention with Chinese-American elderly and immigrant populations.

METHOD

Subjects

Subjects were 50 Chinese elderly immigrants living in a major U.S. metropolitan area who volunteered to participate in the study (age range, 62 to 91; mean

TABLE 1. Geriatric Depression Scale Validation Studies

Reference	Sample/Setting	Reliability/Validity	Sensitivity/Specificity
Abraham, 1991	n = 76 (depressed nursing home residents)	Koder-Richardson KR-20 coefficients ranged from .69–.88	Not reported
Agrell & Dehlin, 1989	n = 40 stroke patients, 17 depressed patients (in day hospital & nursing home)	Concurrent validity with SDS = .88, with CES-D = .82	Cutoff score ≥ 10; sensitivity = 88%; specificity = 64%
Alden et al., 1989	n = 81 (34 nursing home residents & 47 healthy elders)	GDS Long & Short Forms correlated (r = .66, $p < .01$)	Not reported
Burke et al., 1989	n = 142 (70 not demented; 72 mildly demented)	Not reported	For intact group, cutoff range = 14/16 (sensitivity/specificity 80%/78% to 73%/88%)
Burke et al., 1992	n = 194 (cognitively intact & impaired patients in outpatient assessment clinic)	Not reported	Cutoff score ≥ 11. For impaired group: sensitivity = 74%, specificity = 66%. For intact group: sensitivity = 81%, specificity = 61%
Cwikel & Ritchie, 1988	n = 40 (20 depressed, 20 control elders in Jerusalem, Israel). Use GDS-Short Form	Not reported	Cutoff score ≥ 7; sensitivity = 70%; specificity = 75%

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TABLE 1. Continued

Reference	Sample/Setting	Reliability/Validity	Sensitivity/Specificity
Dunn & Sacco, 1989	*n* = 439 (community-dwelling elderly)	Concurrent validity with DSC = .82, with SDS = .59; alpha = .91	Cutoff score ≥ 11; sensitivity = 83%; specificity = 82%
Feher et al., 1992	*n* = 83 (mild to moderate probable Alzheimer's patients)	Concurrent validity with Hamilton Depression Scale = .58	Not reported
Jamison & Scogin, 1992	*n* = 68 (depressed and nondepressed older persons)	Alpha = .94; split-half reliability = .94; concurrent validity with HRS-D = .72, with BDI = .67	Cutoff score ≥ 11; sensitivity = 84%; specificity = 95%
Lee et al., 1993	*n* = 193 (113 normals & 80 depressed) Hong Kong elders. Use GDS Short Form	Alpha = .90; split-half reliability = .84	Cutoff score ≥ 8; sensitivity = 96.3%; specificity = 87.5%
Lichtenberg et al., 1992	*n* = 34 (demented patients)	Not reported	Cutoff score ≥ 11; sensitivity = 82%; specificity = 88%
Norris et al., 1987	*n* = 68 (geriatric outpatients)	Concurrent validity with BDI = .85	Cutoff score ≥ 10; sensitivity = 89%; specificity = 73%
Olin et al., 1992	*n* = 50 (25 depressed outpatients & 25 healthy controls)	Concurrent validity with BDI = .91	Cutoff score ≥ 11; sensitivity = 96%; specificity = 96%

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TABLE 1. Continued

Reference	Sample/Setting	Reliability/Validity	Sensitivity/Specificity
O'Riordan et al., 1990	n = 111 (patients in geriatric unit)	Not reported	Cutoff score ≥ 11; sensitivity = 96%; specificity = 89%
Parmelee et al., 1989	n = 806 (nursing home & congregate apartment residents)	Alpha = .92 for impaired group; alpha = .91 for intact group	Cutoff score ≥ 11; sensitivity = 92.1%; specificity = 86.2%
Sheikh & Yesavage, 1986	n = 35 (normal = 18, depressed patients = 17)	Correlation between GDS Long & Short Form = .84 ($p < .001$)	Not reported
Snowdon, 1990	n = 69 (50 in aged hostels & 19 in nursing home), in Sydney, Australia	Not reported	Cutoff score ≥ 11; sensitivity = 93%; specificity = 83%
Woo et al., 1994	Older men = 877, older women = 734; use GDS-Short Form	Not reported	Cutoff score ≥ 8; sensitivity = 96.3%; specificity = 87.5%
Yesavage et al., 1983	n = 100 (60 depressed patients & 40 community controls) in Santa Clara County, CA	Alpha = .94; split-half = .94; test-retest = .85; convergent validity with HRS-D = .83, with SDS = .84	Cutoff score ≥ 11; sensitivity = 84%; specificity = 95%

Note. Sensitivity/specificity were determined according to physician's diagnosis of depression. BDI = Beck Depression Inventory; CES-D = Center for Epidemiologic Studies Depression Scale; DSC = Depression Symptom Checklist; GDS = Geriatric Depression Scale; HRS-D = Hamilton Rating Scale for Depression; SDS = Zung Self-Rating Depression Scale.

TABLE 2. Descriptive Statistics of the Geriatric Depression Scale

		Percentage of Chinese Elders Who Endorsed Statement
1. *Satisfied with life*[a,b]		*13.9*
2. *Dropped activities/interests*[a,b]		*26.8*
3. *Life is empty*[a,b]		*36.8*
4. *Often get bored* [a,b]		*28.6*
5. Hopeful about the future		47.6
6. Obsessive thoughts		27.5
7. *In good spirits*[a,b]		*22.0*
8. *Fear bad things*[a,b]		*30.0*
9. *Happy most of the time*[a,b]		*26.8*
10. Often feel helpless[a]		17.1
11. *Often get restless*[b]		*21.9*
12. Prefer to stay home[a]		53.7
13. *Worry about the future*[b]		*20.0*
14. *Problem with memory*[a,b]		*47.5*
15. Wonderful to be alive[a]		17.9
16. *Feel downhearted and blue*[b]		*20.5*
17. *Feel worthless*[a,b]		*22.0*
18. Worry about the past		12.5
19. Life is exciting		30.0
20. Hard to start new projects		32.4
21. Full of energy[a]		25.0
22. Situation hopeless[a]		24.4
23. *Others are better off* [a,b]		*38.5*
24. *Upset over little things*[b]		*17.5*
25. *Feel like crying*[b]		*13.8*
26. Trouble concentrating		17.8
27. Enjoy getting up in the morning		15.4
28. Avoid social gatherings		19.5
29. Easy to make decisions		12.8
30. Mind as clear as used to be		37.5
GDS-Long Form	($M \pm SD$ =	7.2 ± 5.6)
Normal (0–10)		82.0
Mildly depressed (11–20)		16.0
Moderate/severe (21–30)		2.0
GDS-Short Form	($M \pm SD$ =	3.9 ± 3.4)
Normal (0–4)		74.0
Mildly depressed (5–9)		20.0
Moderate/severe (10–15)		6.0
New GDS-Short Form	($M \pm SD$ =	3.6 ± 3.4)
Normal (0–4)		70.0
Mildly depressed (5–9)		22.0
Moderate/severe (10–15)		8.0

Note. Items 2–4, 6, 8, 10–14, 16–18, 20, 22–26, and 28 are scored 1 point if answered "yes," and Items 1, 5, 7, 9, 15, 19, 21, 27, 29, and 30 are scored 1 point if answered "no." Higher scores indicate higher levels of depression. The italicized items had no missing data and were highly correlated with the total GDS-Long Form score. These italicized items make up the new GDS-Short Form. GDS = Geriatric Depression Scale.

[a]Sheikh & Yesavage (1986) GDS-Short Form items. [b]New GDS-Short Form for Chinese elders.

= 75.1; *SD* = 6.5; male = 25, female = 25). All subjects were participants in senior centers and congregate meal sites. The majority of subjects had finished only 8 years of education. The average length of stay in the U.S. was 19 years, and they were all immigrants born in Asian countries. Their income levels were low, with over 80% receiving less than $500 a month from either Social Security or Supplemental Security Income (a disability income program for the indigent).

Measures

The subjects were administered a Chinese questionnaire that was developed to assess sociodemographics, informal support system, health status, and mental health status. The GDS-LF was used to measure depression. The GDS-LF was chosen because it is one of the most widely used and highly recommended screening measures for depression in older adults (Thompson et al., 1988). The assessment of depression is more difficult in an elderly population than in a younger population because of the higher prevalence of somatic complaints, genuine physical problems, and medication use. One of the strengths of the GDS-LF is that it contains no somatic items that can introduce age bias in the depression screening scale and inflate total scores among the elderly population (Berry et al., 1984). Another strength of the GDS is its simple yes/no response format for statement endorsement; this is preferable for subjects with limited formal education. The GDS-LF measures depression, with scores ranging from 0 to 30. Those who report 10 or fewer symptoms are considered as normal, 11 to 20 symptoms as mildly depressed, and 21 or more symptoms as moderately to severely depressed (Brink et al., 1982).

Translation and Back-Translation of GDS-LF

The GDS-LF was translated into Chinese and was back-translated from Chinese to English using techniques consistent with the literature to ensure that measures would be understandable and culturally meaningful (Brislin, 1986). The GDS-LF was translated into Chinese by a bilingual mental health professional and then translated into English by three other bilingual mental health professionals. The first back-translation was then translated (for a second time) into Chinese and compared with the original Chinese translation. During this process, the team of four bilingual professionals compared the various translations to ascertain that the items were culturally valid and matched the intent of the original instrument. The final Chinese version of the GDS-LF was compared to the GDS-LF Chinese version done in Hong Kong (Chiu et al., 1993). There were slight discrepancies between our Chinese translation and the Hong Kong Chinese version. Translation is approximate and it is important to preserve the connotation of questions (Robins, 1989). Therefore, a decision was made to select wordings that were easier to understand and yet would be consistent with the intent of the original instrument (see Table 2). Content and face validity of

the GDS-LF Chinese version were established through intensive review of the instrument by the panel of four bilingual experts to ascertain and confirm its vocabulary and syntax.

Procedure

Community-dwelling Chinese elderly immigrants were approached and interviewed by the researcher at senior centers and congregate meal sites in a major U.S. metropolitan area. Subjects were included in the study when they were judged to be without cognitive impairment (those who scored 8 or more points on the test) by using the Chinese version of the Short Portable Mental Status Questionnaire (SPMSQ) (Chi & Boey, 1994). No one was screened out by this procedure and the response rate was 89%. All the Chinese respondents who gave consent and volunteered for the study were administered the GDS-LF orally because many of them were illiterate. Only the 30-item GDS-LF was administered to the elderly Chinese subjects, and the 15 items of the short version (Sheikh & Yesavage, 1986) were subsequently selected by me for further analyses. The GDS-SF measures depression, with scores ranging from 0 to 15. Those who reported 4 or fewer symptoms were considered as normal, 5 to 9 symptoms as mildly depressed, and 10 or more symptoms as moderately to severely depressed (Sheikh & Yesavage, 1986).

RESULTS

Scores on the GDS-LF for the Chinese elders ranged from 0 to 25 with a mean of 7.2 ($SD = 5.6$). The median was 6, and skewness was .82. Eighteen percent of the sample scored at 11 or above, indicating possible depressive symptomatology. The Cronbach's alpha coefficient of the GDS-LF was .90 and the split-half reliability coefficient was .82, indicating good internal consistency and acceptable reliability of this scale. GDS-SF scores ranged from 0 to 11 with a mean of 3.9 ($SD = 2.9$). The median was 3 and the skewness was .69. Twenty-six percent of the sample scored at 5 or above, indicating possible depressive symptomatology. The Cronbach's alpha coefficient of the GDS-SF was .72, which indicates the reliability of this scale was not as good as that of the GDS-LF.

Because the Sheikh and Yesavage short form of the GDS had less than acceptable internal consistency, I then examined the long form to identify culturally meaningful items in the scale. It was assumed that an unanswered item might be a reflection that that item was difficult for the elderly Chinese-American respondents to comprehend or was culturally irrelevant. Examination of the long form revealed 15 items that had no missing data and were highly correlated with the total GDS-LF score. (These items are italicized in Table 2 and make up the new GDS-SF.)

A principal component analysis with varimax rotation was conducted with these 15 selected items. This procedure yielded a two-factor solution. The

factors could be described as happy and sad mood. Factor loadings are presented in Table 3. The Cronbach's alpha coefficient for these 15 items is .89, which is almost as high as that of the original GDS-LF. Ten of the 15 items overlap with those of the old GDS-SF, but 5 of them are different. These different items are culturally more meaningful for elderly Chinese subjects. These new items are: No. 11 (get restless and fidgety); No. 13 (worry about future); No. 16 (feel downhearted and blue); No. 24 (get upset about little things); and No. 25 (feel like crying). The replaced items are: No. 10 (feel helpless); No. 12 (prefer to stay home); No. 15 (wonderful to be alive); No. 21 (full of energy); and No. 22 (situation hopeless). The five replaced items are culturally less relevant. For example, "Prefer to stay home" is almost a virtue in Chinese culture and older people stay home especially to take care of grandchildren. This is a highly regarded activity. Therefore, a statement by a Chinese elder that he or she prefers to stay at home may not be an indicator of depression. Also, the remaining replaced items are extreme in the feelings expressed. To answer questions that indicate extreme responses to life situations is inconsistent with Chinese culture; Chinese people put a lot of emphasis on doing things in moderation. A Chinese-language version of the new GDS-SF is presented in Table 4.

In order to assess the validity and utility of the GDS-LF and this new GDS-SF, I ran parallel regression models using the same set of independent variables (age, sex, self-rated health, living alone, and perceived satisfaction with family help). Results of the two regression models were similar in terms of significant findings and the amount of variance explained (.49/.50), indicating that this new GDS-SF for Chinese elders is a good substitute for the GDS-LF. The relative importance of explaining variables in the models is as follows: self-rated health (beta = .44/.43), living alone (beta = .36/.39), and perceived satisfaction with

TABLE 3. Factor Structure and Factor Loading for the New Geriatric Depression Scale Short Form

Items	Factor 1 (Happy Mood)	Factor 2 (Sad Mood)
1. Satisfied with life	.88	.19
7. In good spirits	.87	.10
9. Happy most of the time	.71	.02
2. Dropped activities/interests	.07	.76
3. Life is empty	.22	.75
4. Often get bored	.00	.72
8. Fear bad things	.21	.70
11. Often get restless	.11	.69
13. Worry about the future	.03	.66
14. Problem with memory	–.22	.65
16. Feel downhearted and blue	.31	.61
17. Feel worthless	.29	.59
23. Others are better off	.37	.56
24. Upset over little things	.10	.53
25. Feel like crying	–.21	.50

TABLE 4. New Geriatric Depression Scale Short Form for Chinese Elders

1. 你對自己的生活大致上滿意嗎？
   Are you basically satisfied with your life?
2. 你是否已放棄了很多活動和有興趣的事呢？
   Have you dropped many of your activities and interests?
3. 你是否覺得生活無意思呢？
   Do you feel that your life is empty?
4. 你是否時常感到煩悶呢？
   Do you often get bored?
5. 你是否常常感到精神很好呢？
   Are you in good spirits most of the time?
6. 你是否怕將會有不好的事情發生在你身上呢？
   Are you afraid that something bad is going to happen to you?
7. 你是否很多時都感到快樂呢？
   Do you feel happy most of the time?
8. 你是否常常感煩躁和不安寧呢？
   Do you often get restless and fidgety?
9. 你是否常常擔心未來的事情呢？
   Do you frequently worry about the future?
10. 你是否覺得你比其他人有多一些記憶力的問題呢？
    Do you feel you have more problems with memory than most?
11. 你是否常常感到情緒低落及苦悶呢？
    Do you often feel downhearted and blue?
12. 你是否覺得自己現在是十分之無用的呢？
    Do you feel pretty worthless the way you are now?
13. 你覺得很多人的情況都比你好嗎？
    Do you think that most people are better off than you are?
14. 你是否常為著很小的事而感到不開心呢？
    Do you frequently get upset over little things?
15. 你是否時常想哭呢？
    Do you frequently feel like crying?

family help (beta = -.29/-.26). Depression for Chinese elders was associated with poor perceived health, living alone, and dissatisfaction with the quality of family help. Poor health and living alone as predictors of depression are consistent with the findings of studies done on White and other ethnic elderly populations (Burnette & Mui, 1994; Mui, 1993; Mui & Burnette, 1996). The correlation between the GDS-LF and the new GDS-SF was .93 ($p < .0001$), indicating that the new short form is an appropriate substitute for the long form as a community screening instrument.

LIMITATIONS FOR THE STUDY

Because all subjects were volunteers, the findings of this study are probably biased in favor of healthier and nondepressed individuals. In addition, the sample size was relatively small. The obtained "prevalence rates" probably underestimate the true prevalence of depression among the immigrant Chinese-American elders. Another limitation is that there are no data on test-retest

reliability and no data on validity against psychiatric diagnosis. More validation research is needed to compare both normal and clinical samples of elderly Chinese. The sensitivity and specificity rates could be determined if psychiatric diagnosis is compared against GDS data. The findings of the present study are most appropriately generalizable to Chinese immigrants who are not demented and who reside in the community.

DISCUSSION

The present study aimed at developing and evaluating the appropriateness of the GDS for use in older Chinese immigrants. In general, results showed that both the GDS-LF and a new GDS-SF developed by the author were reliable screening devices for assessing depression in a community sample. Also, the new GDS-SF is more desirable than the long form for use in Chinese Americans or immigrants because it is shorter and may be culturally more sensitive. Based on the new GDS-SF, and a cutoff point of 5 or above, about one third of a community sample of elderly Chinese-American immigrants were moderately to severely depressed. When the original GDS-SF with the same cutoff point was used, 26% of this sample were considered to be moderately to severely depressed. Using the original GDS-SF and a cutoff point of 8 or above, Woo and colleagues (1994) in Hong Kong found an overall prevalence rate of 35% (adjusted rate = 29.2%), which was much higher than the rate found in the present study, despite a higher cutoff point for depression. Based on Lee and colleagues' (1993) validation study, Woo and co-workers used a cutoff criterion of 8 points, which was considered to be a maximal cutoff point, yielding high sensitivity and specificity rates. If they had used the suggested criterion (cutoff 5 or greater) by Sheikh and Yesavage (1986), the prevalence would be even higher. The higher prevalence of depression in the Hong Kong elderly sample may be due in part to Hong Kong's political and economic instability and the tension between China and Hong Kong. Because of restrictive immigration policies, many adult children of elderly Hong Kong Chinese have migrated overseas, leaving their older parents behind.

Furthermore, age and gender did not correlate with depression (Mui, 1996). Elderly Chinese respondents in the present study admitted to depressive symptoms at a rate that was lower than that found in other research (Woo et al., 1994). One study found that elderly Chinese immigrants showed greater moderation and reported fewer physical and mental health problems than white American elderly (Raskin et al., 1992). The self-rated depression measure in the present study may have been affected by the cultural norm of moderation in expressing feelings and emotions. In future studies on this population, I plan to employ a social desirability scale to control for this response tendency.

Because the items of the new GDS-SF are simple and easy to understand, it is likely that it would be a valid measure of depression even for those older persons with mild cognitive impairment. For older persons with greater levels

of cognitive impairment, clinicians may have to rely on other means of assessment. Although the GDS-LF and the author's new GDS-SF were both reliable for use with a U.S. sample of noninstitutionalized Chinese-American elderly, these instruments should be cross-validated on other Chinese samples, so as to further evaluate the findings' generalizability. Moreover, the respondents were healthy volunteers in the community and the results of the study may be different among institutionalized patients or the general Chinese-American elderly population. In any case, the GDS appears to be a valuable method for screening elderly Chinese immigrants for depression.

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