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Exploring the relationship between physical health, depressive symptoms, and depression diagnoses in Hispanic dementia caregivers

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Abstract

Objectives—The present study examined the relationship between self-reported physical health, depressive symptoms, and the occurrence of depression diagnosis in Hispanic female dementia caregivers.

Participants—Participants were 89 Hispanic female dementia caregivers.

Design—This study used a cross-sectional design. Baseline depression and physical health data were collected from participants enrolled in the 'Reducing Stress in Hispanic Anglo Dementia Caregivers' study sponsored by the National Institute on Aging.

Measurements—Physical health was assessed using the Medical Outcome Study Short Form-36 (SF-36), a one-item self-report health rating, body mass index, and the presence or history of self-reported physical illness. Depressive symptoms were assessed using the Center for Epidemiologic Studies – Depression Scale (CES-D). The occurrence of depression diagnosis was assessed using the Clinical Interview for DSM-IV Axis I Disorders (SCID).

Analysis—Multiple linear and logistic regression analysis was used to examine the extent to which indices of physical health and depressive symptoms accounted for variance in participants' depressive symptoms and depressive diagnoses.

Results—Self-reported indices of health (e.g., SF-36) accounted for a significant portion of variance in both CES-D scores and SCID diagnoses. Caregivers who reported worsened health tended to report increased symptoms of depression on the CES-D and increased likelihood of an SCID diagnosis of a depressive disorder.

Conclusion—Self-reported health indices are helpful in identifying Hispanic dementia caregivers at risk for clinical levels of depression.

Keywords

depression; physical health; Hispanics dementia caregivers

Introduction

Dementia caregivers (DCs) are at increased risk for a wide variety of negative physical and psychological health outcomes, including bodily pains, high blood pressure, allergies, use of nonprescription pain medication, and depression (Cohen, Kessler, & Underwood-Gordon, 1997; Coon, Thompson, Steffen, Sorocco, & Gallagher-Thompson, 2003; Gignac & Gottlieb, 1996; Jutras & Lavoie, 1995; Pinquart & Sorensen, 2007; Vitaliano, Zhang, & Scanlan, 2003). The negative health effects of serving in the DC role can severely diminish their quality of life and in some cases accelerate the need for institutionalization of care receivers (Gaugler, Leitsch, Zarit, & Pearlin, 2000).

Several studies show a positive association between poor self-reported physical health and depression in DC's (Kim & Lee, 2003; O'Rourke, Cappeliez, & Guindon, 2003; Pinquart & Sorensen, 2003; Ranney & Aranda, 2001) and the strength of this association can increase over time (Roth, Haley, Owen, Clay, & Gode, 2001). For example, a recent study showed that poor physical health problems were predictive of DCs self-reported depressive symptoms 5 years later (O'Rourke et al., 2003). To further clarify this relationship, researchers have studied 'subjective' (i.e., self-report) and 'objective' (e.g., the presence of physical illness) indices of physical health and found them to be significant predictors of depressive symptoms in DCs (O'Rourke et al., 2003).

One important limitation of prior research in this area is an emphasis on the inclusion of Caucasian participants or a failure to specify the ethnic make up of the study sample (Covinsky et al., 2003; McNaughton, Patterson, Smith, & Grant, 1995). Accordingly, little attention has been paid to understanding how physical health and depression interact in Hispanic DCs. Hispanic individuals are the fastest growing minority group in the United States with current estimates suggesting that one in seven people in the United States is Hispanic. Furthermore, this number is expected to continue to rise (Jelinek, 2005). By 2050, Hispanic individuals are expected to make up approximately 16% of the older adult population (Alzheimer's Association, 2007) and this will undoubtedly result in increases in the number of Hispanic older adults requiring long-term care due to Alzheimer's disease or other forms of dementia, and increases in the number of families undertaking the informal caregiving role.

There are a handful of studies that have examined the link between physical health and depression in Hispanic DCs (O'Rourke et al., 2003; Ranney & Aranda, 2001). Ranney and Aranda conducted a cross-sectional study that included 97 Hispanic DCs. Physical health was assessed using a single-item subjective health rating to assess DCs' health status. Depressive symptoms were assessed using a 22-item screening tool based on the DSM-III-R criteria for depression. Results indicated that poor self-report of physical health was associated with increased depressive symptoms. One limitation of this study was the lack of an indicator of objective health. Research shows that assessing both subjective and objective physical health may be important given recent evidence that more objective indices can contribute additional explanatory power in predicting depression in DCs (O'Rourke et al., 2003).

This finding may be at least partly due to the manner in which many depressed Hispanic individuals manifest their symptoms. Studies show somatic presentations of depression to be more common in Hispanics than other ethnic groups (Canino, Rubio-Stipec, Canino, & Escobar, 1992; Mezzich & Raab, 1980). Cultural expectations about how to express depression likely contributes to this finding. For example, Hispanic individuals may not acknowledge symptoms of depression directly as they may consider them 'acts of God' or expressions of them as 'impolite' and as a result, are expected to 'suffer in silence' (Purnall,

1998). Accordingly, a somatic presentation style is particularly common among depressed Hispanics in primary care settings (Hough et al., 1987), which may be the result of their expectation that physicians will focus more on the physical components of health.

Cultural values and beliefs may also influence the extent to which Hispanic DCs express depressive symptoms. Hispanic individuals strongly endorse the value of ‘familismo’ which refers to a sense of collectivism or a sense of duty and loyalty that one feels towards family members (Sabogal, Marin, Otero-Sabogal, Marin, & Perez-Stable, 1987). A strong sense of familismo also means that a person is more likely to turn to one’s family when help is needed. In addition, gender expectations about family roles such as caregiving are common (e.g., caregiving is a ‘woman’s job’) and are expected to be accepted with a sense of loyalty and as a family duty.

One might expect caregivers holding these values to experience less burden and fewer depressive symptoms. It has been suggested that these familismo may act as a buffer against some of the negative effects of caregiving (Losada et al., 2006; Shurgot, & Knight, 2004). However, these values may also negatively impact DCs if it means that help-seeking outside the family is not permitted until later stages of dementia, when more significant behavioral problems are commonly present (Allery et al., 2004; Neary & Mahoney, 2005). This may be particularly problematic for caregivers receiving little or no family support. Research has shown that Hispanic DCs report the least amount of social support when compared with other ethnic groups of DCs (Adams, Aranda, Kemp & Takagi, 2002). Thus, when the value of familismo is not in operation (e.g., due to increasing acculturation of the family) Hispanic DCs may experience the same level or perhaps even greater degree of depressive symptoms than other ethnic and cultural groups of caregivers (Talamantes, Trejo, Jimenez, & Gallagher- Thompson, 2006).

The present study attempts to build on previous findings by further examining the association between both subjective and objective indices of physical health and depression in Hispanic DCs. This study also deliberately used two indicators of caregiver depression – the Center for Epidemiologic Studies Depression Scale (CES-D) and Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I, nonpatient edition) (First, Spitzer, Gibbon, & Williams, 2008). This decision was based on prior research suggesting that depressed persons are commonly biased in their self-appraisal of physical health in the negative direction (Croyle & Uretsky, 1987). Therefore, in an attempt to minimize biased appraisals of DC depression, we utilized diagnostic information from the SCID. Two specific hypotheses were tested:

1. First, we hypothesize that subjective and objective indices of physical health will each contribute independent variance to depressive symptoms in Hispanic caregivers.
2. Second, we hypothesize that subjective and objective indices of physical health will each contribute independent variance to the occurrence of depression diagnoses as determined by use of the SCID-I.

Method

Participants

Participants were 89 self-identified Hispanic women DCs enrolled in an intervention study called ‘Reducing Stress in Hispanic and Anglo Dementia Family Caregivers’ which was part of a program project grant entitled: ‘Stress, the HPA, and Aging’ – grant # AG 18784 from the National Institute on Aging. Of the 89 Hispanic/Latino women participating in this study, 74% ($n = 66$) self-identified as Mexican/Mexican-American/Chicana and 26% ($n =$

23) self-identified as a mixture of Central American, South American, Cuban/Cuban-American, and Puerto Rican/Puerto Rican-American.

Participants were women, at least 21 years of age, who provided 8 h or more a week of care for at least 6 months to a family member. Participation required caring for a family member needing assistance with at least two instrumental activities of daily living (IADL, Katz, Ford, Moskowitz, Jackson, & Jaffee, 1963) or one activity of daily living (ADL, Lawton & Brody, 1969). Either a physician's diagnosis of dementia or a recent mini-mental state examination (MMSE, Folstein, Folstein, & McHugh, 1975) score less than or equal to 23 was also required for participation. All analyses in the present study were conducted on data obtained during baseline assessment, before random assignment of subjects to one of the intervention conditions.

Procedures

An assortment of strategies was used during the recruitment phase of the project, including referrals from local health and social service professionals, media outlets, and informal sources (i.e., word-of-mouth). Recruitment details are reported elsewhere (Gallagher-Thompson et al., 2004) as are the results of the randomized trial (Gallagher-Thompson, Gray, Dupart, Jimenez, & Thompson, in press). Eligible participants completed a baseline interview during one to two sessions that took place in their home after enrollment. Bilingual/bicultural research assistants, trained in the administration of assessment instruments used in this study screened and interviewed the caregivers. All data were collected in an interview format due to the high likelihood of missing data when relying only on self-report questionnaires (Valle, 2005). Materials were translated into Spanish using accepted forward and back-translation methods (Flaherty et al., 1988). Caregivers had the option to respond in either English or Spanish; 90% selected Spanish. The data reported here are from the baseline interviews, before participation in any intervention.

Measures

Caregiver characteristics—Caregivers were asked: their age, marital status, annual income, relationship to family member with dementia, and number of years providing care. The care recipient's age, IADL/ADL total score, and MMSE score are also reported. IADL/ADL information was obtained from the caregiver; the MMSE was administered to the care-recipient by the research assistant.

Subjective health—The Medical Outcome Study Short Form-36 (SF-36, Ware, Kosinski, & Gandek, 2000) was used as the primary indicator of participants' subjective health. The SF-36 is a valid and reliable measure of health-related quality of life in Hispanic individuals (Peek, Ray, Patel, Stoenbner-May, & Ottenbacher, 2004). The SF-36 consists of eight subscales: (1) General Health – comprising 5-items that assesses general health in terms of personal perceptions; (2) Physical Functioning – a 10-item scale that evaluates the individual's abilities to attend to physical requirements in life; (3) Role Physical – a 4-item scale that assesses the extent physical capabilities limit activities; (4) Role Emotional – 3 items that assess problems with work or daily activities due to emotional factors; (5) Social Functioning – a 2-item scale that assesses the extent to which physical health or emotional problems hindered social interaction; (6) Bodily Pain – a 2-item scale that evaluates the perceived amount of pain experienced and the extent pain has interfered with activities; (7) Vitality – 4 items that assess energy level; and (8) Mental Health – 5 items that assesses mental well-being. These subscales can be aggregated to form two composite scores – mental and physical health (Ware et al., 2000). Higher scores on the sub-scales and composite summary score indicate higher perceived health.

In addition, we administered a single-item question to assess participants' subjective health. Participants were asked to rate their overall health on a 5-point scale ranging from '1 = poor' to '5 = excellent'.

Objective health—To assess objective health, participants were asked to report whether or not they currently have or have ever been told that they have a series of health problems. All 'yes' responses were added to calculate a total number. Thirteen health problems were possible including – arthritis, high blood pressure, heart condition, lung disease, diabetes, stroke, stomach and/or bowel problems, kidney problems, cirrhosis, cancer, and/or vision or hearing difficulties.

Body mass index (BMI) was also calculated (based on weight and height) as an additional measure of each participants overall objective health. BMI is a method for determining whether someone is normal weight, overweight, or obese. These measurements were taken in participants homes by research assistants. BMI categories were defined according to the published clinical guidelines (National Heart, Lung, and Blood Institute, 1998). We divided BMI into four categories: less than 18.5 kgm^{-2} was defined as underweight, $18.5\text{--}24.9 \text{ kgm}^{-2}$ as normal weight, $25.0\text{--}29.9 \text{ kgm}^{-2}$ as overweight, and 30.0 kgm^{-2} as obese.

Depression—This study used two indicators of caregiver depression – the 20-item CES-D (Radloff, 1977) and the SCID-I (research version) (First et al., 2008). All participants were assessed using both instruments.

The CES-D has been shown to have adequate reliability for use as a measure of change in depressive symptoms in older adults (Hertzog, Van Alstine, Usala, & Hultsch, 1990) as well as in cross-cultural research (McDowell & Newell, 1996; Naughton, & Wiklund, 1993). It has been widely used in dementia caregiving research as well (Pinquart & Sorensen, 2003). The CES-D measures the frequency with which respondents have experienced depressive symptoms within the past week. Response options range from 0 ['rarely or none of the time (less than 1 day)'] to 3 ['most or all of the time (5–7 days)']. The reported average coefficient alpha (to index internal consistency) for the CES-D Scale is 0.88, and in this study, reliability was 0.93.

Participants were also classified into two groups (depressed or not depressed) based on their responses and interviewer observations obtained through use of the SCID-I. SCID-I interview consists of an overview section (e.g., demographic information, work history, chief complaint, history of present and past periods of psychiatric illness, treatment history) and a main body consisting of nine diagnostic modules (e.g., mood disorders, psychotic symptoms). Depending on the clinical and/or research focus, interviewers choose which (if not all) modules to include in the interview. Each section of the interview includes probe and suggested follow-up questions. Also, 'skip-out' directions are included so that when an interviewee passes the screening question (i.e., does not respond in a clinical direction) then subsequent questions in that section can be skipped over.

Research has examined the test–retest and inter-rater reliability of the SCID-I for DSM-IV (Zanarini et al., 2000). Test–retest kappa were in the good range for major depression (kappa = 0.61) and lower for dysthymia (kappa = 0.35). The inter-rater reliability was 'excellent' for both major depression and dysthymia (Zanarini et al., 2000).

Bilingual interviewers were trained to administer the SCID modules for depressive disorders (i.e., major and minor depression, and dysthymia), following standard instructions for administering and scoring.¹

Data analysis

General linear model

To test our two main hypotheses, we utilized a hierarchical multiple regression and logistic regression to examine three blocks of variables – participant demographics, and subjective and objective health factors. All variables within a block were entered simultaneously. The significance of the entire block was tested in hierarchical regression model and adjusted R^2 and incremental changes in adjusted R^2 are provided for each block. Standardized coefficients for the regression analyses are presented in Table 2. Because of the relatively small sample size examined this study, we chose to keep the number of predictors for each outcome variable to a minimum. For example, we chose to use the SF-36 mental and physical health composite scores instead of the eight subscales to reduce the number of predictors in the hierarchical and logistic models. A total of nine variables were included in the final model.

Results

Caregiver demographics

Descriptive demographic data for the study sample ($n = 89$) are summarized in Table 1. The mean age of participants 51.79 ($SD = 11.56$). The majority were married and in the role of daughter, daughter-in-law, or granddaughter of the carereceiver (76.5%), with approximately one-fourth of the sample in the role of spouse (23.5%). Most DCs had annual incomes of less than \$30,000 (56.2%) and had been caregiving for a mean average of 4.18 ($SD = 4.29$) years. The majority (77.5%) of participants reported living with the care receiver. The remaining participants were not living with the care receiver but reported being highly involved in their care (e.g., at least 8 h per week and not paid).

Sixty-seven percent of caregivers in this study reported being in good to excellent health on the single-item health rating. Regarding objective health, participants reported an average of 2.51 ($SD = 1.63$) physical health problems out of a total of 13 possible. The mean average BMI of participants in this study was 30.27 ($SD = 6.01$) indicating that the average participant in our sample was in the obese BMI range.

The mean CES-D scores of 10.88 ($SD = 8.63$) indicated that, on average, study participants were not in the depressed range. Further study of the data revealed that 25.8% of our sample scored 16 or above, indicating a high degree of symptoms consistent with a diagnosis of depression. In addition, 28.1% of participants met diagnostic criteria for major and/or minor depression, and/or dysthymia, using the SCID-I. Finally, 87% of caregivers who obtained a score of 16 or greater on the CES-D also met diagnostic criteria for depression according to the SCID-I.

Multivariate relationships

Results from the multivariate regression analyses are shown in Table 2.

Block 1: Demographics—When entered as a block, demographic characteristics did not account for any variance in baseline self-report of depressive symptoms (CES-D)

($R^2_{\text{adj}} = -0.01$, $p > 0.05$). Caregiver income approached but did not meet our criterion for statistical significance, $\beta = 0.20$, $p = 0.09$. Similar results were observed in the logistic

¹All SCID interview data was reviewed by the project PI (DGT) to confirm diagnoses. When disagreements arose they were conferenced until agreement was obtained.

model predicting the occurrence of SCID – I depression (1 = yes, 0 = no). Specifically, none of the four demographic variables (relationship to carereceiver, years caregiving, caregiver age in years, and caregiver income) emerged as impacting the occurrence of major and/or minor depression, and dysthymia in our sample of Hispanic caregivers.

Block 2: Subjective health—To begin testing our hypotheses, we entered a second block of variables – (a) SF-36 mental and physical health composite summary scores and (b) a single-item question to assess participants overall physical health. When entered as a block, these variables explained a relatively large percentage of variance in CES-D scores ($r^2_{\text{adj}}=0.66$, $p < 0.01$). Of these variables, both the SF-36 mental health and physical health composite summary scores emerged as significant predictors of baseline self-reported depressive symptoms. This was not the case for the single-item health rating.

In contrast, the logistic model identified the SF-36 mental health composite score as the only variable significantly associated with the occurrence of a depression diagnosis (odds ratio, OR 0.40; 95% confidence interval, CI, 0.25–0.64). These results show that as participants' health rating on the SF-36 mental health composite increases (demonstrating greater perceived health), their likelihood of obtaining a depression diagnosis significantly decreases. Other subjective health variables including the SF-36 physical health composite and single-item rating were not significantly associated with SCID–I depression diagnosis.

Block 3: Objective health—The inclusion of total medical problems and BMI reported by participants did not improve model prediction for CES-D scores (0% change in adjusted R^2). However, logistic regression identified total medical problems as a significant predictor of depression diagnosis (OR, 1.85, 95% CI, 1.05–3.24). These results indicate that as total number of medical problems increases, the likelihood of a depression diagnosis tends to increase. BMI did not emerge as an important predictor for predicting baseline CES-D scores or depression diagnosis.

Discussion

We examined cross-sectional data to investigate the relationship between indices of subjective and objective physical health, and depressive symptoms and diagnoses in a small sample of Hispanic DCs. Previous studies have found a link between health and depressive symptoms in other ethnically diverse DCs (Covinsky et al., 2003; McNaughton et al., 1995; O'Rourke et al., 2003); however, little research has explored various physical health indices and depression in Hispanic DCs. This investigation partially supported our hypotheses that both subjective and objective physical health indicators would each contribute to independent variance in predicting baseline CES-D scores and SCID-I depression diagnoses in our sample of DCs.

Our results provide support for using the SF-36, and particularly the mental health composite summary score, as a predictor of both self-reported depressive symptoms and the occurrence of SCID-I depression diagnosis. Interestingly, indicators of more 'objective' physical health (i.e., total medical problems and BMI) did not provide incremental predictive power for predicting baseline CES-D scores, but did partially (due to total medical problems) emerge as an important predictor of baseline depression diagnosis. We anticipated that adding these two objective health indices would strengthen the predictive relationship between our indicators of physical health and depressive symptoms, thus providing mixed support for our hypotheses.

Our findings are consistent with prior research in that as DCs self-reported health tends to decline, associated increases in depression are observed (O'Rourke et al., 2003; Ranney &

Aranda, 2001). In addition, our results show that both subjective and objective physical health indices both play a role in predicting depression in Hispanic DCs. Our results are in line with prior research showing that perceived and objective physical health factors are significantly associated with depressive symptoms in DCs (O'Rourke et al., 2003). Our study adds to this literature in at least two important ways. First, we deliberately used two indicators of caregiver depression – the CES-D and SCID-I diagnoses of depression. The reason for this decision was findings from research suggesting that depressed persons tend to view their health in a worsened state than is actually the case (Croyle & Uretsky, 1987). The observed relationships in past studies may have been reflecting this self-report bias, rather than reflecting a true relationship between health and depression. Thus, we then examined the extent to which both subjective and objective health factors functioned to predict a diagnoses (or not) of depression. This latter analysis was an attempt to minimize self-report bias and establish the criterion validity of the CES-D, as 87% of caregivers who obtained a score of 16 or greater on the CES-D also met diagnostic criteria for depression using the SCID-I. We found that total medical problems reported by participants did predict depression diagnoses. However, they did not add to the strength of the model when predicting depressive symptoms, suggesting that self-report indices may in themselves be adequate to establish this relationship. Secondly, to our knowledge, this is the first study that has found a link between multiple indicators of health and depression in this particular ethnic group, which continues to grow exponentially in the United States. Identifying health indices of depression in this group is particularly important given both higher rates of depression in Hispanic DCs (Pinquart & Sorenson, 2005) and the potential for these individuals to present to primary care with physical health complaints.

In summary, we found that the SF-36 accounted for a significant portion of variance in both CES-D scores and SCID diagnoses, and this relationship was in the predicted direction. Therefore, we recommend the use of the SF-36 or a shorter version such as the SF-12 (Ware, Kosinski, & Keller, 1996) for screening in primary care clinics, where Hispanic individuals tend to go first when they are distressed (Miranda, Azocar, Organista, Dwyer, & Areal, 2003). In Latino culture, it is still considered to be more appropriate to express depression in terms of somatic complaints, rather than as a psychological or psychiatric disturbance (Organista, 2006). Should the results of the screening indicate the presence of depressive symptoms, providers may wish to screen further using the CES-D, which comes in several lengths (10- and 20-item versions), and is available in Spanish. In addition, given the well documented disparities in health care among Hispanics (Fiscella, Franks, Doescher, & Saver, 2002), we suggest that providers take steps to improve the utilization of appropriate health care services by using strategies such as providing interpreters, utilizing culturally competent health promotion, and coordinating with community health workers (Brach, 2000).

This study has several limitations. First, objective health indices may not have been queried in a sufficient manner to be useful in predicting depressive symptoms. The scope of the medical problems assessed in this article was limited to the 'top killers' such as diabetes, heart disease, and cancer. Conditions with high mortality and low survival do not always create the most disability and diminished functional capacity, and this varies by individuals' success in disease management. Thus, future research might ask participants about whether they are experiencing any 'minor' illnesses (e.g. aches and pains) that might impact their physical health and functioning in a negative way. Second, this study focused solely on women caregivers. Although DCs are typically women, the prevalence of male DCs is increasing especially in certain age groups (Lauderdale, D'Andrea, & Coon, 2003). Third, laboratory tests such as a blood panel were not conducted, which could reveal pre-clinical conditions such as insulin resistance, which is strongly associated with later development of diabetes. This assessment strategy could provide an additional indicator of objective health

problems, as it may identify medical issues unknown to the participant. We recommend that, in future studies, a more comprehensive assessment of the physical functioning status of Hispanic DCs is conducted. Fourth, we did not examine depressive symptoms in the care-recipients which may play an important role in the occurrence of depression symptoms and diagnosis in DCs. We recommend that this has to be included in future studies examining factors associated with depression symptoms and diagnosis in Hispanic DCs. Finally, we did not assess participants' level of acculturation which has shown to play a role in how Hispanic individuals respond to self-rated health questions (Finch, Hummer, Reindl, & Vega, 2002). We suggest that future research utilizing self-rated health questionnaires incorporate a measure of acculturation to determine the extent to which this influences Hispanic individuals' responses to such measures.

This study supports and extends prior research in that not only were depressive *symptoms* evaluated, but also depressive *diagnoses*. Having a quick, easy to use culturally acceptable measure that can identify at-risk caregivers could enable them to receive appropriate treatment in a timely manner. Given that untreated depressive disorders are associated with increased medical morbidity and mortality (Zheng et al., 1997), it would seem prudent to identify and treat this very treatable problem early. This seems particularly appropriate for chronically stressed dementia family caregivers whose depression is not likely to remit (Sorensen, Pinquart, & Duberstein, 2002). By effectively identifying caregivers at risk for clinical depressive disorders, and then providing them with appropriate treatment, we are increasing the likelihood that they will remain caregivers longer, and be more efficacious in their role. As a variety of effective, evidence-based interventions are now available to treat depression and stress in family caregivers (Gallagher-Thompson & Coon, 2007) – including several developed for, and evaluated with, Hispanic caregivers – there is more of an opportunity to treat depression earlier in the caregiving career than ever was possible before. We encourage researchers and clinicians to make greater use of these interventions and to further study the complex relationships among health, and mental health, in ethnically and linguistically diverse dementia family caregivers.

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Table 1Study sample characteristics ($n = 89$).

Variable	<i>M</i> (SD)	Min–Max	<i>n</i> (%)
<i>Demographics</i>			
Caregiver age (years)	51.79 (11.56)	27, 85	
Marital status			
Single			20 (22.5%)
Married			55 (61.8%)
Divorced			11 (12.4%)
Separated			3 (3.4%)
Living with care receiver			
Yes			69 (77.5%)
No			20 (22.5%)
Income			
Less than \$30,000			50 (56.2%)
More than \$30,000			39 (43.8%)
Relationship to care receiver			
Spouse (or past spouse)			20 (23.5%)
Daughter/Daughter-in-law/Granddaughter			65 (76.5%)
Number of years caregiving	4.18 (4.29)	0.06, 20	
<i>Subjective health</i>			
SF-36 composite scores			
Mental health	22.90 (2.04)	17.51, 22.84	
Physical health	26.45 (1.13)	26.18, 28.93	
Caregiver health rating			
Poor			10 (5.4%)
Fair			51 (27.6%)
Good			62 (33.5%)
Very good			37 (20%)
Excellent			25 (13.5%)
<i>Objective health</i>			
Total medical problems (max. = 13)	2.51 (1.63)	0, 9	
Body mass index (BMI)	30.27 (6.01)	20, 44	
<i>Depression symptoms and diagnosis</i>			
CESD			
CES-D total score	10.88 (8.63)	0, 36	
CES-D < 16			66 (74.2%)
CES-D ≥ 16			23 (25.8%)
<i>SCID</i>			
Not depressed			64 (71.9%)
Depressed (major, minor, and/or dysthymia)			25 (28.1%)
Major depressive disorder			15 (16.9%)

Variable	<i>M</i> (SD)	Min–Max	<i>n</i> (%)
Dysthymic disorder			13 (14.6%)
Minor depressive disorder			7 (7.9%)

Table 2

Standardized regression coefficients predicting CES-D scores and the occurrence of depression diagnoses.

	CES-D Scores				Depression diagnoses				
	B	(SE)	β	Adj R ²	ΔAdj R ²	B	(SE)	Odds ratio	95% CI
Block 1 (demographics)									
CG age	-0.07	0.16	-0.07	-0.01		-0.01	0.03	0.99	0.94, 1.01
Relationship to CR	-2.53	4.41	-0.08			-0.30	0.74	0.75	0.17, 3.19
CG income	5.29	3.13	0.20*			0.02	0.53	1.02	0.36, 2.88
Years of caregiving	-0.04	0.34	-0.01			0.04	0.05	1.04	0.94, 1.16
Block 2 (subjective health)									
				0.66**	0.66**				
CG age	0.06	0.10	0.05			0.01	0.04	1.01	0.94, 1.09
Relationship to CR	-1.48	2.62	-0.05			0.05	0.98	1.05	0.15, 7.1
CG income	3.20	1.90	0.12*			-0.48	0.74	0.62	0.15, 2.62
Years of caregiving	-0.12	0.20	-0.04			0.07	0.08	1.07	0.92, 1.24
SF-36 mental health	-5.17	0.46	-0.81**			-0.92	0.24	0.40**	0.25, 0.64
SF-36 physical health	-2.03	0.90	-0.18*			-0.12	0.30	0.89	0.49, 1.61
Health rating	-1.16	1.05	-0.09			-0.59	0.39	0.56	0.26, 1.19
Block 3 (objective health)									
				0.66**	0.00				
CG age	0.03	0.10	0.02			-0.02	0.04	0.98	0.90, 1.07
Relationship to CR	-1.40	2.63	-0.05			0.53	1.08	1.70	0.21, 14.08
CG income	3.33	1.94	0.13*			-0.65	0.83	0.52	0.10, 2.63
Years of caregiving	-0.14	0.20	-0.05			0.06	0.08	1.06	0.91, 1.24
SF-36 mental health	-5.07	0.46	-0.80**			-0.99	0.26	0.37*	0.22, 0.62
SF-36 physical health	-1.78	1.02	-0.16*			0.15	0.37	1.17	0.57, 2.40
Health rating	-1.12	1.05	-0.08			-0.55	0.40	0.58	0.26, 1.27
Total medical problems	-0.20	0.15	-0.09			0.61	0.29	1.85*	1.05, 3.24
BMI	-0.08	0.09	-0.04			-0.06	0.07	0.94	0.83, 1.07

** and * indicate $p < 0.01$ and $p < 0.05$, respectively.