Published in final edited form as:

Alzheimer Dis Assoc Disord. 2017 ; 31(4): 328–334. doi:10.1097/WAD.000000000000199.

Increased reporting accuracy of Alzheimer's disease symptoms in Caribbean Hispanic informants

Martina Azar, B.S.¹, Carolyn Zhu, Ph.D.², Brittany DeFeis, B.A.¹, Yian Gu, Ph.D.¹, Katherine Ornstein, Ph.D.², Siobhan Lawless, B.A.¹, and Stephanie Cosentino, Ph.D.¹

¹Cognitive Neuroscience Division, Department of Neurology, G.H. Sergievsky Center, and Taub Institute for Research on Alzheimer's Disease and The Aging Brain, Columbia University Medical Center

²Department of Geriatrics and Palliative Medicine, Icahn School of Medicine at Mount Sinai, NY, NY

Abstract

INTRODUCTION—Informant report of symptoms is essential for diagnosing and characterizing Alzheimer's disease (AD). Differences in the perception and experience of dementia across ethnicities may influence informant report. Understanding such differences is critical given that among those with AD, Hispanics are disproportionately affected.

METHODS—Cross-sectional analyses examined informant report of cognitive and functional symptoms in mild AD across Caucasian (n=107) and Caribbean Hispanic (n=71) informants. To explore its accuracy, informant report of symptoms was compared against objective measures of patient performance.

RESULTS—Adjusted analyses revealed Hispanics reported more symptoms than Caucasian informants. Informant report of symptoms was inversely correlated with patients' global cognition in both ethnic groups. Only Hispanic report of symptoms was significantly associated with memory and language performance.

DISCUSSION—Informant report of symptoms was associated with patients' global cognition, reflecting relatively accurate informant reports in both ethnic groups, and was stronger in Hispanics when examining memory and language. Such differences may reflect cultural caregiving practices and perceptions of dementia, having implications for diagnosis and treatment.

Keywords

informant report; accuracy; cognition; dementia; ethnicity

Corresponding Author: Stephanie Cosentino, Columbia University Medical Center, 630 168th Street, P & S Box 16, New York, NY 10032, Tel: (212) 342-0289, Fax: (212) 342-1838, sc2460@cumc.columbia.edu.

Author Contributions: MA: concept and design, acquisition of data, analysis, interpretation of data, preparation of manuscript. CZ: statistical analyses, preparation of manuscript. BD: concept and design, preparation of manuscript. YG: data organization and manuscript preparation. KO: concept and design, preparation of manuscript. SC: concept and design, analysis, interpretation of data, preparation of manuscript.

Sponsor's Role: The sponsor had no role in the design, methods, subject recruitment, data collection, analysis, and preparation of this paper.

Conflicts of Interest and Source of Funding: The authors declare no conflicts of interest related to this study.

1.1 INTRODUCTION

The number of older adults suffering from Alzheimer's disease (AD) has risen exponentially and will continue to rise as the population ages¹. Among those diagnosed with dementia, Hispanics are disproportionately affected and demonstrate a greater occurrence of comorbidities and disability once diagnosed^{2,3}, calling for more research to be done in a fast-growing segment of the United States population¹. As the perception and experience of dementia differ between ethnic minority groups, and also across Hispanic and Caucasian cultures^{1,2,4,5} it is important to understand the extent to which ethnicity may influence the detection and assessment of symptoms associated with dementia. Given the various cultures and backgrounds falling under the term "Hispanic", the experience and perception of dementia may well differ among these cultures. Therefore, it is important to note that the present study is composed largely of Caribbean Hispanics; only for comparison purposes, these participants will be referred to as Hispanics from here onward.

Early diagnosis, characterization of disease progression, and evaluation of interventions in AD is heavily reliant on informant report of symptoms due to many patients' limited awareness of disease symptoms⁶. Informant report of symptoms tends to be associated with objective markers of patients' functioning⁷ and complements direct clinical evaluation by capturing typical levels of functioning not always evident at the time of evaluation⁸. However, the extent and accuracy of an informant's report of symptoms, can be influenced by a variety of factors such as whether or not the informant lives with the patient⁹, the nature of their relationship^{8,9} informant gender¹⁰ and years of education¹¹.

Cultural variables such as ethnicity may also influence the way in which informants talk about and report symptoms of dementia. Cultural variables are known to play an important role in the perception of dementia,^{4,12,13} and previous work has demonstrated that ethnic minorities are more likely than their white counterparts to experience barriers to care-seeking, and to have a delay to diagnosis¹¹. The Sociocultural Health Belief Model (SHBM) has been proposed to better understand these issues, and is derived from the Health Belief Model¹¹ which suggests that decisions about care seeking are based on a person's susceptibility to a given disease, the current severity of such disease, and the individual's perceptions of the potential benefits and/or barriers to seeking care. The SHBM extends the HBM framework to consider the potential effects of culturally specific variables on dementia care-seeking, such as family-centeredness (i.e., familism), acculturation, or culturally associated beliefs about dementia that may either stigmatize or normalize the condition.

In the current paper, we propose that cultural values considered by the SBMH framework may extend to influence the manner in which informants talk about and report symptoms of dementia in the context of an evaluation. Specifically, we expected to find differences in the number of symptoms reported by Caucasian and Hispanic informants, given the theoretical evidence on cultural differences in views on mental illness and caregiving. Our working hypothesis was that Hispanic informants may be more likely to underreport symptoms due to stigmatization^{3,4,13} and/or lack of knowledge regarding neurodegenerative diseases¹³ including AD¹⁴ in comparison to Caucasians.. While informant report of dementia

symptoms is known to be influenced by a range of informant characteristics, to our knowledge there has been no empirical examination of how informant ethnicity may influence informant report of symptoms, a key outcome in dementia evaluations and trials.

1.2 METHODS

1.2.1. Participants

The current study focused on informants for individuals with mild AD enrolled into the IRB-approved Predictors Study, which consisted of clinic-based cohort (Predictors 1 and 2) followed at 6 month intervals and community-based cohort (Predictors 3) followed annually. Inclusion and exclusion criteria have been published previously¹⁵. Individuals enrolled into Predictors 3 were drawn from the ongoing Washington Heights and Inwood Columbia Aging Project (WHICAP) and followed yearly¹⁶. Diagnoses of AD were made in a consensus conference attended by a neuropsychologist and physician in accordance with the NINCDS-ADRDA criteria.¹⁷ Individuals diagnosed with AD (incident or prevalent; CDR=1) were included in this study. In the current study, all individuals who self-identified as Hispanic requested assessment in Spanish, while all individuals who self-identified as Non-Hispanic received assessments in English.

All patients in the Predictors Study are required to have an informant willing to provide information about the patient, including non-paid/ informal caregivers (e.g., family members) and paid/formal caregivers (e.g., home attendants). Home health attendants generally undergo a 2-month training consisting of 75 hours of training and skills testing (59 hours in classroom, and 16 hours of supervised practical training). The following data were collected for all informants: ethnicity, gender, age, relationship to participant, years of education, hours spent with participant, whether or not they live with participant, and whether or not they are a formal caretaker. In the present paper, we identify caretakers as either “informal” referring to a family informant, while “formal” refers to non-family member (usually a paid home health aide).

1.2.2 Procedures

Data from the current study were taken from each individual’s baseline visit at which time patients underwent cognitive testing and informants provided information regarding cognitive and functional symptoms of dementia. All interview questions were administered after consenting (English or Spanish). All instructions were translated into Spanish by a committee of Spanish speakers and then back-translated to ensure accuracy. Spanish assessments did not differ according to individual’s country of origin.

1.2.3 Measures

The primary dependent variable was an index of 11 cognitive and functional symptoms reported by the informant. These symptoms were assessed as part of two separate interviews. First, the Blessed Dementia Rating Scale Part 2¹⁶ queries level of difficulty experienced by the patient in 7 abilities (i.e., Does the patient have trouble remembering lists? Does the patient have trouble with chores? Handling money? Does the patient have trouble remembering lists? Around the house? Around the neighborhood? Recognizing

places? Trouble remembering things?) Informants rate patients as having no difficulty (0), little difficulty (0.5), or lot of difficulty (1). For ease of analysis and combination with symptoms from a second scale, responses were dichotomized as no difficulty (0) or at least some difficulty (0.5 or 1). Second, the Communicative Ability (CA) questionnaire¹⁸ queries informants regarding the presence (1) or absence (0) of 4 specific cognitive difficulties in the last two weeks (i.e. Does the patient have trouble finding the right word when speaking? Does the patient have trouble understanding people when they talk? Does the patient ask the same question over and over again? Do people understand the patient when he/she talks?) The final index score (0–11) was a sum of all symptoms endorsed. The main independent variable was self-identified informant ethnicity.

Modified Mini-Mental State Examination (mMMS¹⁹)—This 57-point modification of the Mini Mental State Examination (MMSE) adds naming, registration, general knowledge, and additional attention and calculation items to the standard MMSE²⁰. The current study examined total mMMS as well as a mMMS subscore including Memory and Language items. This subscore, ranging from 0–24, was derived to more closely examine the predominant cognitive symptoms (i.e., memory and language) queried in the informant questionnaires. Items measure episodic and semantic memory, and language abilities (naming, comprehension, and repetition).

1.2.4 Data Analysis

Using SPSS 19, bivariate correlations and chi-square analyses were conducted to identify demographic, caregiving, and patient factors associated with either informant ethnicity or informant report of symptoms. Variables that were significantly associated with ethnicity or informant report of symptoms were included in a hierarchical multiple regression examining the extent to which ethnicity was independently associated with informant report of symptoms. Subsequently, to explore the accuracy of informant report in each ethnic group, bivariate correlations between informant report of symptoms and objective measures of cognition including the mMMS and the Memory/Language Subscore were conducted. Fischer's exact tests examined differences in the strength of the association between cognitive measures and informant report of symptoms in each group.

1.3 RESULTS

The current study included 178 informants for patients diagnosed with mild AD (Clinical Dementia Rating Scale = 1). Informants were included in the current study if they were Caucasian (n = 107; 60%) or Hispanic (n = 71; 40%). This study focused on Caribbean Hispanic informants (83% were Dominican, 14% were Puerto Rican, and 3% were Cuban, See Table A1).

1.3.1 Factors Associated with Informant Ethnicity

Hispanic informants had fewer years of education ($F(1,160)=48.293, p<.001$), were more likely to be female, ($X^2(1, N=178)=7.82, p<.01$), less likely to live with the participant ($X^2(1, N=168)= 33.23, p<0.001$), less likely to be spouses of patients ($X^2(1, N=173)= 75.62, p<0.001$), more likely to be younger ($F(1, 168)=48.717, p<0.001$) and more likely to be

formal caregivers (X^2 (1, N=173) = 64.24, $p < 0.001$) than Caucasian informants. Differences also existed across participants with AD as a function of informant ethnicity: those with Hispanic informants were older ($F(1,176)=54.373$, $p < 0.001$), had fewer years of education ($F(1,176)=233.867$, $p < 0.001$) and lower mMMS total scores ($F(1,170)=77.915$, $p < 0.001$) and subscores ($F(1,171)=45.880$, $p < 0.001$). Hispanic informants reported on patients that were 93% Hispanic, 5.6% white and 1.4% Black, while Caucasian informants reported on patients that were 97.2% white, 1.9% Black and 1% Hispanic. Patient ethnicity was available for 177 of the 178 patients, and largely coincided with informant ethnicity (X^2 (2, N=177) = 154.10, $p < 0.001$) See Table A.1.

1.3.2 Factors Associated with Informant Report (#) of Symptoms

Informant report of symptoms was negatively associated with informant education ($r = -0.20$, $p = 0.02$), and was higher in formal ($M = 9.17$, $SD = 3.62$) than informal informants ($M = 7.16$, $SD = 2.91$), ($F(1,160) = 12.637$, $p < 0.001$). Informant report of symptoms was also associated with patient age ($r = 0.23$, $p = 0.003$), and inversely associated with patient education ($r = -0.33$, $p < 0.01$), mMMS total score ($r = -0.43$, $p = 0.00$), and mMMS memory/language score ($r = -0.46$, $p < 0.01$).

1.3.3 Ethnicity and Informant Report

In unadjusted analyses, informant report of symptoms differed by informant ethnicity ($F(1, 161) = 39.656$, $p < 0.001$). Specifically, Hispanic informants reported more cognitive and functional symptoms ($M = 9.4$, $SD = 3.5$, range = 3–18) than Caucasian informants ($M = 6.5$, $SD = 2.3$, range = 1–13).

A three stage hierarchical multiple regression was conducted with the number of symptoms reported by informant as the dependent variable. Other variables entered into the model as predictors included informant and participant variables that were associated with either ethnicity or number of symptoms reported by informant. At stage one of the regression, informant variables (age, education, gender, living status, relationship to participant and payment status) were added as independent variables to determine their predictive value on informant reported number of symptoms. Participant variables were added at the second stage (total mMMS, memory and language subscores, participant age and education), and the main variable of interest (informant ethnicity) was entered at stage three.

The first stage of the hierarchical multiple regression was significant $F(6, 131) = 2.76$, $p = .015$ with $R^2 = .112$. However, only informant education uniquely predicted the informant-reported number of symptoms, standardized $\beta = -.22$, $p = .01$. The second stage of the model introduced the participant cognitive performance scores and was significant $F(10, 127) = 5.71$, $p < .001$ with $R^2 = .310$. Total mMMS score uniquely predicted the informant-reported number of symptoms, standardized $\beta = -.50$, $p = .002$. The final model including informant ethnicity, was also significant $F(11, 126) = 5.76$, $p < .001$ with an overall $R^2 = .334$. Informant ethnicity had an independent association with number of symptoms reported, $\beta = .30$, $p = .034$. mMMS total score also maintained an independent association with informant report of symptoms in the final model $\beta = -.45$, $p < .05$. while informant education was no longer a significant predictor.

1.3.3.1 Supplementary Analysis—To further examine the potential influence of specific covariates (i.e., informant paid status and patient education) on informant report of symptoms, we re-ran the hierarchical multiple regression in two stratified analyses. In a stratified sample of informal (family member) informants only (101 Non-Hispanic, 32 Hispanic), the association between informant ethnicity and report persisted in the final stage, $F(9, 91)=4.97$, $p<0.001$ with informant ethnicity predicting report of symptoms $\beta=.36$, $p<0.01$. Total mMMS also predicted report of cognitive symptoms, $\beta=-.039$, $p<0.05$. A separate analysis in the formal informant group was not possible as there were not enough Non-Hispanics in the sample (2 Non-Hispanic, 38 Hispanic). We performed a similar stratification across high ($n=83$) and low levels ($n=79$) of patient education based on a median split across both groups (<12 versus 13). Informant ethnicity was still associated with report of symptoms in the low patient education group, $F(10, 85)=3.81$, $p<0.001$; $\beta=0.29$, $p<0.05$ (47 Non-Hispanic, 69 Hispanic). A separate analysis in the high patient education group was not possible as there were not enough Hispanics in the sample (59 Non-Hispanic, 2 Hispanic).

1.3.4 Accuracy of Informant Report

Informant report of symptoms was inversely associated with patient performance on the overall mMMS ($r=-0.52$, $p<0.01$) as well as the Memory and Language subscore ($r=-0.43$, $p<0.01$). When stratified by ethnic group, the correlation between total mMMS and informant report of symptoms appeared stronger in the Hispanic group ($r=-0.47$, $p<0.01$) than in the Caucasian group ($r=-0.26$, $p<0.05$), although this was not a statistical difference ($p=0.07$). When comparing informant report of symptoms to the mMMS Memory and Language subscore, the association between report and cognition was significantly stronger in Hispanic informants ($r=-0.41$, $p=0.001$), than in Caucasian informants ($r=-0.14$, $p=0.17$), ($p=0.075$). Hispanics' report of cognitive symptoms remained more strongly related to the mMMS subscore ($r=-.41$, $p<0.001$) than Caucasians' report ($r=-.13$, $p=.22$), $p=0.05$ when co-varying for paid status in a partial correlation.

1.4 DISCUSSION

Given the importance of informant report of symptoms in characterizing the onset and trajectory of dementia, and the suspected role of cultural variables in the perception and experience of dementia, we sought to determine the extent to which ethnicity might influence informant report of symptoms in mild AD. Current findings suggest that the number of symptoms reported by informants may vary as a function of ethnicity, with fewer symptoms reported by Caucasian informants as compared to Caribbean Hispanic informants. Moreover, the accuracy of informant report of symptoms, that is the degree to which number of symptoms reported was associated with the patients' cognitive performance, appeared to be higher in Hispanic informants. In line with the Sociocultural Health Belief model (SHBM)¹¹, our findings suggest that sociocultural factors may affect not only care seeking¹¹ but also report of symptoms. It is possible that the dementia disease model in Hispanics is different from the biomedical model seen more clearly in Caucasians²¹. Previous research has indicated that Hispanic individuals conceptualize dementia differently (e.g., etiology, presentation of symptoms)—leading to many other factors being associated with dementia¹¹

and possibly cause greater report of symptoms. Below we discuss potential cross-ethnic differences in the perception of dementia that may contribute to informant report of symptoms.

Previous studies focusing on Central and South American Hispanics have pointed to cultural differences between certain Hispanic groups and Caucasians that might be expected to increase the accuracy of informant report of symptoms. The influence of *familismo* (value of family unity), as well as *personalismo*, the value of close and respectful interactions between medical professionals and patients, set Hispanic cultures apart from non-Hispanic cultures^{12,13}. Reflecting on caregiving practices, these values may increase attentiveness and serviceability towards elderly, and consequently heighten awareness and reporting of dementia related symptoms^{13,22}. Although we did not measure these cultural values, it is possible that they extend beyond the family unit, such that formal caregivers who are non-family members could display high levels of attentiveness and service toward patients. Indeed, the current findings suggest that after adjusting for important factors, Hispanic informants endorsed more cognitive and functional symptoms than their Caucasian counterparts, and that report among Hispanic informants was more tightly linked to the patient's objective cognitive status. These cultural variables provide a possible explanation for the seemingly more accurate report of symptoms in the Caribbean Hispanic informants, and should be directly evaluated in relation to informant report of symptoms in future studies. It is important to note, that although this study focused primarily on Dominicans, the values of personalismo and familismo apply to numerous cultural groups falling under the term "Hispanic"¹³ though they have not been empirically studied.

It has also been suggested that Hispanics are more likely than Caucasians to view cognitive impairment as part of the normal aging process^{1,13}, or accept it as God's will⁴. These ideas may help further explain why Hispanic informants/caretakers more readily endorsed dementia symptoms, whether or not they believe that the symptoms are related to dementia. Our study did not support the idea that Hispanic individuals under-report symptoms, in line with what might have been expected in the context of stigmatization or lack of education regarding symptoms. According to several qualitative research studies, dementia symptoms may be more likely to be stigmatized in Hispanic cultures compared to Non-Hispanic whites^{3,4,12,13}, arising from beliefs that dementia is caused by a stressful life^{21,23}, "mal de ojo", or "nervios"⁴ particularly in those with less education on mental illness¹³. It has also been suggested that Hispanics may have less education on the subject of mental health¹³ and be less knowledgeable about AD symptoms^{4,13} than Caucasians. Either of these factors could have been expected to contribute to an under-report of symptoms, although such an association has never been explicitly evaluated. Future research should directly examine how cultural differences in the perception of dementia and mental illness affect important outcomes such as informant report of symptoms.

Differences in informant report of symptoms across ethnic groups were apparent after controlling for a number of demographic, caregiving, and cognitive differences across the informant groups and the patients for whom they were reporting. Adjusted analyses revealed that on average Hispanic informants endorsed nine of the 11 symptoms, whereas Caucasian informants endorsed approximately seven. Item analysis revealed that Hispanic informants

were more likely than Caucasians to state that the patients had difficulty with chores, handling money, recognizing places, and being understood when speaking. Patient global cognition was independently associated with report of symptoms in the final model; more symptoms were reported for those with lower mMMS scores, speaking to the validity of informant report.

The relatively higher endorsement of symptoms in the Hispanic informants may reflect more or less accurate reporting practices than Caucasians. Bivariate correlations revealed that both groups of informants reported more cognitive symptoms as patient performance on the mMMS worsened. From an absolute standpoint, the strength of the association between report and mMMS was greater in the Hispanic group than in the Caucasian group, although this difference did not reach statistical significance. However, the association between report and performance on mMMS subscale was significant only in the Hispanic informants, and this association was significantly greater than that seen in the Caucasian group. Although formal caretakers (i.e. home health aides) acted as informants in the Hispanic group more than in the Caucasian group, the training received for home and patient care was general and not extensive; this offers an explanation for ethnicity and other factors, but not training being responsible for differences in report. We ensured these informant differences were taken into account in the stratified analysis: our results were replicated when conducting partial correlations adjusting for paid status of the informant (formal vs. informal care).

These analyses suggest that informant report of symptoms in the Hispanic group is more accurate than in the Caucasian group as measured by its association with an objective measure of cognitive functioning. These results further argue against the idea that stigmatization or normalization of symptoms exists in this cohort of Hispanic individuals, or if they do exist, that they lead to under-report of symptoms. Since much of the work discussing cultural values surrounding the perception and experience of dementia has been theory-based, empirical work is needed to directly evaluate the presence of cultural values that could influence informant report regarding dementia symptoms.

It is possible that increased association between report of symptoms and objective measures of patient cognition among Hispanic informants relates to: *familismo*, *personalismo*,¹³ increased perception of responsibility,¹³ and/or tendency to care for family members in the home instead of nursing homes³, any of which may lead to increased attentiveness toward older adults, and particularly those with dementia. These values are consistent with the family-centered, concentric approach to dementia caregiving that has been observed among Hispanics as a culturally embedded value,³ a value which may also influence the manner in which formal caregivers attend to patients.

1.4.2 Informant and Patient Differences across Ethnic Groups

It is important to consider the implications of the demographic, caregiving and cognitive differences across informants and patients for interpreting the current findings, as well as for understanding informant issues and caregiving practices more broadly. In the current study, Caucasian informants had more years of education, were more likely to be male, be spouses living with the patient, and were correspondingly less likely to be a formal caregiver in comparison to Hispanic informants. In other words, most of the Caucasian informants were

informal caregivers, while they were mostly paid and therefore formal caregivers in the Hispanic group. Although none of these variables predicted informant report of symptoms in the final model, we questioned the extent to which formal informants may simply be more geared towards attending to, and detect dementia symptoms, than informal informants. We thus conducted a second ANCOVA in a stratified sample of informal informants only. Informant ethnicity remained associated with report among informal informants which comprised 98% of the Caucasian group and 45% of the Hispanic group. When examining the accuracy of informant report, the association between informant report of symptoms and objective cognition remained stronger in Hispanics than Caucasians even when adjusting for paid status.

The current study also did not find that years of education predicted number of AD symptoms reported, which differs from previous literature that has established a relationship between education and knowledge of AD in minority groups²¹ and also with acculturation²⁴. The current study's finding suggests that other factors, such as acculturation should be accounted for when examining the relationship between these variables, as they may compensate for lack of education when assessing knowledge of the disease.

Caucasian informants reported almost entirely on Caucasian patients (99%), and these patients were younger, more highly educated, and correspondingly, had higher cognitive performance than the predominantly Hispanic patients (93%) with Hispanic informants. The strong association between ethnicity, education, and cognitive performance in this sample of patients reflects the well documented socioeconomic differences between the Caucasian and Hispanic older adults²⁵ residing in North Manhattan²⁶. The reduced education among Hispanic informants and patients likely relate to immigration status, and having to work from an early age and/or having had little access to advanced education.

It is important to note that differences in global cognition across the patients speak to differences in age and education across these groups.^{25,27,28} The Caucasian patients were 9 years younger, on average, with 9 more years of education--differences that are expected to be associated with higher cognitive scores.^{25,27-29} Thus, although Caucasian informants were reporting on patients with an average mMMS of 39 (versus 30 in the Hispanics), this does not necessarily reflect differences in disease severity. Indeed, all patients were judged by the examiner to be in a similar stage of the disease (CDR=1). Finally, the effect of informant ethnicity on number of symptoms report persisted when adjusting for all of these important patient characteristics and when stratifying by patient education. The finding that ethnicity predicts cognitive status (MMSE), after controlling for years of education, is in line with previous research³⁰; this indicates there may be other factors, not accounted for by education status that are responsible for cross-cultural differences in presentation of the same level of severity across individuals. Initial evaluation often occurs at later stages in the disease for Hispanics, and hence is another factor related to greater number of symptoms reported by Hispanic informants in comparison to the Caucasian group¹¹. Moreover, Hispanic informants may be more sensitive to the term dementia, and associate greater behavioral and psychological symptoms to the disease¹¹ given their cultural beliefs of it.

1.4.3 Limitations

A limitation of the current study includes the key disparities in demographic and caregiving variables that are closely linked with ethnicity in the current sample. However, all adjusted analyses and findings suggest that informant ethnicity has a unique association with report, above and beyond the effects of these other patient characteristics. The current study was also limited by not explicitly examining cultural values and views towards aging, cognitive impairment, and caregiving—all of which would provide important information regarding the extent to which such ethnicity related differences are mediated by cultural values. Given the scarcity of literature on Caribbean Hispanic views on caregiving and dementia, this paper aimed to begin to categorize converging cultural values—that encompass various cultures falling under the umbrella of the term “Hispanic” by referencing studies also focusing on South and Central American Hispanics. This can be considered a limitation since findings largely reflect Caribbean Hispanics and do not necessarily reflect other dominant Hispanic cultures in the United States. Future research should compare across Hispanic cultures. Additionally, although previous work has found measurement variance in the Functional Assessment Questionnaire (FAQ)³¹ when comparing assessment of Hispanic and non-Hispanics, to our knowledge there has not been the work done on the BDRS or FAQ. Hence, future research may need to focus on differences/similarities in patterns of factor loadings to ensure that the assessment results are fairly comparable for both groups.

1.4. 4 Conclusions

To our knowledge, this was the first study to investigate the role of ethnicity in informant report of dementia symptoms and was unique in its access to ethnically diverse patient drawn from both the community and clinic. This study included only individuals with mild dementia to control for disease severity when looking at symptom report and awareness, but these results could extend to a wider spectrum of patients (mild cognitive impairment through moderate or severe AD). Future studies should further investigate the role of ethnic background and respective cultural values (i.e., approach/avoidance of symptoms of dementia, acculturation’s effect on personal and caregiving views) to capture how they may affect report. Qualitative interviews may also allow for a deeper understanding of deep-seated cross-cultural perceptions of caregiving and dementia—as has been done when comparing African American, European American individuals³². Given the ever-growing diversity of the United States, further systematic examination of cultural differences in the perception of dementia will enhance multicultural competence during diagnosis and advance treatment of AD for patients of diverse backgrounds.

Acknowledgments

This study was supported by the National Institute on Aging (R01 AG007370)

Funding Source: This study was supported by the National Institute on Aging (R01 AG007370).

The authors would like to thank Dr. Yaakov Stern, PI of the Predictors Study and Chief of the Cognitive Neuroscience Division in the Department of Neurology, G.H. Sergievsky Center, and Taub Institute for Research on Alzheimer’s Disease and the Aging Brain at Columbia University Medical Center. Dr. Stern graciously allowed the authors to examine the Predictors 3 data for the first original study of this cohort, and provided valuable feedback regarding the design, analyses, and results of the current study.

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Table A. 1
Informant and Patient Characteristics by Informant Ethnicity (n=178)

Information listed as percentages, means, and standard deviations.

	Informant		Patient	
	Caucasian	Hispanic	Caucasian	Hispanic
<i>N</i>	107	71	107	70
Age	68.5 (13.97)	52.3 (14.52) **	76.4 (8.31)	85.2 (7.0) **
Education	15.9 (2.97)	11.8 (4.39) **	14.7 (3.5)	5.8 (4.2) **
% Female	71	89 *	54	60
% Patient Hispanic			1	93 **
% Living with patient	69	24 **		
% Spending several hours per day or more with patient	73	74		
% Paid caregiver	2	55 **		
% Spouse	57	11 **		
mMMS total			39.7 (7.1)	30.1 (6.73) **
mMMS subscore			15.7(3.4)	11.9 (3.7) **

Note.

*
 $p < .01$

**
 $p < 0.001$

mMMS subscore = memory and language items from the mMMS.