CLINICAL CHARACTERISTICS OF COMMUNITY-DWELLING BLACK ALZHEIMER'S DISEASE PATIENTS

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There is a relative dearth of studies examining the cognitive and neuropsychiatric features of black Alzheimer's disease (AD) patients in the United States. Therefore, this cross-sectional investigation reported on the prevalence and clinical correlates of depression and psychosis in a community-dwelling black AD sample. The study participants comprised 55 English-speaking black patients evaluated consecutively at a university-affiliated memory disorders clinic. All patients were evaluated utilizing standardized procedures and diagnosed with possible or probable AD according to the criteria established by the National Institute of Neurological and Communicative Diseases and Stroke–Alzheimer's Disease and Related Disorders Association. The presence of neuropsychiatric symptoms, including major depression and psychosis (delusions or hallucinations) was established via a semistructured psychiatric interview with the patient and primary care giver. The level of global cognitive impairment was rated with the Mini-Mental State Examination. The results showed that major depression and psychosis were observed in 20% and 58% of the sample, respectively. Mood disturbance was linked with low education, whereas psychosis was associated with greater cognitive dysfunction. This study provides important insight into the clinical characteristics of community-dwelling black AD patients. It is clear that continued research in the area of ethnicity and dementia is warranted to better understand the clinical needs of blacks and other minority populations in the United States that are afflicted with AD. (*J Natl Med Assoc.* 2000;92:424–429.)

Key words: Alzheimer's disease ♦ ethnicity

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Alzheimer's disease (AD) has been identified as the most common cause of dementia among the black, Hispanic, and non-Hispanic white populations in the United States.[1,2] Hallmark clinical features of the disease include a gradual onset and progressive rate of decline in cognitive skills as well as marked functional deficits. Current estimates suggest that AD affects nearly 4 million Americans and this number is projected to rise to 14 million by the middle of the next century.[3,4] Hence, the economic burden of AD in this country is expected to be substantial over the coming decades.[5]

In addition to deficits in cognitive and functional performance, AD patients may also evidence dra-

matic neuropsychiatric changes. Some of the more common behavioral and psychological signs and symptoms among patients with dementia include depression and psychosis (i.e., delusions or hallucinations).[6,7] These symptoms have significant clinical implications for the patients as well as the family care givers. For instance, research indicates that neuropsychiatric symptoms may impact the clinical course of the disease[8,9] and frequently lead to care giver distress[10,11] and greater risk of patient institutionalization.[12]

Although early investigations focused primarily on the profound cognitive deficits of the disease, more recent research has documented the spectrum of neuropsychiatric problems in AD patients. Yet, research efforts have failed to reflect the cultural diversity of the United States population.[13] Indeed, a review of the literature indicates a relative paucity of empirical studies focusing on ethnicity and dementia.[14] With respect to behavioral pathology, the prevalence of depression and psychosis in black AD patients has not been clearly established. Furthermore, it remains to be elucidated what specific factors are related to psychiatric disturbances in these patients. Because blacks are currently the largest minority group in the U.S.,[15] investigations of behavioral and psychological signs and symptoms in this patient population are imperative.

The current study addressed several specific questions: 1) What are the prevalence rates for the syndromes of major depression and psychosis among black AD outpatients? 2) What factors show relations with mood disturbance and psychotic symptomatology in this patient population? In light of prior research among Caucasian[16–18] and black AD patients,[19,20] we chose to evaluate whether the following factors conferred risk for behavioral pathology in the current sample: age, education, gender, cognitive status, and comorbid psychosis/depression.

METHODS

Participants

The participants for this cross-sectional study were drawn from a consecutive series of 94 elderly black patients evaluated between 1987 and 1999 at the Wien Center for Alzheimer's Disease and Memory Disorders, an affiliated outpatient clinic of Mount Sinai Medical Center and the University of Miami School of Medicine. Demographic information, including patient ethnicity, was ascertained during the intake evaluation with the patient and primary care giver. We chose to classify the patients as black rather African American for the purposes of this study, because the current investigation included subjects of African origin who were born in either the United States or the Caribbean. To focus on a more homogeneous black cohort, we restricted the sample to blacks that spoke English as their primary language. Thus, French or Creole-speaking patients of Haitian heritage (n = 4) and Spanish-speaking patients of Hispanic heritage (n = 8) were excluded from the study. Twenty-seven additional patients were not included in the present investigation due to incomplete clinical data (e.g., did not undergo comprehensive psychiatric assessment). The final sample comprised 55 English-speaking black patients.

The study participants underwent a comprehensive multidisciplinary clinical evaluation, in addition to a thorough assessment that included complete blood count, chemistry panel, serology, serum thyroid-stimulating hormone, vitamin B_{12} levels, and computerized tomography (CT) or magnetic resonance imaging (MRI) of the brain. All of the patients met diagnostic criteria for possible or probable AD as established by the National Institute of Neurological and Communicative Diseases and Stroke–Alzheimer's Disease and Related Disorders Association.[21] The sensitivity of a clinical diagnosis of AD at the Wien Center has previously been shown to be 75% for possible AD and 93% for probable AD.[22] Participation in the investigation was voluntary, and informed consent was obtained by the patient or primary care giver for all cases. The protocol was approved by the Human Rights Committee at Mount Sinai Medical Center, Miami Beach, FL.

Clinical Assessment

The assessment of patient depression was part of an extensive psychiatric evaluation conducted by clinicians specializing in dementia. The informants for this study were the primary care givers who accompanied the patients to the clinic. Diagnoses of major depression were made in accordance with the criteria established by the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition-Revised.*[23] Symptoms of psychosis (evidence of delusions or hallucinations) over the past month were assessed

Table 1.
Clinical and Demographic Characteristics in Black Alzheimer's Disease Patients

Characteristic	Mean ± SD
Age	76.4 ± 7.9
Age of disease onset	71.9 ± 8.2
Education	9.3 ± 4.4
Mini-Mental State Exam Score	12.8 ± 6.1
Major depression	N (%)
Yes	11 (20%)
No	44 (80%)
Psychosis	
Yes	32 (58%)
No	23 (42%)
Gender	
Male	10 (18%)
Female	45 (82%)

using a structured clinical interview previously described.[24] Delusions were defined as a fixed, false belief not attributable to the patient's cultural experience. These were distinguished from disorientation, confabulation, or overvalued ideas. Hallucinations were carefully differentiated from illusions. Psychiatric information ascertained from the clinical interview was used to arrive at a multidisciplinary consensus diagnosis, with the presence of major depression and psychosis recorded in the patient's discharge summary (Table 1).

The Mini-Mental State Examination (MMSE)[25] was administered to assess level of global cognitive impairment. This scale contains 11 items that test attention, calculation, recall, language, praxis, registration, and orientation. The MMSE has a maximum score of 30 points, with scores less than 24 suggesting significant cognitive dysfunction. This instrument demonstrates satisfactory reliability and construct validity as a brief screen of global cognitive functioning.[26]

Statistical Analysis

The assessment of factors associated with major depression and psychosis was determined utilizing multiple logistic regression analyses that yielded odds ratios (OR) and 95% confidence intervals (CI) for the explored risk factors. Putative risk factors for each psychiatric outcome included age, education, gender, comorbid psychosis/depression, and level of global cognitive dysfunction (MMSE score).

Table 2.
Risk Factors for Major Depression in Black Alzheimer's Disease Patients

		95% CI		
Predictor	OR	Lower	Upper	p value
Age	0.90	0.79	1.00	0.08
Education	1.31*	1.06	1.73	0.03
Gender	2.45	0.32	51.40	0.45
Cognitive status	0.90	0.75	1.05	0.22
Psychosis	0.88	0.45	5.04	0.88

*OR corresponds to each one-point decrement in years of schooling.

RESULTS

Patient Characteristics

In this sample, the mean age for patients was 76.4 years (SD, 7.9) and the mean age of onset was 71.9 years (SD, 8.2). The average years of formal education was 9.3 (SD, 4.4). Eighty-two percent (n = 45) of the participants in the study were women. Participants had an average MMSE score of 12.8 (SD, 6.1). The prevalence rates for the explored neuropsychiatric syndromes were 20% (n = 11) for major depression and 58% (n = 32) for psychosis.

Factors Associated with Depression and Psychosis in AD

Table 2 presents the results of the logistic regression analysis for major depression. An elevated risk for mood disturbance was associated with fewer years of formal education (OR = 1.31; 95% CI = 1.06 to 1.73; Wald $\chi^2 = 4.9$; $p < 0.05$). It should be noted that, because education was entered as a continuous variable in the analysis, each increment in the OR corresponds to a 1-year change in years of schooling. This analysis did not show an increased risk for depression in relation to patient age, gender, level of cognitive impairment, and comorbid psychosis.

The findings of the logistic regression analysis for psychosis are listed in Table 3. Increased risk for thought disturbance was predicted by greater cognitive dysfunction (OR = 1.21; 95% CI = 1.07 to 1.40; Wald $\chi^2 = 7.5$; $p < 0.05$). As described previously, the OR corresponds to each one-point decrement in MMSE score, because this predictor was entered as a continuous variable in the analysis. The logistic regression analysis indicated that patient

Table 3.
Risk Factors for Psychosis in Black Alzheimer's Disease Patients

Predictor	OR	95% CI		p value
		Lower	Upper	
Age	1.05	.97	1.16	.26
Education	0.95	0.80	1.13	.58
Gender	1.06	0.21	5.05	.94
Cognitive status	1.21*	1.07	1.40	.01
Major Depression	0.93	0.20	4.59	.93

*OR corresponds to each one-point decrement in the Folstein Mini-Mental State Exam score.

age, education, gender, and comorbid depression did not increase the risk for psychosis.

DISCUSSION

This study provides important insight into the prevalence and associated factors of depression and psychosis among community-dwelling black AD patients. We found that 20% of the sample evidenced major depression. This finding is generally consistent with prior reports of affective disturbance in dementia, which have shown prevalence rates of 12%–16% in black patients[1,2,20,27,28] and 10%–20% in Caucasian patients.[16,17] It should be noted that studies that have focused on depressive symptoms rather than the syndrome of depression in black dementia patients have reported higher rates, ranging from 24% to 44%.[19,29,30] The results also indicated that 58% of the sample presented with psychotic symptomatology. This rate compares favorably with the results of previous research among black dementia patients that have reported rates of 15%–77% for thought disturbance.[19,20,27,29–33] The frequency of psychosis in our sample of black AD patients is also in accordance with prior studies in Caucasian AD cohorts, which have shown prevalence rates of 10%–73% for delusions and 21%–49% for hallucinations.[16,18]

The average MMSE score in our cohort of black outpatients was 12.8, indicating the sample was functioning at the moderate to severe stages of dementia. The observed MMSE scores are very similar to those reported in other studies of community-dwelling black AD patients from around the United States, which have ranged from 13.4 to 17.7.[1,19,29,30,33] As noted by Auchus,[19] this suggests that the dementia syndrome for many of these patients was not identified until they had progressed to a rather significant stage of the illness. It is evident that an implication of this finding is the need to develop more effective outreach strategies to facilitate the early diagnosis and treatment of AD among community-dwelling blacks. This is particularly relevant given the recent development of pharmacologic agents for AD that may improve cognitive functioning in the mild-to-moderate stages of the illness.[34–36] Pharmacologic treatments may also be effective in terms of ameliorating symptoms of behavioral pathology in these patients.[36–38]

The current investigation examined factors associated with signs and symptoms of depression and psychosis. In this sample of black AD patients, increased risk for mood disturbance was linked with lower education. This finding contrasts with a recent report of black AD outpatients from Atlanta, GA, which found a higher frequency of affective symptoms among patients with more education.[19] The discrepant findings may be related to methodological differences between the two studies, because Auchus[19] rated symptoms of depressed or anxious affect whereas we identified more severe major depressive disorders. The relation of education with affective disturbance has not been extensively investigated in demented patients, although several other studies have reported elevated depression in AD patients with fewer years of formal education.[39,40] A likely explanation for this relationship may be that education represents a surrogate for socioeconomic status, which has been linked with heightened risk for depressive symptoms among older adults.[41]

We found that more severe cognitive dysfunction increased the risk for psychosis. This finding is congruent with reports of psychosis in AD[42,43] and a recent study of demented African American nursing home residents.[20] The association between psychiatric symptoms and MMSE scores is likely related to neuropathological changes underlying the global cognitive dysfunction witnessed among patients with AD. Förstl and colleagues,[44] for instance, reported that in a sample of 56 autopsy-confirmed AD patients, delusions and hallucinations were linked with lower cell counts in the dorsal raphe nucleus. In addition, Zubenko and coworkers[45] found that, among 27 autopsy-verified AD cases, psychosis was associated with increased densities of senile plaque and neurofibrillary tangles in the prosubiculum and middle frontal cortex areas of the brain. These studies support the contention that neuropathologic

mechanisms mediate the relation between cognitive impairment and behavioral manifestations in AD.

There are several limitations to the present investigation. The results may not characterize black AD patients in general, because this study included black patients of U.S. and Caribbean descent (identified as English-speaking) currently living in south Florida. However, the decision to include U.S.-born and Caribbean-born blacks seems justified given the lack of substantial clinical and psychiatric differences that have been demonstrated between these two groups in studies of demented outpatients[30] and demented nursing home residents.[20,28] Given the paucity of psychiatric research among ethnic minority elderly, further research is needed to identify not only interracial but also intraracial differences in the expression of behavioral pathology among patients with AD. Indeed, Fabrega and colleagues[46] note that "even a biologically well-defined black group is likely to contain subjects that are influenced by highly diverse (background) cultures (and national traditions) so that it naturally does not constitute a well-established 'cultural' group (p. 286).

In summary, this study adds to the growing body of literature on ethnicity and dementia. We found that depression and psychosis represent prominent neuropsychiatric syndromes among black AD patients residing in the community. Several of the explored factors were shown to confer risk for behavioral pathology, including lower education and increased cognitive impairment. Continued investigations of the prevalence and clinical correlates of behavioral and psychological disturbances among black AD patients are required to understand the clinical needs of this patient population. The findings of such research may also promote more informed outreach strategies and lead to the implementation of appropriate psychopharmacologic and behavioral interventions.

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