Published in final edited form as:

Am J Geriatr Psychiatry. 2009 November ; 17(11): 925–933. doi:10.1097/JGP.0b013e3181ad4f3c.

Ethnic Differences in Beliefs Regarding Alzheimer Disease Among Dementia Family Caregivers

Heather L. Gray, M.A., Daniel E. Jimenez, Ph.D., Michael A. Cucciare, Ph.D., Hui-Qi Tong, M.D., and Dolores Gallagher-Thompson, Ph.D.

Alzheimer's Association, Northern California/Northern Nevada Chapter, CA (HLG); Dartmouth-Hitchcock Medical Center, Lebanon, NH (DEJ); HSR&D, Center for Health Care Evaluation, VA Palo Alto Health Care System and Stanford University School of Medicine (MAC); Older Adult and Family Center, VA Palo Alto Health Care System and Stanford University School of Medicine (HQT, DGT); Pacific Graduate School of Psychology (HQT); and Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine (DGT), Palo Alto, CA.

Abstract

Objective—The purpose of this study was to examine ethnic differences in female dementia family caregivers' knowledge, attitudes, and beliefs about Alzheimer disease (AD).

Methods—Baseline data were collected from 215 female caregivers before their participation in various psychoeducational intervention programs. Caregivers were questioned about the epidemiology, etiology, and treatment of AD. Logistic regressions and one-way analysis of variance were conducted to assess ethnic differences.

Results—Hispanic and Chinese caregivers were more likely to believe that AD is a normal part of aging and that AD can be diagnosed by a blood test than the white group. These beliefs about AD may delay help-seeking activities for these patients and their family caregivers.

Conclusion—Increased public education about AD is needed in these communities. Results are discussed in terms of barriers to accessing information about AD and ways to improve public informational outreach activities, so that the intended audiences are reached more effectively.

Keywords

Caregiving; ethnicity; dementia; AD

Projection of population trends show an increased proportion of elderly persons over the next 2 decades from 12% to 34%,¹ and more than a quarter of these people will belong to a racial or ethnic minority group.² The shift in the U.S. population will affect the prevalence of dementia or related disorders³ and subsequently increase the number of individuals being cared for by a family member. It is likely that the 20% reported providing care to a person with dementia will also increase.⁴

Family members require education and knowledge about the nature and course of dementia and available treatments and services, to cope effectively with their situation,^{5,6} and ethnic minority families may lack the necessary information or hold to culturally influenced beliefs about dementias that can delay necessary help seeking.^{7–12} Unfortunately, the increased understandings of dementia resulting from medical/scientific advances are not commonly held among members of various ethnic minority groups.^{13–17}

Research shows that multiethnic variation exists in conceptualizations of Alzheimer disease (AD) and related dementias.^{18,19} Although the term has a broad connotation, Hinton et al.⁸ have used the phrase “explanatory models” to help understand how different cultural groups explain the nature and cause of various diseases, including AD. For example, some Hispanic/Latino caregivers may attribute the presence of dementia to having experienced a difficult life. Others believe that dementia is caused by God's will or results from such forces such as “el mal ojo” (the evil eye).⁹ Dementia may also carry with it a strong stigma in the Latino and other minority cultures,^{13,18,19} associated with the view that the older adult has “lost his mind” or has “gone crazy.”^{20,21}

Similarly, dementia is often described with negative connotations in the Chinese community.¹² Symptoms related to AD and other dementias are, in fact, still categorized as a form of mental illness in the current mental disorder classification system used in China.^{12,22–25} In the early stages of dementia, Chinese families tend to normalize problems such as memory loss and confusion as part of normal aging,^{9,23} and families generally express high tolerance for difficult behaviors, viewing these as part of regression to a child-like state that sometimes occurs as part of the life course.^{8,23,25} In the later stages of dementia, stigmatization is likely to occur. It is often regarded as a punishment for violating Confucian norms governing interpersonal relations and for that reason is a shameful condition to have.^{26,27} Finally, one aspect of filial piety, the belief in one's responsibility to provide care for family members, is deeply ingrained, and nursing home placement is considered only as a last resort.^{28,29} Thus, Chinese individuals taking care of demented family members may rely heavily on other family members (and more traditional sources of healing such as teas and herbs) and not seek external help until all familial resources have been exhausted.³⁰

In addition to cultural values, beliefs, and level of knowledge about AD, other factors influence help-seeking behaviors in minority cultures, such as longevity in the United States and level of acculturation,^{15,18} along with practical barriers (such as lack of services in the preferred language) and program cost.¹³ This results in a complex situation in which a number of factors should optimally be considered when trying to understand how care of the demented person is influenced.

It is important to note that despite our attempt to describe some of the ways in which dementia is viewed in the Hispanic/Latino and Chinese cultures, considerable heterogeneity exists among these ethnic groups. The term “Hispanic” includes persons with Cuban, Puerto Rican, Mexican, and Central American ancestry. Although all share the same language, there are significant cultural differences among the subgroups. Chinese individuals may originally be from distinct regions (e.g., mainland China, Taiwan, or Hong Kong) with their

unique sociopolitical histories and languages. Currently, there is a paucity of dementia caregiving research on specific subgroups, and more research is needed to fully appreciate the complexities involved.^{2,4,13,16}

In contrast to many of the views just expressed, whites generally believe that dementia is best understood using the Western biomedical model, meaning that it results from disease processes happening in the brain of the individual for which, at present, there is no specific cause or effective treatment.^{31,32} Whites tend to seek diagnosis sooner and volunteer more for research studies involving experimental treatments (e.g., new medications) for their loved ones because they believe that the biomedical perspective is most likely to be of assistance, overall.³¹

Summary and Aims of This Study

As stated in a recent report by Ayalon and Areán,¹¹ crossethnic research on family caregiver's knowledge of AD is still quite limited, and those studies that have been done used primarily qualitative methodology^{7–10,12,33,34} and/or focused primarily on white participants.^{35,36} In one of the first quantitative studies, Ayalon and Areán¹¹ reported that whites were significantly more knowledgeable about all aspects of AD, when compared with Latinos, Asians, and African Americans, leading the authors to recommend that ethnic minority groups need to have more education about AD to increase early detection and intervention.

This study builds on this prior research in the following ways: 1) larger samples of white and Hispanic/Latino individuals were recruited; 2) rather than a mixed group of “Asian” participants, the current “Asian” sample consisted exclusively of Chinese-American individuals (importance given to the heterogeneity within Asian cultures²⁸); 3) participants were self-identified as primary family caregivers of an older adult relative with either an AD diagnosis or having signs and symptoms of dementia; and 4) additional questions were included to assess caregivers' attitudes and beliefs regarding the effectiveness of various treatments for AD, their beliefs about the perceived threat of AD for themselves, and their sources of information about AD (e.g., family and media). This study hypothesized that white caregivers will have more accurate knowledge about AD than Hispanic/Latino or Chinese-American caregivers, overall. In addition, to gain greater knowledge about culturally derived beliefs regarding impact of AD, and its possible treatment, we conducted several exploratory analyses using the remaining subscales of the selected measure. Because of the scarcity of prior research on these dimensions, no directional hypotheses were made.

METHODS

Participants

The overall sample consisted of a total of 236 white, Hispanic, and Chinese-American women caring for relatives with either a diagnosis of AD (or other dementia) or evaluated as having symptoms consistent with a dementia diagnosis, including cognitive status, presence of behavioral problems, and difficulties taking care of activities of daily living, as evaluated by the project's consulting psychiatrist. Caregivers lived in the San Francisco Bay Area,

were at least 21 years of age, were caregiving for at least 6 months, and spent a minimum of 8 hours a week providing direct care. All caregivers were enrollees in one of several studies testing the effectiveness of interventions to reduce distress in dementia family caregivers. They were recruited from a variety of sources; most of the ethnic minority caregivers were referred by a healthcare professional from whom services were already being obtained for themselves or their relative. Most of the white caregivers were self-referred, in response to media announcements about the programs. All recruitment materials were available in English, Spanish, or Chinese (Cantonese or Mandarin forms). Detailed information about translation methods used, and more versus less effective recruitment strategies, are given elsewhere.^{37,38} Information about level of distress at baseline (and related data) are also presented there. Only those caregivers who completed the knowledge of Alzheimer disease (KAD³⁵) measure at baseline (before participation in any of the interventions being evaluated) were included in analyses (N = 215). This sample comprised 84 Anglo, 83 Hispanic/Latino, and 48 Chinese-American women.

Procedures

Data were collected during a structured interview in the participant's home. Bilingual/bicultural research staff was utilized to collect data, and all assessment instruments and treatment materials were translated into Spanish and Chinese using accepted translation/back-translation methods as reported elsewhere.^{39,40}

Measures

Of the set of caregiver measures collected at the baseline interview, two from the time point were used in the current report.

Sociodemographic Characteristics—Information was gathered on age; country of birth (in the United States or outside the United States); years in the United States; primary language spoken (English or non-English); years of formal education; country received formal education (in the United States or outside the United States); annual household income (less than or more than \$30,000 annually); marital status (married or unmarried); and caregiver's relationship to care recipient (spouse or nonspouse) using a modified version of a measure used in the Resources for Enhancing Alzheimer's Caregiver Health study.⁴¹

Knowledge of Alzheimer Disease—The KAD³⁵ was used to assess attitudes and beliefs regarding AD. It consists of four subscales concerning the: 1) epidemiology and etiology of AD; 2) perceived effectiveness of different forms of currently available treatments; 3) beliefs regarding the perceived threat of AD for oneself; and 4) how respondents learned about the disease.

Scale 1: Epidemiology/Etiology Disease Scale—Attitudes and beliefs on these topics consisted of 13 items using a true/false response format. Sample items included “The first signs of AD usually occur before age 60” and “significant loss of memory and mental ability, commonly known as senility, is a normal part of aging.” A total score is calculated by summing all correct responses. Cronbach's α on this scale for each ethnic group was 0.79 for whites, 0.76 for Hispanics, and 0.77 for Chinese.

Scale 2: AD Treatment Effectiveness—This was assessed with 15 items; participants were first asked to rate the effectiveness of seven treatment options to reduce the memory problems of AD and then to rate the effectiveness of eight treatment options to prevent or delay AD. Each item was measured on a 5-point Likert scale: 1 = not effective to 5 = very effective. To develop meaningful scores for this section, an exploratory principle components factor analysis was conducted. The 15 items loaded on two factors: 1) healthy behaviors and 2) medical behaviors. Separate scale scores were created for each factor by summing the eight items that loaded on the Healthy Behaviors factor and the seven items that loaded on the Medical Behaviors factor. Items on the former scale included behavioral interventions such as keeping physically and mentally active and eating a proper, healthy diet. Items on the Medical Behaviors scale included estrogen replacement therapy and the use of medications (e.g., Aricept and antiinflammatory medications), vitamins (e.g., Vitamin E), and herbal supplements. Cronbach's α for the healthy behaviors scale was 0.95, 0.94, and 0.96 for whites, Hispanics, and Chinese, respectively, and for the medical behaviors scale, it was 0.84, 0.87, and 0.85 for the three groups, respectively.

Scale 3: Perceived Threat of AD—This was measured using six items tapping the perceived likelihood of developing AD someday; the perceived concern of developing AD in the next few years; and the belief that developing AD would be extremely stressful for themselves and their loved one. Items were measured on a 5-point Likert scale: 1 = strongly agree to 5 = strongly disagree. Cronbach's α for each of the three ethnic groups was 0.57, 0.73, and 0.70, respectively.

Scale 4: AD Information Sources—On this 8-item scale, participants were asked to indicate whether they had learned about AD from one of eight potential sources of information (e.g., friends, physicians, and media). A total score is computed by summing the eight items to yield an overall score indicating how many of the AD information sources were endorsed (range = 0–8). Cronbach's α for this scale was low for each ethnic group at 0.39 for whites, 0.59 for Hispanics, and 0.35 for Chinese.

RESULTS

Sociodemographic Characteristics of the Sample

Ethnic group differences on sociodemographic variables were tested using a one-way analysis of variance (ANOVA) for continuous variables and χ^2 analyses for categorical variables. Significant ethnic group differences were found across all variables of interest. Hispanic/Latino caregivers were the youngest group, which is likely related to the fact that 78% were daughters (or daughters-in-law) compared with 63% and 49% daughters in the Chinese-American and white groups, respectively. The Hispanic/Latino and Chinese-American samples were more likely to be non-English speaking, born outside of the United States, report lower incomes, and report fewer years of education than their white counterparts. Details are presented in Table 1. The Mini-Mental State Examination scores of the care-recipients averaged 15.32 (SD = 8.9) for whites, 12.36 (SD = 7.67) for Hispanics, and 9.25 (SD = 9.23) for Chinese, respectively, indicating significant cognitive impairment across the ethnic groups.

Scale 1: Epidemiology and Etiology of AD

ANOVA was conducted with the total score on the epidemiology/etiology scale of the KAD as the dependent variable and ethnic group affiliation as the independent variable.

Significant ethnic group differences in total number of correctly endorsed responses were found, $F_{[2, 191]} = 23.01$, $p < 0.001$. Comparisons with the Hispanic/Latino and the Chinese-American samples revealed that the white sample (as hypothesized) was significantly more knowledgeable about the epidemiology and etiology of AD than the other two ethnic groups ($t_{[150]} = 6.49$, $p < 0.001$ and $t_{[116]} = 5.88$, $p < 0.001$, respectively). No significant difference was found between the Hispanic/Latino and the Chinese-American women.

Separate logistic regressions were conducted with each individual item on this scale as the dependent variable and ethnicity as the independent variable. Analyses revealed many significant differences among the three ethnic groups on whether or not they believed the statement as being “true.” Hispanic/Latino and Chinese-American caregivers were more likely to believe that AD is a normal part of aging than the white sample. A summary of significant results is presented in Table 2.

Scale 2: Perception of AD Treatment Effectiveness

Total scores were computed for the Healthy Behaviors and Medical Behaviors scales. Separate oneway ANOVAs were conducted for each scale with the total score as the dependent variable and ethnicity as the independent variable. Significant ethnic group differences on the Medical Behaviors scale were found $F_{[2, 210]} = 10.01$, $p < 0.001$. No significant ethnic differences were found with the Healthy Behaviors scale. When compared with their white counterparts, the Hispanic/Latino ($t_{[163]} = -4.40$, $p < 0.001$) and Chinese-American ($t_{[130]} = -2.41$, $p < 0.01$) women believed that medical interventions were more effective in reducing, preventing, and delaying AD. No other significant differences between the Hispanic/Latino sample and the Chinese-American sample were found.

Scale 3: Perceived Threat of AD

A one-way ANOVA on the total score indicated significant ethnic group differences in perceived threat of AD ($F_{[2, 181]} = 7.55$, $p < 0.001$). Separate Kruskal-Wallis nonparametric ANOVA revealed that responses to each of the seven items varied significantly across ethnic groups. Follow-up MannWhitney U tests and the Bonferroni adjustment, with the level of significance set at < 0.05 , revealed significant differences between ethnic group comparisons in their mean rankings on each item. Hispanic/Latino and Chinese-American caregivers were more likely to worry about developing AD in the future than their white counterparts. However, white caregivers were more likely to believe AD to be one of the worst diseases that they knew, when compared with the other groups. Results are presented in Table 3.

Scale 4: AD Information Sources

Whites endorsed an average of 4.52 (SD = 1.66) information compared with an average of 3.67 (SD = 1.87) for the Hispanic/Latino women and an average of 3.65 (SD = 1.59) for the Chinese women. Overall, the three most commonly endorsed items among the entire sample were: 1) books, newspapers, or magazines (77.2%), 2) physicians and other healthcare

professionals (66.5%), and 3) TV and radio (61.9%). χ^2 analyses were performed to examine ethnic group differences on each item; results revealed that white caregivers were more likely to report learning about AD from the print media (i.e., books, newspapers, or magazines) ($\chi^2 = 8.06$, $p < 0.05$, $df = 2$), the Internet ($\chi^2 = 15.44$, $p < 0.001$, $df = 2$), and the Alzheimer's Association ($\chi^2 = 7.50$, $p < 0.05$, $df = 2$), than Hispanic/Latino and Chinese-American caregivers who preferred professional referrals. However, the low internal consistency found for each ethnic group on this subscale must be kept in mind when interpreting these results.

Correlations Between Variables Representing Acculturation and KAD Subscales

Correlations were conducted between proxy measures of acculturation—language (coded – 0.5 for English speaking and 0.5 non-English speaking) and income (–0.5 for less than and 0.5 for more than \$30,000 annually) and each subscale of the KAD. Results showed that Scales 1, 2, and 3 (questions on health behaviors) were significantly associated with some aspect of acculturation, varying by ethnicity. These values are shown on Table 4. For example, there was a significant correlation between Hispanic participants' income level and their total scores on Scale 1 of the KAD, whereas for Chinese participants, a significant association between English speaking preference and Scale 1 was found. Specifically, Hispanic participants who reported an income over \$30,000 annually reported greater knowledge of the epidemiology and etiology of AD, when compared with those reporting lower income. Similarly, Chinese participants who reported preferring English as their primary language tended to report greater knowledge of the epidemiology and etiology of AD, when compared with those reporting a preference for speaking Mandarin and/or Cantonese (Table 4).

DISCUSSION

This study highlights how socially and culturally based constructions of dementia can impact all aspects of caregiving, including understanding and interpreting symptoms, help-seeking behaviors, patient and family's treatment preferences and expectations, and compliance with treatment.^{11,34} Although research is still limited, the existing body of studies does suggest that certain ethnic minorities, including Hispanics/Latinos and Chinese-Americans, are more likely to use a combination of folk models and biomedical models to explain AD symptomatology.^{9,10}

Prior research has focused mainly on ethnic differences in the level of caregivers' factual knowledge about AD.^{5,11,35} Few studies have looked at other dimensions of familial knowledge and beliefs, such as treatment effectiveness and information sources,^{35,42} and/or did not include non-white caregivers.^{35,36} In the current investigation, attitudes and beliefs about AD held by family caregivers from three different ethnic groups were examined to gain a better understanding of how these beliefs may have been influenced by the various cultures represented. Our findings in this study lend support to several previous qualitative studies conducted with Hispanic/Latino and Chinese-American individuals where it was found that respondents generally viewed the signs and symptoms of AD as a normal part of aging, not requiring intervention from medical practitioners.^{10,11,13}

Consequently, these beliefs delay early treatment, which can prove invaluable to the patient with dementia.²⁰ At the same time, when looking at the Chinese caregivers, normalization of dementia-related symptoms and disabilities as “natural” consequences of advanced age (and stigmatization due to the “dementia” label) can and do hinder families' participation in dementia-related research and delay their seeking professional help.^{23,30} Both of these views are supported by findings in this study.

Community-based education (conducted by such organizations as the Alzheimer's Association) needs to target different types of information for different ethnic groups. Key points, such as the fact that AD cannot be prevented (given the current state of knowledge) and that most cases of AD are not genetically determined, seem to be not commonly known among Hispanic/Latinos and Chinese-Americans.

Also of interest are the discrepancies among the three groups regarding “worries” about getting AD someday; both the Hispanic/Latino and Chinese-American caregivers worried about developing AD in the future (compared with the whites), but at the same time, they endorsed items indicating the belief that AD is part of getting older. This suggests confusion regarding how AD is developed: a topic of great interest to all groups, but one where, to effect change, it is necessary to appreciate the markedly different cultural beliefs and values about AD, which are commonly held in these and other culturally diverse groups of caregivers. It seems that awareness of, and sensitivity to, these culturally rooted traditions is a necessary precursor to modifying beliefs and attitudes and bringing them more into alignment with what is considered state-of-the-art knowledge in this field at this time.²⁰

Some limitations to understanding results of this study should be noted. First, differences in level of acculturation of the family caregivers could be of great explanatory value.⁴³ However, we could not address this issue directly because we did not collect one acculturation measure across the three ethnic groups included in these projects. Second, no male caregivers were included in this study due, in part, to the fact that gender differences in caregiving stress and burden have been noted in the literature and were expected to confound results in the current study.⁴⁴ Third, other major groups (such as African Americans) and members of other Asian groups (e.g., Japanese, Korean, or Asian Indians) were not included in this study. Their concepts regarding AD may well be different, rooted in their cultural beliefs and traditions, and requiring separate studies of their own. Fourth, subgroups of our Latino/Hispanic sample were not examined with respect to their knowledge of AD. Such information would address any potential heterogeneity among this ethnic group and perhaps help indicate whether certain subgroups are more “at risk” for delaying help-seeking activities for their relatives with dementia and for themselves. Fifth, there was self-selection in this study, in that participating caregivers actively presented themselves to researchers to be part of larger, randomized clinical trials aimed at reducing their caregiving distress. Furthermore, participants were recruited from only one region of the United States, making it difficult to generalize these results to caregivers that reside in other locations. This is especially relevant for Hispanic/Latino caregivers who may live in areas where access to information and resources in Spanish is even more limited. Finally, future research with large samples sizes is needed so that the complex interactions of culturally based differences in KAD can be elucidated more clearly.

Acknowledgments

This work was supported by grant no. AG 18784 from the National Institute on Aging and grant no. IIRG-01-3157 from the National Office of the Alzheimer's Association, Chicago (to DG-T).

References

1. U.S. Bureau of Census. The National Center of Health Statistics, and the Bureau of Labor Statistics. U.S. Bureau of Census; Washington, D.C.: 2002.
2. Administration on Aging. Achieving Cultural Competence: A Guidebook for Providers of Services to Older Americans and Their Families. U.S. Department of Health and Human Services; 2001. Available at: <http://aoa.dhhs.gov/minorityaccess/guidebook2001>
3. Hebert LE, Scherr PA, Bienias JL, et al. Alzheimer disease in the US population: prevalence estimates using the 2000 census. *Arch of Neurol*. 2003;60:1119–1122.
4. Alzheimer's Association and the National Alliance of Caregiving: Families Care. Alzheimer's caregiving in the United States. Alzheimer's Association and the National Alliance of Caregiving; 2004. Available at: <http://www.caregiving.org/alzcaregivers04.pdf>
5. Graham C, Ballard C, Sham P. Carers' knowledge of dementia, their coping strategies and morbidity. *Int J Geriatr Psychiatry*. 1997; 12:931–936. [PubMed: 9309472]
6. Proctor R, Martin C, Hewison J. When a little knowledge is a dangerous thing: a study of carers' knowledge about dementia, preferred coping style and psychological distress. *Int J Geriatr Psychiatry*. 2002; 17:1133–1139. [PubMed: 12461762]
7. Levkoff, SE.; Hinton, W.; Simmons, J., et al. A qualitative analysis of dementia explanatory models across four ethnic groups, in *Alzheimer's Disease: Biology, Diagnosis, and Therapeutics*. Iqbal, K.; Winblad, B.; Nishimura, T., et al., editors. Wiley; New York: 1997. p. 799-804.
8. Hinton WL, Guo Z, Hillygus J, et al. Working with culture: a qualitative analysis of barriers to recruitment in dementia research among Chinese families. *J Cross Cultural Gerontol*. 2000; 15:119–137.
9. Talamantes, M.; Trejo, L.; Jimenez, D., et al. Working with Mexican American families, in *Ethnicity and the Dementias*. 2nd Ed.. Yeo, G.; Gallagher-Thompson, D., editors. Taylor & Francis; NY: 2006. p. 327-340.
10. Dilworth-Anderson P, Gibson B. The cultural influence of values, norms, meanings, and perceptions in understanding dementia in ethnic minorities. *Alzheimer Dis Assoc Disord*. 2002; 16:S56–S63. [PubMed: 12351916]
11. Ayalon L, Areán PA. Knowledge of Alzheimer's disease in four ethnic groups of older adults. *Int J Geriatr Psychiatry*. 2004; 19:51–57. [PubMed: 14716699]
12. Zhan L. Caring for family members with Alzheimer's disease: perspectives from Chinese American caregivers. *J Gerontol Nurs*. 2004; 30:19–29. [PubMed: 15359526]
13. Allery, AJ.; Aranda, MP.; Dilworth-Anderson, P., et al. Alzheimer's disease and communities of color, Alzheimer's disease and communities of color. In: Whitfield, KE.; Washington, DC., editors. *Closing the Gap: Improving the Health of Minority Elders in the New Millennium*. The Gerontological Society of America; 2004. p. 81-86.
14. Mok W, Chow TW, Zheng L, et al. Clinicopathological concordance of dementia diagnoses by community versus tertiary care clinicians. *Am J Alzheimers Dis Other Demen*. 2004; 19:161–165. [PubMed: 15214202]
15. Aranda M, Knight B. The influence of ethnicity and culture on the caregiver, stress and coping process: a sociocultural review and analysis. *Gerontologist*. 1997; 37:342–354. [PubMed: 9203758]
16. Dilworth-Anderson P, Williams IC, et al. Issues of race, ethnicity, and culture in caregiving research: a twenty-year review (1980-2000). *Gerontologist*. 2002; 42:237–272. [PubMed: 11914467]
17. Coon, DW.; Ory, MG.; Schulz, R. Family caregivers: enduring and emergent themes. In: Coon, DW.; Gallagher-Thompson, D.; Thompson, LW., editors. *Innovative Interventions to Reduce Dementia Caregiver Distress: A Clinical Guide*. Springer; New York: 2003. p. 3-27.

18. Berry, JW. Conceptual approaches to acculturation, in *Acculturation: Advances in Theory, Measurement and Applied Research*. Chun, KM.; Organista, PB.; Marin, G., editors. American Psychological Association; Washington, DC: 2003. p. 17-37.
19. Hinton L, Franz CE, Yeo G, et al. Conceptions of dementia in a multiethnic sample of family caregivers. *J Am Geriatr Soc*. 2005; 53:1405–1410. [PubMed: 16078970]
20. Areán P, Gallagher-Thompson D. Issues and recommendations for the recruitment and retention of older ethnic minority adults into clinical research. *J Consult Clin Psychol*. 1996; 64:875–880. [PubMed: 8916614]
21. Henderson JN, Gutierrez-Mayka M. Ethnocultural themes in caregiving to Alzheimer's patients in Hispanic families. *Clin Gerontologist*. 1992; 11:59–74.
22. Takamura, JC. Asian and Pacific Islander elderly. In: Mokuau, N., editor. *Handbook of Social Services for Asian and Pacific Islander Americans*. Greenwood Press; New York: 1991. p. 185-202.
23. Elliott, KS.; Di Minno, M.; Lam, D., et al. Working with Chinese families in the context of dementia. In: Yeo, G.; Gallagher-Thompson, D., editors. *Ethnicity and the Dementias*. Taylor & Francis; Washington, DC: 1996. p. 89-100.
24. Braun, KL.; Browne, C. Cultural values and caring patterns among Asian Pacific Islander Americans. In: Redburn, D.; McNamara, editors. *Social Gerontology*. Greenwood Press; New York: 1998. p. 155-182.
25. Ikels, C. Becoming a human being in theory and practice: Chinese views of human development. In: Kertzer, DI.; Schaie, KW., editors. *Social Structure and Aging: Comparative Perspectives on Age Structuring in Modern Societies*. Lawrence Erlbaum Associates; NJ: 1989. p. 109-134.
26. Guo Z, Levy BR, Hinton WL, et al. The power of labels: recruiting dementia affected Chinese American elders and their caregivers. *J Mental Health Aging*. 2000; 6:103–112.
27. Li, TY.; Lin, MC. Love, denial and rejection: responses of Chinese families to mental illness. In: Kleinman, A.; Lin, T., editors. *Normal and Abnormal Behavior in Chinese Culture*. Reidel; Norwell, MA: 1981. p. 250-257.
28. Lu FG, Lim RF, Mezzich JE. Issues in the assessment and diagnosis of culturally diverse individuals. *Cross Cultural Psychiatry*. Section. 1995; IV:477–509.
29. Lan PC. Subcontracting filial piety: elder care in ethnic Chinese immigrant families in California. *J Transcult Nurs*. 2002; 13:202–209. [PubMed: 12113151]
30. Pang FC, Chow TW, Cummings JL, et al. Effects of neuropsychiatric symptoms of Alzheimer's disease on Chinese and American caregivers. *Int J Geriatr Psychiatry*. 2002; 17:29–34. [PubMed: 11802227]
31. Castleman, M.; Gallagher-Thompson, D.; Naythons, M. *There's Still a Person in There: The Complete Guide to Treating and Coping With Alzheimer's*. Putnam Publishing; New York: 2003.
32. Gallagher-Thompson, D. The family as the unit of assessment and treatment in work with ethnically diverse older adults with dementia. In: Yeo, G.; Gallagher-Thompson, D., editors. *Ethnicity and the Dementias*. 2nd ed.. Taylor & Francis; NY: 2006. p. 119-124.
33. Chung JCC. Lay interpretation of dementia. *Int Psychogeriatr*. 2000; 12:369–377. [PubMed: 11081957]
34. Hinton WL. Improving care for ethnic minority elderly and their family caregivers across the spectrum of dementia severity. *Alzheimer Dis Assoc Disord*. 2002; 16(suppl 2):S50–S55. [PubMed: 12351915]
35. Roberts JS, Connell CM. Illness representations among first-degree relatives of people with Alzheimer disease. *Alzheimer Dis Assoc Disord*. 2000; 14:129–136. [PubMed: 10994653]
36. Werner P. Correlates of family caregivers' knowledge about Alzheimer's disease. *Int J Geriatr Psychiatry*. 2001; 16:32–38. [PubMed: 11180483]
37. Gallagher-Thompson D, Singer L, Depp C, et al. Effective recruitment strategies for Latino and Caucasian dementia family caregivers in intervention research. *Am J Geriatr Psychiatry*. 2004; 12:484–490. [PubMed: 15353386]
38. Gallagher-Thompson D, Rabinowitz Y, Tang PY, et al. Recruiting Chinese Americans into dementia caregiver intervention research: what works? *Am J of Geriatr Psychiatry*. 2006; 14:676–683. [PubMed: 16861372]

39. Coon DW, Rubert M, Solano N, et al. Well-being, appraisal, and coping in Latina and Caucasian dementia caregivers: findings from the REACH study. *Aging Ment Health*. 2004; 8:330–345. [PubMed: 15370049]
40. Gallagher-Thompson D, Gray HL, Tang PCY, et al. Impact of in-home intervention versus telephone support in reducing stress of chinese caregivers: results of a pilot study. *Am J Geriatr Psychiatry*. 2007; 15:425–434. [PubMed: 17463192]
41. Wisniewski SR, Belle SH, Coon DW, et al. The resources for enhancing Alzheimer's Caregiver Health (REACH): project design and baseline characteristics. *Psychol Aging*. 2003; 18:375–384. [PubMed: 14518801]
42. Roberts JS, Connell CM, Cisewski D, et al. Differences between African Americans and Whites in their perceptions of Alzheimer Disease. *Alzheimer Dis Assoc Disord*. 2003; 17:19–26. [PubMed: 12621316]
43. Marin, G.; Gamba, RJ. Acculturation and changes in cultural values. In: Chun, KM.; Organista, PB.; Marin, G., editors. *Acculturation: Advances in Theory, Measurement, and Applied Research*. American Psychological Association; Washington, DC: 2003. p. 83-93.
44. Lauderdale, S.; D'Andrea, J.; Coon, DW. Male caregivers: challenges and opportunities. In: Coon, DW.; Gallagher-Thompson, D.; Thompson, LW., editors. *Innovative Interventions to Reduce Dementia Caregiver Distress: A Clinical Guide*. Springer; New York: 2003. p. 243-266.

TABLE 1 Sociodemographic Characteristics of Caregivers

Sociodemographic Variables	Ethnicity						Significance Difference ^a
	White (n = 84)		Hispanic (n = 83)		Chinese (n = 48)		
	M	SD	M	SD	M	SD	
Age	63.83	13.58	51.28	11.58	60.02	12.913	AH, ^b HC ^b
Years in the United States	61.37	14.80	36.29	16.97	31.29	21.54	AH, ^b AC, ^c HC ^b
Years of education ^a	15.25	2.17	10.52	4.48	13.56	4.09	AH, ^b AC ^b
	N	%	N	%	N	%	χ^2
Language preference							
English	84	100	32	38.6	15	31.3	0.00 ^c
Non-English ^b	0	—	51	61.4	33	68.8	
Income ^c							
<\$30,000	16	20	46	56.1	17	35.4	0.00 ^c
\$30,000	64	80	36	43.9	21	43.8	
Marital status							
Married	66	78.6	52	62.7	38	79.2	0.04
Not married	18	21.4	31	37.3	10	20.8	
Relationship to CR							
Spouse	43	51.2	18	21.7	18	37.5	0.00 ^c
Nonspouse	41	48.8	65	78.3	30	62.5	
Place of birth							
In the United States	77	91.7	26	31.3	13	27.1	0.00 ^c
Outside the United States	7	8.3	57	68.7	35	72.9	
Place of education							
In the United States	77	91.7	37	45.7	17	36.2	0.00 ^c
Outside the United States	7	8.3	44	54.3	30	63.8	

Notes: AH: significant difference between whites and Hispanics/Latinos; AC: Significant difference between whites and Chinese-Americans; HC: Significant difference between Hispanics/Latinos and Chinese-Americans.

^aThree participants (two Hispanic/Latinos and one Chinese-American) had no years of formal education.

^bNon-English speaking Hispanic/Latino participants spoke Spanish, and Non-English speaking Chinese-American participants spoke either Cantonese or Mandarin.

^cFifteen participants (4 whites, 1 Hispanic/Latino, and 10 Chinese-Americans) refused to report annual income.

TABLE 2

Significant Results on Scale 1: Epidemiology and Etiology of AD, by Ethnicity

Items	Percentage Endorsing the Item as "True," % (n)			Significant Difference
	White (n = 84)	Hispanic (n = 83)	Chinese (n = 48)	
Most people with AD live in nursing homes (false)	19.5 (16) ^a	31.7 (26) ^b	43.8 (21)	AC ^c
First signs of AD usually occur before age 60 (false)	24.1 (20) ^b	48.2 (40)	37.5 (18)	AH ^d
Drugs are available to treat symptoms of AD (true)	83.1 (69) ^b	80.5 (66) ^b	57.4 (27) ^b	AC ^c
Drugs are available to prevent AD (false)	2.4 (2) ^a	28.4 (23) ^a	34.0 (16) ^b	AH, ^d AC ^d
There is no known cure for AD (true)	97.6 (82)	92.7 (76) ^b	78.7 (37) ^b	AC ^c
AD can be diagnosed by a blood test (false)	7.2 (6) ^b	42.5 (34) ^a	33.3 (14) ^e	AH, ^d AC ^d
Significant loss of memory/mental ability, commonly known as senility, is a normal part of aging (false)	27.7 (23) ^b	66.3 (55)	68.8 (33)	AH, ^d AC ^d
People with AD usually die within a year or two after developing the disease (false)	0.0 (0)	15.7 (13)	6.5 (3) ^a	AH, ^{f,d} AC, ^{f,g} HC ^d

Notes: I: item number; AH: Significant difference between whites and Hispanics/Latinos; AC: Significant difference between whites and Chinese-Americans; HC: Significant difference between Hispanics/Latinos and Chinese-Americans.

^aTwo participants did not respond to item.

^bOne participant did not respond to item.

^cp < 0.01.

^dp < 0.001.

^eSix participants did not respond to item.

^fMann-Whitney U test ran between groups.

^gp < 0.05.

TABLE 3

Kruskal-Wallis and Man-Whitney *U* Results of Perceived Threat of AD, by Ethnicity

Items	Ethnicity (Median ^a)			Kruskal-Wallis ^b
	White (n = 84)	Hispanic (n = 82)	Chinese (n = 46)	
Believe I will get AD someday	3 ^{AH}	3 ^{AH}	3	18.88 ^c
Worry about getting AD someday	2 ^{AH,AC}	4 ^{AH,HC}	3 ^{AC,HC}	22.09 ^c
Worry about getting AD in the next few years	1 ^{AH,AC}	2 ^{AH}	2 ^{AC}	16.30 ^c
If I got AD, it would be extremely stressful for my loved ones and me	5 ^{AH,AC}	5 ^{AH,HC}	4 ^{AC,HC}	17.68 ^c
AD is just a part of growing older	1 ^{AH,AC}	2 ^{AH}	2 ^{AC}	36.51 ^c
AD is one of the worst diseases I can think of	4 ^{AH,AC}	4 ^{AH,HC}	3 ^{AC,HC}	27.73 ^c
Would like to know if I am going to get AD at some point later in my life	4 ^{AC}	4 ^{HC}	3 ^{AC,HC}	15.45 ^c

Notes: AH: Significant difference between whites and Hispanics/Latinos; AC: Significant difference between whites and Chinese-Americans; HC: Significant difference between Hispanics/Latinos and Chinese-Americans.

^aSignificant differences between ethnic groups where the Median is the same are due to the skewness of the distributions within each sample.

^bKruskal-Wallis values are the standard χ^2 approximations ($df = 2$) for each item.

^c $p < 0.001$.

TABLE 4

Pearson Correlations Between Variables Representing Acculturation (by Ethnicity) and KAD Subscales

	Scale 1	Scale 2	Scale 3 (Health Behaviors)	Scale 3 (Medical Behaviors)	Scale 4
Hispanics					
Language	-0.207	-0.098	0.154	0.131	0.206
Income	0.343 ^a	0.50 ^b	0.034	-0.060	-0.153
Chinese					
Language	-0.499 ^a	-0.266	-0.287 ^b	0.033	-0.058
Income	0.302	0.066	0.337 ^b	-0.043	0.043

Notes: *df* = 81 (Hispanic) and 46 (Chinese).

^a *p* < 0.01.

^b *p* < 0.05.