

# Prevalence and Distribution of Major Depressive Disorder in African Americans, Caribbean Blacks, and Non-Hispanic Whites

## Results From the National Survey of American Life

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**Context:** Little is known about the relationship between race/ethnicity and depression among US blacks.

**Objective:** To estimate the prevalence, persistence, treatment, and disability of depression in African Americans, Caribbean blacks, and non-Hispanic whites in the National Survey of American Life.

**Design:** A slightly modified adaptation of the World Health Organization World Mental Health version of the Composite International Diagnostic Interview.

**Setting:** National household probability samples of non-institutionalized African Americans, Caribbean blacks, and non-Hispanic whites in the United States conducted between February 2, 2001, and June 30, 2003.

**Participants:** A total of 3570 African Americans, 1621 Caribbean blacks, and 891 non-Hispanic whites aged 18 years and older (N=6082).

**Main Outcome Measures:** Lifetime and 12-month diagnoses of DSM-IV major depressive disorder (MDD), 12-month mental health services use, and MDD disability as quantified using the Sheehan Disability Scale and

the World Health Organization's Disability Assessment Schedule II.

**Results:** Lifetime MDD prevalence estimates were highest for whites (17.9%), followed by Caribbean blacks (12.9%) and African Americans (10.4%); however, 12-month MDD estimates across groups were similar. The chronicity of MDD was higher for both black groups (56.5% for African Americans and 56.0% for Caribbean blacks) than for whites (38.6%). Fewer than half of the African Americans (45.0%) and fewer than a quarter (24.3%) of the Caribbean blacks who met the criteria received any form of MDD therapy. In addition, relative to whites, both black groups were more likely to rate their MDD as severe or very severe and more disabling.

**Conclusions:** When MDD affects African Americans and Caribbean blacks, it is usually untreated and is more severe and disabling compared with that in non-Hispanic whites. The burden of mental disorders, especially depressive disorders, may be higher among US blacks than in US whites.

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**M**AJOR DEPRESSIVE DISORDER (MDD) is a common and disabling psychiatric disorder in the United States and elsewhere.<sup>1-5</sup> Worldwide, it is the fourth leading cause of disability and the leading cause of nonfatal disease burden, accounting for almost 12% of total years lived with disability.<sup>6</sup> In the United States, the economic burden of depression was estimated to be \$83 billion in 2000.<sup>7</sup>

The relationship between race and MDD is complex. Large epidemiologic surveys<sup>1,8,9</sup> find that compared with non-Hispanic whites, blacks have lower life-

time rates of MDD and equivalent or lower rates of 12-month MDD. At the same time, blacks are overrepresented in high-need populations, have reduced access to mental health services, and often receive poorer quality care than whites.<sup>10</sup> The National Comorbidity Survey (NCS) found that although blacks had a lower lifetime risk of mood disorder than whites, once diagnosed they were more likely to be persistently ill.<sup>11</sup>

Ethnicity is a neglected dimension of the heterogeneity of the black population.<sup>12</sup> Although there are important commonalities in the black experience, there is also ethnic variation within the population.

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**Table 1. Sociodemographic Weighted Distribution of the National Survey of American Life Sample by Race**

Characteristic	Participants, No. (%)*			F
	African American (n = 3570)	Caribbean Black (n = 1621)	White (n = 891)	
Age, y				1.8
18-29	806 (24.4)	436 (31.1)	150 (20.7)	
30-44	1276 (35.4)	605 (34.5)	265 (33.1)	
45-59	855 (23.8)	356 (19.4)	249 (25.8)	
≥60	633 (16.4)	224 (15.1)	227 (20.4)	
Sex				2.1
M	1271 (44.0)	643 (50.9)	372 (47.3)	
F	2299 (56.0)	978 (49.1)	519 (52.7)	
Work status				6.9†
Employed	2333 (66.8)	1182 (75.2)	597 (72.6)	
Unemployed	366 (10.1)	158 (8.8)	39 (4.5)	
Not in labor force	861 (23.1)	279 (16.0)	250 (22.9)	
Education, y				9.5†
0-11	909 (24.3)	299 (20.9)	148 (15.1)	
12	1344 (37.7)	477 (29.7)	292 (31.2)	
13-15	799 (23.9)	438 (26.1)	211 (24.6)	
≥16	471 (14.1)	388 (23.3)	232 (29.1)	
Annual household income, \$				7.5†
0-17 999	1309 (31.0)	368 (21.3)	212 (19.7)	
18 000-31 999	912 (25.1)	434 (25.1)	204 (21.1)	
32 000-54 999	766 (23.5)	384 (22.0)	225 (26.3)	
≥55 000	539 (20.4)	421 (31.7)	242 (33.0)	
Marital status				7.5†
Married	1220 (41.7)	690 (50.1)	427 (54.0)	
Divorced/separated/widowed	1163 (26.8)	384 (18.9)	287 (24.0)	
Never married	1170 (31.5)	542 (30.9)	173 (22.1)	
Birthplace				
Born in United States	3464 (97.7)	440 (34.9)	855 (96.1)	
Born outside United States	64 (2.3)	1166 (65.1)	29 (3.9)	
Region				4.6†
Northeast	411 (15.7)	1135 (55.7)	107 (22.7)	
Midwest	595 (18.8)	12 (401)	83 (8.0)	
South	2330 (56.2)	456 (29.1)	609 (54.6)	
West	234 (9.3)	18 (11.1)	92 (14.8)	
Urbanicity				0.3
Major metropolitan	3105 (88.9)	1621 (100.0)	700 (84.3)	
Other urban	312 (7.5)	0	106 (9.7)	
Rural	153 (3.7)	0	85 (6.0)	

\*Sample size is unweighted. Some categories do not add up to the total sample size because of missing data.

†Significant at  $P = .001$ .

Approximately 6% of the black population is foreign born, and 10% (3.4 million persons) is of foreign parentage.<sup>13</sup> There are more black immigrants in the United States than American Indians,<sup>14</sup> Cuban Americans,<sup>15</sup> Chinese, or Japanese.<sup>16</sup> Blacks from the Caribbean constitute the largest subgroup of black immigrants.<sup>13,17</sup>

However, little is known about the mental health profile of Caribbean blacks, and it is unclear how their risk of MDD compares with that of African Americans. Caribbean immigrants have higher levels of income<sup>18,19</sup> and lower rates of adult<sup>20,21</sup> and infant<sup>22</sup> mortality than native-born blacks, which might lead one to expect lower rates of MDD. However, 2 studies<sup>23,24</sup> of Caribbean blacks found that they had higher levels of depressive symptoms than black Americans, whereas a recent study<sup>25</sup> found that Caribbean-born poor black women had lower rates of probable depression than US-born poor black women. Results of studies of Caribbean immigrants in

the United Kingdom have also been inconclusive. In contrast to a consistent finding of elevated risk of schizophrenia,<sup>26-28</sup> studies have found comparable, higher, and lower risk of depression or depressive symptoms for Caribbean blacks<sup>29-33</sup> compared with the rest of the British population.

One of the major limitations of previous research on African American mental health has been the small sample sizes that have precluded detailed analyses of how the risk of MDD varies for ethnic subgroups of the black population. This article presents results from the recently completed National Study of American Life (NSAL), the largest study of mental health in the black population ever conducted in the United States.<sup>34</sup> The purpose of this study is to systematically explore the prevalence and persistence levels, sociodemographic correlates, impairment, and treatment of MDD in African Americans, Caribbean blacks, and non-Hispanic whites.

**Table 2. Correspondence Between 12-Month Diagnoses of DSM-IV MDE in the Weighted NSAL CIDI Sample and the Weighted Clinical Reinterview Samples (SCID)**

	Prevalence		CIDI Characteristics, % (95% CI)					CIDI/SCID		
	CIDI	SCID	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Total Classification Accuracy	Concordance by Cohen $\kappa$ (95% CI)	Bias	
									McNemar $\chi^2$	P Value
Total (N = 631)	6.6	5.9	40.5 (22.6-61.4)	95.6 (91.5-97.8)	36.8 (18.9-59.3)	96.2 (93.4-97.9)	92.3 (89.1-95.5)	0.34 (0.13 to 0.56)	2.6	.11
African American (n = 303)	7.1	7.0	44.4 (24.9-65.8)	96.3 (93.2-98.0)	49.6 (31.6-67.7)	95.5 (90.7-97.8)	92.3 (89.2-95.4)	0.43 (0.26 to 0.59)	2.0	.15
Caribbean black (n = 226)	10.0	3.7	27.3 (5.0-61.7)	90.7 (83.0-95.1)	10.2 (2.4-34.5)	97.0 (94.1-98.5)	88.3 (83.0-93.6)	0.10 (-0.19 to 0.39)	6.6	.01
White (n = 102)	6.0	5.1	35.7 (8.4-77.1)	95.4 (86.3-98.5)	27.3 (5.5-71.0)	96.8 (92.0-98.8)	92.6 (87.1-98.1)	0.27 (-0.13 to 0.67)	7.8	.01

Abbreviations: CI, confidence interval; CIDI, Composite International Diagnostic Interview; MDE, major depressive episode; NSAL, National Survey of American Life; SCID, Structured Clinical Interview for DSM-IV.

## METHODS

### SAMPLE

The NSAL is part of a National Institute of Mental Health Collaborative Psychiatric Epidemiology Surveys initiative that included 3 national surveys: the NSAL, the NCS Replication (NCS-R), and the National Latino and Asian American Study.<sup>35</sup> The NSAL adult sample was an integrated national household probability sample of 3570 African Americans, 891 non-Hispanic whites, and 1621 blacks of Caribbean descent (Caribbean blacks), for a total sample of 6082 individuals 18 years and older.<sup>36</sup> The African American sample, the core sample of the NSAL, is a nationally representative sample of households located in the 48 contiguous states with at least 1 black adult 18 years and older. The term *African American* is used to describe persons who self-identified as black but did not identify ancestral ties to the Caribbean. Fifty respondents in the African American sample were born in Africa. *Caribbean blacks* are persons who self-identified as black and indicated that they were of West Indian or Caribbean descent, that they were from a country included on a list of Caribbean countries presented by the interviewers, or that their parents or grandparents were born in a Caribbean country. The Caribbean black sample was selected from the core sampling areas of the NSAL (n = 265) and from additional metropolitan segments (n = 1356) that were sampled based on the concentration of blacks of Caribbean descent (>10%). The *non-Hispanic white* sample was a stratified, disproportionate sample of non-Hispanic white adults residing in households located in census tracts and blocks that have a 10% or greater African American population. These whites represent 14% of the white population in the United States. The sample design and analysis weights for this sample were designed to be optimal for comparative analyses in which residential, environmental, and socioeconomic characteristics are controlled in the black-white statistical contrasts. For all 3 race/ethnic samples, the NSAL weights were designed to correct for disproportionate sampling, nonresponse, and population representation across various sociodemographic characteristics. **Table 1** provides the weighted sociodemographic characteristics of the sample.

Most interviews (86%) were completed face to face using a computer-assisted instrument and lasted an average of 2 hours and 20 minutes. The remaining interviews were either partially or entirely conducted by telephone. All the interviews were performed in English, but the Caribbean sample included persons from English-, French-, Spanish-, and Dutch-speaking Caribbean countries. Data collection was completed between Feb-

ruary 2, 2001, and June 30, 2003. The final response rate was 72.3% overall: 70.7% for African Americans, 77.7% for Caribbean blacks, and 69.7% for non-Hispanic whites. Recruitment and consent procedures were approved by the human subjects committee of the University of Michigan.

A sample of 644 NSAL respondents completed a clinical reappraisal interview to evaluate 12-month diagnoses. The sample was selected to ensure representation of respondents across each of the racial/ethnic categories who had and had not met the diagnostic criteria for specific disorders. Whites, Caribbean blacks, and Composite International Diagnostic Interview (CIDI) cases were oversampled. The data are weighted to adjust for oversampling so that the CIDI test characteristics estimates (sensitivity, specificity, and total classification accuracy) are unbiased.

### MEASURES

The World Mental Health CIDI, a fully structured diagnostic interview, was used to evaluate a wide range of DSM-IV mental disorders. The psychiatric disorders assessed in the NSAL, which included MDD, are slightly modified versions of those developed for the World Mental Health project initiated in 2000<sup>37</sup> and used in the NCS-R.<sup>38</sup> The algorithm for MDD is the same as that for major depressive episode (MDE): criteria C, the presence or absence of a manic episode, is not considered. The Structured Clinical Interview for DSM-IV (SCID),<sup>39</sup> a diagnostic interview that requires administration by a clinician, was used in the reappraisal study to generate the diagnosis of MDE. A comparison of the CIDI and the SCID for MDE for respondents in the clinical reappraisal sample indicates fair concordance for African Americans ( $\kappa = 0.43$ ; 95% confidence interval [CI], 0.26 to 0.59) but much lower concordance for whites ( $\kappa = 0.27$ ; 95% CI, -0.13 to 0.67) and Caribbean blacks ( $\kappa = 0.10$ ; 95% CI, -0.19 to 0.39) (**Table 2**). For Caribbean blacks, the 12-month prevalence of MDE from the CIDI is markedly higher than that from the SCID.

Multiple indicators of impairment were used. Respondents who met the 12-month criteria for MDD were administered the Sheehan Disability Scale<sup>40</sup> and were asked to rate how much their depression interfered with functioning in home management, work, relationships with others, and social life. The scale was divided into 5 categories of severity: none (0), mild (1-3), moderate (4-6), severe (7-9), and very severe (10). Days out of role was assessed by a single item about the number of days in the past 365 days, when respondents with 12-month MDD were totally unable to carry out their daily activities because of their depression.

The World Health Organization's Disability Assessment Schedule II (WHO-DAS-II) was an additional measure of im-

**Table 3. Prevalence and Persistence of DSM-IV/CIDI-Defined Major Depressive Disorder in the NSAL Sample by Race**

	Participants, % (SE)			F
	African American	Caribbean Black	White	
Prevalence				
Lifetime	10.4 (0.5)	12.9 (2.1)	17.9 (1.5)	30.2*
12 mo before the interview	5.9 (0.4)	7.2 (1.2)	6.9 (0.7)	1.3
30 d	2.2 (0.3)	2.2 (0.9)	3.1 (0.8)	0.9
Persistence				
12 mo within lifetime	56.5 (3.0)	56.0 (5.3)	38.6 (5.4)	9.4*
30 d within 12 mo	38.2 (4.6)	31.2 (12.1)	44.1 (8.2)	0.4
30 d within lifetime	21.6 (3.2)	17.5 (7.4)	17.0 (4.3)	0.5

Abbreviations: CIDI, Composite International Diagnostic Interview; NSAL, National Survey of American Life.

\*Significant at  $P = .001$ . Degrees of freedom associated with the F statistic are (2,144) for prevalence, (2,132) for within lifetime persistence and (2,114) for within 12 months' persistence.

pairment.<sup>41</sup> Respondents who said that their physical or mental health was not excellent or whose health had changed for the worse in the past year were administered a subset of items from the WHO-DAS-II. The WHO-DAS-II is based on the International Classification of Functioning, Disability, and Health and is cross-culturally applicable. It assesses functioning and disability at the individual level instead of the disorder-specific level. Thirty-day functional impairment in 7 WHO-DAS-II domains was assessed: days out of role, self-care (washing, dressing, etc), mobility (standing, moving, etc), cognition (concentration, memory, etc), social (conversing, maintaining friendships, etc), productivity (quality and quantity of normal daily activities at home and at work), and family burden (frequency with which respondents' health interfered with the life and activities of their close friends and family). Respondents who were not asked these questions owing to excellent health were given a score of 0. For days out of role, the outcome is the count of the number of days in the past 30 days preceding the time of interview that respondents were unable to carry out their normal activities. For the other domains, the impairment measure is the number of days (in the past 30 days) that the respondents' symptoms caused difficulty in the given area of functioning weighted by the level of difficulty. Very severe, severe, moderate, mild, and no difficulty were weighted 1.0, 0.75, 0.50, 0.25, and 0, respectively.

Levels of depression-specific symptom severity were assessed using a subset of the Quick Inventory of Depressive Symptomatology Self-Report (QIDS-SR),<sup>42</sup> which measures symptom severity during the worst 2-week period of the past year. Six domains were assessed: sleep problems, depressed mood, cognitive functioning (ie, concentration and decision making), negative personal outlook, diminished interest, and anergia. Respondent scores were summed across all domains and were mapped onto the framework of the full Inventory of Depressive Symptomatology scale<sup>43</sup> using conversion algorithms developed for the QIDS-SR.<sup>44</sup> The final converted score was divided into 4 levels of depressive symptom severity: mild, moderate, severe, and very severe.

African Americans and Caribbean blacks were asked if they saw any of an extensive list of providers for problems with their emotions, nerves, mental health, or use of alcohol or drugs. Health care treatment providers were categorized into mental health specialty (psychiatrists, psychologists, counselors and social workers seen in mental health settings, other mental health professionals, and mental health hotlines) and general medical (general practitioners, family physicians, nurses, occupational therapists, and other health professionals). Non-health care providers were human services providers (religious and

spiritual advisors and counselors and social workers in non-mental health settings) and complementary and alternative medicine providers (herbalists, chiropractors, spiritualists, self-help groups, and Internet support groups). Twelve-month service use was defined as making at least 1 visit to a service provider in the past 12 months.

In addition, respondents were asked whether they had taken any medications in the past 12 months for problems with emotions, nerves, mental health, substance use, energy, concentration, sleep, or ability to cope with stress. A medicine chest inventory of respondents' medication bottles was conducted by interviewers to maximize accurate recording of medication names and dosages. Further questions asked about duration and source (eg, psychiatrist or general practitioner) of treatment. Respondents were also considered to have received treatment from the health care sector if they reported taking antidepressant agents for at least 30 days during the past 12 months, even if they had not visited a health care provider during that time.

Sociodemographic correlates include race (African American, Caribbean black, or white), age, sex, employment status, years of education completed, household income (divided approximately into quartiles), marital status, country of birth, region,<sup>45</sup> and urbanicity (major metropolitan areas, suburbs with a population  $\geq 2500$ , and rural areas).<sup>46</sup>

## ANALYSIS STRATEGY

Because the NSAL used a multistage sample design involving clustering and stratification, specialized statistical techniques to account for the complexity of the design and its associated standard errors were used. In the NSAL the Caribbean black sample is more clustered than the African American sample, and the relatively small white sample represents a large population of whites. Thus, the corrected standard errors for these 2 groups will usually be larger than those for the African American sample.

Cross-tabulations are given to show race and ethnic differences on prevalence of disorders and the severity of mental illness. The percentages represent weighted proportions based on the sample's race-adjusted weight measure; the standard errors reflect the recalculation of variance using the study's complex design; and the Rao-Scott  $\chi^2$  represents a complex design-corrected measure of association. Logistic regression analysis was used to examine the demographic correlates of the prevalence of disorders. Odds ratio estimates and 95% CIs are given along with design-corrected Wald  $\chi^2$  measures. Throughout the analyses,  $P < .05$  on a 2-sided design-based test of significance

represented the cutoff value for assessing statistical significance. All analyses were conducted using a software program (SAS 9.12; SAS Institute Inc, Cary, NC) that uses the Taylor expansion approximation technique for calculating the complex design-based estimates of variance.<sup>47</sup>

## RESULTS

### PREVALENCE OF MDD

The lifetime prevalence estimate of CIDI/DSM-IV MDD is higher for whites (17.9%) than for African Americans (10.4%) and Caribbean blacks (12.9%) (**Table 3**). The levels of MDD for the 12 months before the interview were more similar for the 3 groups, with prevalence estimates of 5.9% for African Americans, 7.2% for Caribbean blacks, and 6.9% for whites. Whites (3.1%) have slightly higher 30-day prevalence of MDD than African Americans and Caribbean blacks (2.2% each). Regarding the course and persistence of MDD, considering the ratio of individuals with 12-month MDD in the sample of lifetime MDD cases indicates that MDD is a chronic disorder for most blacks. This measure of persistence is higher for African Americans (56.5%) and Caribbean blacks (56.0%) than for whites (38.6%). The 30-day to 12-month prevalence ratios indicate that MDD is intermittent in its course, with whites having a higher ratio (44.1%) than African Americans (38.2%) or Caribbean blacks (31.2%). African Americans (21.6%), however, have a higher 30-day to lifetime prevalence ratio than Caribbean blacks (17.5%) or whites (17.0%).

### SOCIODEMOGRAPHIC CORRELATES

African Americans and whites 60 years and older have lower rates of lifetime MDD than their younger counterparts (**Table 4**). A similar pattern is found for Caribbean blacks, but it is not significant. African American females have almost twice the rate of MDD as their male peers, but, among Caribbean blacks, women have a lifetime rate of MDD that is comparable with that of men. Among African Americans, employed persons have lower rates of MDD than the unemployed, but this pattern is reversed for Caribbean blacks. Education and income are unrelated to MDD risk for all 3 race/ethnic groups. Across the 3 groups, married persons tend to report lower rates of MDD than the unmarried, although this pattern is not significant for whites. Caribbean immigrants have lower lifetime rates of MDD than persons of Caribbean ancestry born in the United States. There is a tendency, especially for African Americans, toward regional variations in MDD, with residents of the South and West having lower prevalence of MDD than residents of the Northeast and Midwest. For African Americans and whites, rural residence is associated with a reduced rate of MDD. The elevated prevalence of MDD linked to urbanicity is especially marked for African Americans and whites residing in major metropolitan areas.

Similar analyses (data not shown) were performed for 12-month disorders. The patterns were similar to those for lifetime disorders. Two patterns for Caribbean blacks, although not significant owing to low statistical power,

**Table 4. Lifetime Prevalence of DSM-IV/CIDI-Defined Major Depressive Disorder by Demographics in the NSAL Sample by Race**

Characteristic	Lifetime Prevalence, % (SE)		
	African American (n = 3434)	Caribbean Black (n = 1587)	White (n = 668)
Age, y			
18-29	12.8 (1.3)	19.9 (3.5)	14.7 (4.0)
30-44	10.2 (1.0)	10.4 (2.4)	26.4 (3.1)
45-59	12.2 (1.1)	9.8 (3.3)	16.2 (4.6)
≥60	4.5 (0.8)	7.6 (5.4)	9.3 (1.9)
F statistic	8.1*	2.2	3.7†
Sex			
M	7.0 (0.6)	12.6 (3.0)	16.2 (2.5)
F	13.1 (0.7)	13.1 (2.7)	19.5 (2.4)
F statistic	42.0*	0.0	0.7
Work status			
Employed	10.6 (0.7)	13.4 (2.5)	19.2 (2.2)
Unemployed	14.5 (1.7)	10.6 (3.2)	24.1 (13.9)
Not in labor force	8.1 (1.0)	11.7 (4.1)	12.8 (2.3)
F statistic	4.7†	0.2	0.9
Education, y			
0-11	11.3 (1.1)	13.1 (5.6)	12.4 (4.1)
12	9.1 (0.8)	9.6 (2.2)	17.1 (3.5)
13-15	10.8 (1.4)	12.9 (2.7)	20.4 (1.6)
≥16	11.7 (1.7)	16.5 (6.8)	19.6 (2.3)
F statistic	1.0	0.4	1.0
Annual family income, \$			
0-17 999	11.3 (1.0)	12.7 (3.1)	20.8 (5.3)
18 000-31 999	10.0 (1.3)	16.6 (4.1)	17.3 (3.4)
32 000-54 999	9.8 (1.0)	13.5 (3.4)	21.1 (3.8)
≥55 000	10.1 (1.4)	9.2 (3.6)	14.1 (2.0)
F statistic	0.4	0.8	0.9
Marital status			
Married	8.2 (0.7)	8.6 (2.3)	16.1 (2.8)
Divorced/separated/ widowed	12.1 (1.4)	12.4 (2.9)	22.1 (3.3)
Never married	11.9 (1.1)	19.9 (3.4)	17.9 (5.3)
F statistic	4.2†	6.0‡	0.6
Birthplace			
Born in United States	10.4 (0.5)	19.8 (5.0)	17.9 (1.6)
Born outside United States	10.8 (3.7)	8.9 (1.7)	18.8 (7.7)
F statistic	0.0	5.4†	0.0
Region			
Northeast	14.5 (0.8)	9.8 (1.5)	23.9 (2.8)
Midwest	15.8 (1.4)	NA	18.7 (3.7)
South	8.0 (0.6)	13.8 (3.4)	14.7 (1.4)
West	7.8 (1.8)	NA	20.0 (2.8)
F statistic	15.5*	1.2	5.5‡
Urbanicity			
Major metropolitan	11.1 (0.5)	12.9 (2.0)	19.1 (1.5)
Other urban	6.0 (1.6)	NA§	12.5 (1.4)
Rural	2.6 (0.5)	NA§	10.8 (2.9)
F statistic	12.0*	NA	10.4*

Abbreviations: CIDI, Composite International Diagnostic Interview; NA, empty cell or very low unweighted cell frequency; NSAL, National Survey of American Life.

\*Significant at  $P = .001$ .

†Significant at  $P = .05$ .

‡Significant at  $P = .01$ .

§As Table 1 indicates, all of the participants in the Caribbean black sample were living in major metropolitan areas.

are worthy of note. The prevalence of 12-month MDD was 8.5% for Caribbean men and 5.8% for Caribbean women. Also, the 12-month rate of MDD was 10.9% for

**Table 5. Severity of Role Impairment Using the SDS in 12-Month DSM-IV/CIDI-Defined MDD Cases in the NSAL Sample by Race\***

SDS Domain	Severity of Role Impairment		F Statistic (P Value)†
	None/Mild/Moderate	Severe/Very Severe	
<b>12-mo MDD Cases in SDS Domain (N = 341)</b>			
Home			
Black (n = 279)	61.9 (4.3)	38.1 (4.3)	0.22 (.64)
White (n = 62)	56.8 (10.2)	43.2 (10.2)	
Work			
Black	62.8 (4.2)	37.2 (4.2)	0.91 (.34)
White	71.1 (7.4)	28.9 (7.4)	
Relationship			
Black	56.8 (4.0)	43.2 (4.0)	1.09 (.30)
White	69.1 (10.1)	30.9 (10.1)	
Social			
Black	44.6 (3.4)	55.4 (3.4)	9.51 (.003)
White	65.8 (5.3)	34.2 (5.3)	
Overall‡			
Black	25.6 (3.3)	74.4 (3.3)	0.91 (.35)§
White	36.4 (11.7)	63.6 (11.7)	
<b>Days Out of Role Among 12-mo MDD Cases (N = 341)</b>			
No. of days out of role due to depression in the past 365 d, mean			
Black	25.5 (11.1)	70.8 (10.8)	8.89 (.005)§
White	0.7 (0.4)	62.9 (18.3)	10.92 (.002)§
F statistic (P value)¶	4.9 (.04)	0.3 (.61)	

Abbreviations: CIDI, Composite International Diagnostic Interview; MDD, major depressive disorder; SDS, Sheehan Disability Scale.

\*Data are given as percentage (SE). Reported numbers are unweighted and represent the number of respondents who met the criteria for 12-month MDD.

†Tests for significant association between race and severity of role impairment for SDS domains (in the upper panel). Tests for significant differences in days out of role (out of role is the number of days of the past 30 days that respondents reported being completely unable to work or carry out normal daily activities) across severity within race (in the lower panel).

‡Highest severity category across all 4 SDS role domains.

§Significant at  $P < .01$ .

||Mean number of days presented within each category of the overall severity measure. The severity  $\times$  race interaction term is not significant.

¶Tests for race differences within level of severity ( $P < .05$ ).

US-born blacks of Caribbean ancestry but 2.0% for Caribbean immigrants.

## ROLE IMPAIRMENT

Among respondents with 12-month MDD, 97.2% of African Americans, 95.7% of Caribbean blacks, and 100.0% of whites reported some role impairment related to their depression in at least 1 of the 4 role domains (home, work, relationships, and social) evaluated. In addition, 93.3% of African Americans, 95.1% of Caribbean blacks, and 92.5% of whites rated their impairment to be at least moderate in severity. Mean differences in impairment between African Americans and Caribbean blacks were not significant. Accordingly, the 2 black groups were combined and the impairment categories were collapsed into none/mild/moderate and severe/very severe because of the small number of cases in each impairment level. Three of 4 blacks and almost 2 of 3 whites viewed their impair-

ment as severe or very severe in at least 1 domain (**Table 5**). The level of impairment is greatest in the social role domain, and blacks report higher levels of this impairment than whites; 55.4% of blacks and 34.2% of whites indicated that social impairment is severe or very severe. The lowest level of impairment is in the work domain, with 37.2% of blacks and 28.9% of whites describing this impairment as severe or very severe.

Respondents with 12-month MDD whose depression is rated as severe or very severe report more days out of role in the past year (totally unable to work or carry out their normal activities because of their depression), and blacks report more days out of role than whites. Among persons with severe or very severe impairment, the average number of days out of role is 71 for blacks and 63 for whites.

Levels of impairment on the 6 dimensions of the WHO-DAS-II were also compared for persons with MDD with those with no lifetime MDD. Preliminary analyses of functional impairment for African Americans compared with Caribbean blacks revealed only 1 significant difference, with African Americans reporting higher levels of impairment in mobility. Accordingly, the 2 black groups were combined. Results of statistical tests (data not shown) also indicated that the levels of functional impairment for each domain were significantly different across the 4 MDD recency groups, with respondents with MDD reporting higher levels of impairment on all 6 of the WHO-DAS-II domains compared with those with no history of MDD. In general, blacks with MDD report higher levels of functional impairment than whites (**Table 6**).

## CLINICAL SEVERITY

The mean score on the QIDS-SR measure of severity was significantly higher ( $P < .05$ ) for African Americans (15.6) than for Caribbean blacks (13.8) but did not differ for whites. In fact, 94.0% of African Americans, 95.4% of Caribbean blacks, and 96.2% of whites with 12-month CIDI-defined MDD had their depressive symptoms independently classified by the QIDS-SR as moderate, severe, or very severe during their worst month of the year. The mild and moderate severity categories were collapsed and contrasted with the severe and very severe categories due to the small number of cases. Although the mean severity scores for all of the correlates of symptom severity tend to be higher for African Americans than Caribbean blacks, they are not significantly different, probably owing to low statistical power. Accordingly, the 2 black groups were combined for the analyses in **Table 7**. Cases rated as mild or moderate in severity do not differ from those rated severe or very severe for the number of weeks depressed in the past year, the level of comorbidity of MDD with another disorder, and role impairment (the percentage of respondents who were rated as severe or very severe on at least 1 dimension of the Sheehan Disability Scale). Cases of MDD rated as mild or moderate, however, had fewer days out of role (7.6 days) than those rated as severe or very severe (78.6) for whites. Two significant racial differences were also evident. Among MDD cases rated on the QIDS-SR as mild or moderate, blacks reported more days out of role and higher comorbidity than whites.

**Table 6. Thirty-Day Comparisons of Functional Impairment Using the WHO-DAS-II in Blacks (African Americans and Caribbean Blacks) and Whites With vs Without DSM-IV/CIDI-Defined MDD in the NSAL by Recency of MDD**

WHO-DAS-II Race/ Ethnicity Domain*	Recency of MDD, Mean Score (SE)			
	Past 30 d	Past 12 mo	≥12 mo Ago	No Lifetime MDD
Out of role				
Blacks	9.8† (1.5)	6.3† (1.1)	3.4 (0.6)	2.7 (0.2)
Whites	2.9 (1.1)	4.8 (1.7)	0.8 (0.4)	1.7 (0.2)
t‡	t <sub>53</sub> = 3.36§	t <sub>65</sub> = 0.77	t <sub>64</sub> = 3.74§	t <sub>72</sub> = 3.41§
Self-care				
Blacks	0.7 (0.2)	0.5   (0.1)	0.5 (0.2)	0.2 (0.0)
Whites	0.5 (0.3)	1.2 (0.8)	0.3 (0.1)	0.2 (0.1)
t‡	t <sub>53</sub> = 0.54	t <sub>65</sub> = -0.84	t <sub>64</sub> = 1.00	t <sub>72</sub> = 0.77
Mobility				
Blacks	3.4† (0.6)	2.3   (0.6)	1.8   (0.3)	1.2 (0.1)
Whites	1.6 (1.1)	3.5   (0.9)	0.7 (0.3)	1.3 (0.2)
t‡	t <sub>53</sub> = 1.39	t <sub>65</sub> = 1.15	t <sub>64</sub> = 2.65¶	t <sub>72</sub> = -0.85
Cognition				
Blacks	1.9† (0.5)	2.0† (0.5)	0.5 (0.2)	0.3 (0.0)
Whites	1.3 (0.5)	1.5   (0.6)	0.2 (0.1)	0.3 (0.1)
t‡	t <sub>53</sub> = 0.82	t <sub>65</sub> = 0.62	t <sub>64</sub> = 1.34	t <sub>72</sub> = 0.60
Productivity				
Blacks	7.6† (0.9)	5.3† (0.8)	2.9   (0.4)	2.0 (0.1)
Whites	4.4   (1.1)	5.3   (1.4)	1.2 (0.3)	1.8 (0.2)
t‡	t <sub>53</sub> = 2.31¶	t <sub>65</sub> = 0.02	t <sub>64</sub> = 3.86§	t <sub>72</sub> = 1.24
Social				
Blacks	1.7† (0.4)	1.0† (0.3)	0.4   (0.1)	0.2 (0.0)
Whites	2.4   (1.2)	1.3   (0.6)	0.2 (0.1)	0.2 (0.1)
t‡	t <sub>53</sub> = 0.57	t <sub>65</sub> = 0.44	t <sub>64</sub> = 1.62	t <sub>72</sub> = 0.86
N (weighted)				
Blacks	113 (66)	166 (110)	240 (136)	4500 (2631)
Whites	23 (90)	39 (114)	87 (325)	720 (2424)

Abbreviations: CIDI, Composite International Diagnostic Interview; MDD, major depressive disorder; NSAL, National Survey of American Life; WHO-DAS-II, World Health Organization's Disability Assessment Schedule II.

\*All the WHO-DAS-II domain scores range from 0 to 30. "Out of role" is the number of days of the past 30 days that the respondents reported being completely unable to work or carry out normal daily activities. The remaining 5 domains represent the number of days of the past 30 days that the respondents reported extreme difficulty in the given domain area such that they were unable to perform domain-relevant tasks.

†Significantly different from the "No lifetime MDD" mean within the same row at  $P < .01$ . The  $df$  of these  $t$  tests are 57 for blacks and 15 for whites.

‡These  $t$  tests test the null hypothesis of no difference between the means for blacks and whites within each impairment domain and MDD recency group combination.

§Means were different at the  $P < .01$  level.

||Significantly different from the "No Lifetime MDD" mean within the same row at  $P < .05$ .

¶Means were different at the  $P < .05$  level.

## TREATMENT

Most participants with 12-month MDD received no treatment (**Table 8**). Only 45.0% of African Americans and 24.3% of Caribbean blacks received treatment of any type. For both black groups, except for treatment from non-health care professionals for African Americans, the receipt of all treatment types did not significantly increase as symptom severity increased. Only 48.5% of African Americans and 21.9% of Caribbean blacks with severe or very severe symptoms received any treatment. In the NSAL, data on treatment were not collected for whites. For each sector of treatment, African Americans with a 12-month MDD were more likely to receive treatment than Caribbean blacks, but these differences were significant only for non-health care, human services. Among persons with 12-month MDD, 16.7% of African Americans but only 2.8% of Caribbean blacks were receiving treatment from the human services sector. Most visits to human service providers for both groups were to the

clergy. Similarly, 20.4% of African Americans compared with 3.6% of Caribbean blacks received services from non-health care professionals. Among persons with a 12-month MDD whose symptoms were rated as severe or very severe, African Americans were more likely than Caribbean blacks to receive most types of treatment. For those with mild or moderate severity, African Americans were more likely to receive services from non-health care, human services, and complementary and alternative medicine providers.

## COMMENT

These analyses reveal that the risk of MDD is similar for African Americans and Caribbean blacks; however, compared with whites in the NSAL, both black groups have a lower lifetime prevalence but a higher risk of the persistence of MDD. These findings come from the largest psychiatric epidemiologic study of blacks in the United

**Table 7. Correlates of Symptom Severity Using the QIDS-SR Associated With 12-Month DSM-IV/CIDI-Defined MDD in the NSAL Sample by Race\***

Correlate of Symptom Severity	Mild/Moderate	Severe/Very Severe	F Statistic
No. of weeks depressed in the past year, mean (SE)			
Black ( <i>df</i> = 1,51)	17.5 (1.5)	19.5 (2.2)	0.3
White ( <i>df</i> = 1,41)	21.2 (6.0)	24.0 (3.6)	0.2
F statistic	0.3	1.3	
Days out of role† in 12 mo, mean (SE)			
Black ( <i>df</i> = 1,51)	46.5 (12.3)	70.7 (8.1)	1.8
White ( <i>df</i> = 1,38)	7.6 (4.2)	78.6 (25.1)	7.0‡
F statistic	11.8†	0.1	
Role impairment, % (SE)			
Black ( <i>df</i> = 1,37)	72.4 (5.1)	81.2 (4.4)	1.7
White ( <i>df</i> = 1,38)	51.8 (15.9)	77.1 (9.8)	2.0
F statistic	1.7†	0.2	
Comorbidity in past 12 mo, % (SE)			
Black ( <i>df</i> = 1,38)	64.0 (5.9)	69.7 (5.8)	2.0
White ( <i>df</i> = 1,38)	31.6 (12.5)	60.1 (11.3)	3.2
F statistic	5.5†	0.7	

Abbreviations: CIDI, Composite International Diagnostic Interview; MDD, major depressive disorder; NSAL, National Survey of American Life; QIDS-SR, Quick Inventory of Depressive Symptomatology Self-Report.

\*The QIDS-SR was self-administered in a respondent booklet that was later computerized by the interviewers. Responses were incomplete for 40 respondents, 5 cases had QIDS-SR scores in the noncase range, and 32 respondents were accidentally skipped out of the section. All 77 cases were deleted from this table. The starting number for these analyses, the number of patients who met the criteria for 12-month MDD, was 341.

†Out of role is the number of days of the past 30 days that respondents reported being completely unable to work or carry out normal daily activities. ‡*P* ≤ .05.

States and the first to include a large national sample of Caribbean-origin blacks. They provide a previously unavailable picture of mental health of the US black population. Whites in the NSAL are not representative of whites nationally, but the prevalence of MDD for whites is almost identical to that of whites in the NCS-R.<sup>9,48</sup> Moreover, the elevated rates and lower persistence of MDD for whites in the NSAL compared with blacks is consistent with the NCS<sup>2,8</sup> and the NCS-R<sup>9,48</sup> and highlight the need for renewed attention to identifying the factors responsible for the lower prevalence of MDD for blacks. Future research should explore the extent to which social support systems, including religious participation and psychological resources, such as high levels of self-esteem, can provide some protection to the black population from exposure to adverse social conditions.<sup>49</sup>

There were marked differences in concordance in the clinical reappraisal analyses for African Americans ( $\kappa = 0.43$ ) vs Caribbean blacks ( $\kappa = 0.10$ ). The  $\kappa$  value for African Americans was comparable with that obtained in the NCS-R ( $\kappa = 0.40$ ).<sup>9</sup> We do not understand why the Caribbean sample had a much higher MDE prevalence using the CIDI than the SCID. Additional analyses revealed that the  $\kappa$  value for Caribbean immigrants was higher than that of US-born blacks of Caribbean ancestry, suggesting that differences in acculturation is an un-

likely explanation. Furthermore, the  $\kappa$  value for blacks from the Spanish- and French-speaking Caribbean was slightly higher than the  $\kappa$  value for those from the English-speaking Caribbean, suggesting that primary language differences did not drive these patterns. It is possible that the differences reflect the context of the interviews. The CIDI was administered in an in-person interview in which Caribbean respondents were typically matched to Caribbean interviewers. The SCID was a telephone interview with no ethnic matching. It is possible that a telephone interview, without ethnic matching, shortly after the initial CIDI, may have raised suspicions that led to underreporting. Some evidence suggests that ethnic minorities are more likely to underreport sensitive information in a telephone interview than in an in-person one.<sup>50</sup> Alternatively, despite many efforts to make the CIDI and SCID cross-culturally relevant and extensive use of these instruments internationally,<sup>2</sup> 1 or both of these instruments may not be appropriately calibrated for Caribbean blacks. There is an ongoing need to identify the optimal methods for assessing depression across ethnic groups.

The present findings also shed light on the burden of MDD for blacks. We found that both black populations with MDD were overrepresented among persons with very severe impairment, with African Americans having higher levels than Caribbean blacks on some indicators of impairment. Blacks with severe impairment, irrespective of ethnicity, reported substantially more days out of role than the national average for persons with MDD.<sup>9</sup> These data suggest that when blacks develop MDD, it is likely debilitating in impact and persistent in its course. It is important to find out why blacks who develop this illness have a poorer prognosis than their white counterparts.

These findings also emphasize the need for the treatment of blacks with MDD. In the United States, 57% of adults with MDD receive treatment,<sup>9</sup> but we found that most blacks with MDD, irrespective of ethnicity, do not receive treatment. Only 48% of African Americans and 22% of Caribbean blacks with severe symptoms received treatment. It has not been previously recognized that Caribbean blacks, a group with higher income and education than African Americans, have such marked levels of underutilization of mental health services. Other evidence indicates that blacks who do access mental health care services receive poorer quality care than whites.<sup>51</sup> These findings underscore the pressing need to understand the factors underlying racial differences in access and quality of mental health care and the urgency of implementing interventions to eliminate these disparities.

There were sociodemographic factors that predicted variations in MDD that point to potential differences in the social context between Caribbean blacks and African Americans. First, consistent with previous research on other immigrant groups,<sup>52</sup> Caribbean immigrants had lower rates of MDD than US-born individuals of Caribbean ancestry. Future research needs to understand the contribution of selection factors, acculturation processes, cultural values, and social networks to the mental health of black immigrants.<sup>52</sup> Second, although it is almost universally found that women have higher rates of MDD than men,<sup>9,48,53,54</sup> among Caribbean blacks, there

**Table 8. Treatment in the Past 12 Months for 12-Month DSM-IV/CIDI-Defined MDD by Symptom Severity Assessed Using the Quick Inventory of Depressive Symptomatology Self-report and Race/Ethnicity**

Sector of Treatment	Persons With No 12-mo Disorder (n = 4122), % (SE)	All 12-mo MDD Cases (n = 276), % (SE)*	12-mo MDD Cases by Symptom Severity (n = 210), % (SE)†		$\chi^2$ ‡	P Value‡
			Mild/Moderate (n = 82)	Severe/Very Severe (n = 128)		
Any treatment						
African American	5.4 (0.56)	45.0 (3.30)	40.1 (7.74)	48.5 (6.11)	0.74	.39
Caribbean black	4.8 (1.29)	24.3 (12.11)	30.0 (21.73)	21.9 (9.62)	0.15	.70
$\chi^2$ (P value)	0.18 (.67)	2.04 (.15)	0.16 (.69)	11.2 (.001)		
Health care						
African American	4.3 (0.41)	35.8 (3.04)	38.7 (7.77)	35.6 (6.02)	0.10	.75
Caribbean black	3.6 (1.14)	21.5 (11.92)	29.6 (21.77)	20.0 (9.05)	0.23	.63
$\chi^2$ (P value)	0.23 (.63)	1.01 (.32)	0.13 (.72)	3.65 (.06)		
Specialty mental health						
African American	2.8 (0.32)	26.1 (3.21)	29.6 (7.66)	28.2 (5.56)	0.02	.88
Caribbean black	2.0 (0.96)	20.0 (11.81)	29.6 (21.77)	17.0 (8.00)	0.46	.50
$\chi^2$ (P value)	0.48 (.49)	0.21 (.65)	0.00 (.99)	2.21 (.14)		
General medical						
African American	2.0 (0.27)	21.9 (3.46)	30.3 (7.44)	17.3 (4.93)	2.39	.12
Caribbean black	1.8 (0.80)	14.0 (11.54)	26.7 (22.07)	6.7 (4.26)	2.64	.10
$\chi^2$ (P value)	0.06 (.81)	0.31 (.58)	0.02 (.88)	2.68 (.10)		
Non-health care professionals						
African American	2.1 (0.41)	20.4 (3.20)	8.5 (5.08)	30.5 (6.02)	5.78	.02
Caribbean black	1.4 (0.55)	3.6 (2.08)	1.9 (1.64)	2.5 (1.64)	0.06	.80
$\chi^2$ (P value)	0.84 (0.36)	11.56 (<.001)	3.39 (0.07)	42.28 (<.001)		
Human services						
African American	1.3 (0.31)	16.7 (2.89)	8.5 (5.08)	22.6 (5.79)	2.72	0.10
Caribbean black	1.1 (0.53)	2.8 (1.83)	0.4 (0.40)	1.9 (1.53)	1.61	.20
$\chi^2$ (P value)	0.11 (.74)	10.16 (<.001)	13.43 (<.001)	18.77 (<.001)		
Complementary and alternative medicine						
African American	1.0 (0.29)	7.0 (2.60)	1.2 (1.21)	13.9 (4.98)	10.16	.002
Caribbean black	0.4 (0.23)	1.1 (0.74)	1.5 (1.55)	1.8 (1.33)	0.02	.90
$\chi^2$ (P value)	2.07 (.15)	6.72 (.009)	0.02 (.88)	13.44 (<.001)		

Abbreviations: CIDI, Composite International Diagnostic Interview; MDD, major depressive disorder

\*Percentages in this column represent the proportion of African Americans and Caribbean blacks with 12-month MDD who received treatment within each of the treatment types. The unweighted numbers are shown.

†These columns include persons with 12-month MDD for which symptom severity information was available. The percentages reflect the proportion of adults in each category of symptom severity who received treatment in the specified type in the past 12 months.

‡All  $\chi^2$  statistics and corresponding P values have 3 *dfs* and compare the levels of treatment across severity categories.

is no sex difference in lifetime and 12-month risk of disorder, with a nonsignificant trend for men to higher risk of 12-month MDD than women. It is not clear whether this pattern reflects the selective sex composition of the immigrant pool or processes of advantage and disadvantage linked to mental health risk and sex for Caribbean immigrants. Research<sup>19,55,56</sup> suggests that the new employment and educational opportunities that migration to the United States provides for Caribbean women enhance their personal and financial autonomy and provide increased power in the family. These new freedoms for women could be stressful for Caribbean men who were socialized in a culture that is more patriarchal than in the United States.<sup>57</sup>

There are several limitations to the analyses reported herein. First, the data are cross-sectional, and it is not possible to identify causal associations among the factors examined. Second, we cannot distinguish the association of factors related to the onset of MDD from those related to its course. Third, the assessment of depressive symptoms was based on self-report. We do not know the extent to which cultural factors could affect the will-

ingness of respondents to either admit or recall the presence of symptoms during their lifetime or whether the more generic problem of impaired memory recall could affect subgroups of the sample differentially. Finally, the sample of Caribbean blacks includes immigrants who vary in time in the United States and US-born persons with varying strength of ties to Caribbean culture. Future research on this sample and, with larger samples of persons of Caribbean ancestry, needs to examine the ways in which the distribution of MDD varies by nativity status, length of stay in the United States, and ancestry and generational status. Nonetheless, the findings of this study highlight the importance of identifying high-risk subgroups in racial populations and the continuing need to target cost-effective interventions to them.

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