Ethnicity and Diagnosis in Patients With Affective Disorders

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Background: Clinically, African American psychiatric patients are disproportionately diagnosed with schizophrenia compared with white patients. Why this occurs is unknown. Extending prior work, the authors hypothesized that first-rank symptoms distract clinicians so that they fail to identify affective disorders in African Americans.

Method: 195 African American and white patients with at least 1 psychotic symptom (delusions, hallucinations, or prominent thought disorder) at admission were recruited from January 1, 1998, through May 31, 2001. Each patient received 3 independent DSM-IV diagnoses: a clinical diagnosis, a structured-interview diagnosis, and an expert-consensus diagnosis. The expert-consensus diagnoses were derived from the structured interviews, which were audiotaped and transcribed, and medical records. After reviewing edited transcripts and medical records from which ethnic cues had been eliminated, 2 psychiatrists assigned expert-consensus diagnoses and first-rank symptom ratings. For the 79 patients who received an expert-consensus diagnosis of an affective disorder, clinical variables, diagnoses, and first-rank symptoms were compared between African American (N = 39) and white (N = 40) patients.

Results: Seventy-nine (41%) of 195 patients were diagnosed with an affective disorder by expert consensus. African American men with an expert-consensus affective disorder were significantly ($p < .03$) more likely than other patients to be diagnosed with a schizophrenia spectrum disorder by clinical assessment and structured interview. Although first-rank symptoms were more commonly identified in African American men, this finding did not explain the difference in diagnoses. Post hoc analyses suggested that African American men diagnosed with a schizophrenia spectrum disorder were more likely than other patients to have been identified during structured interview as having psychotic symptoms in the absence of affective symptoms.

Conclusion: The apparent misdiagnosis of schizophrenia in African-Americans with mood disorders cannot be ascribed to differences in first-rank symptoms. However, it may be due to a perception that psychotic symptoms are more chronic or persistent than affective symptoms in these patients.

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For several decades, investigators have found that African American patients with affective disorders appear to be at higher risk than other ethnic groups for receiving a misdiagnosis of schizophrenia.[1–10] This risk appears to be higher in African American men than women.[2,4,6] Unfortunately, the specific reasons why clinicians overdiagnose schizophrenia in African Americans remain uncertain.

Previously, Strakowski et al.[8] attempted to clarify these reasons by comparing clinical and research evaluations in 136 patients hospitalized for a first psychotic episode. Research diagnoses were obtained using structured clinical interviews, whereas clinical diagnoses were made following routine clinical procedures. The investigators found that research and clinical diagnoses were less likely to agree in African American than in white patients. Patient ethnicity was specifically associated with information variance between the 2 diagnostic assessments; particularly, affective symptoms identified by structured interviews were less commonly recorded by clinicians in the African American than in the white patients. These results suggest that clinicians often failed to identify affective symptoms in African American patients with psychosis.

One possible explanation for this finding is that African American patients may be more likely than white patients to present with specific psychotic symptoms that

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distract clinicians and lead them to prematurely assign a diagnosis of schizophrenia. Previous studies have reported that African Americans with psychotic disorders in general, and psychotic mood disorders in particular, are more likely than white patients to report first-rank symptoms of schizophrenia.[7,8,11,12] First-rank psychotic symptoms include specific types of auditory hallucinations and delusions of control (e.g., thought broadcasting, insertion, or withdrawal). Nearly a half-century ago, Kurt Schneider[13] identified these symptoms as suggestive of a diagnosis of schizophrenia in German patients. However, these symptoms are common in a wide variety of psychotic disorders, vary in prevalence across different cultures, and are not pathognomonic for schizophrenia.[7,8,14–16] Nonetheless, if first-rank symptoms are more common in African American than in white patients with mood disorders, then these symptoms may cause clinicians to assign a diagnosis of schizophrenia before adequately evaluating affective symptoms.

With these considerations in mind, we initiated a study to test the hypothesis that increased rates of first-rank symptoms in African American patients, particularly men, with psychotic mood disorders contribute to a clinical misdiagnosis of schizophrenia.

Table 1. Sociodemographic and Clinical Variables in 79 Patients Receiving an Ethnicity-Blinded Expert-Consensus Diagnosis of an Affective Disorder

	African American		White	
Characteristic	Men (N = 17)	Women (N = 22)	Men (N = 25)	Women (N = 15)
Age, mean (SD) y[a]	25 (4)	30 (8)	32 (8)	33 (9)
Education, mean (SD) y[b]	11 (2)	12 (2)	12 (2)	13 (2)
Best income[c,d]	1.5 (0.6)	1.5 (0.7)	2.4 (1.6)	2.3 (1.3)
Parental employment[d]	5.3 (2.3)	5.0 (1.9)	3.8 (2.1)	4.3 (2.0)
Diagnosis, N (%)				
Bipolar disorder	16 (94)	17 (77)	24 (96)	10 (67)
Major depression	1 (6)	5 (23)	1 (4)	5 (33)
Drug use disorder, N (%)[e,f]	10 (63)	5 (23)	13 (52)	4 (27)
Alcohol use disorder, N (%)[e,g]	4 (25)	6 (27)	15 (60)	6 (40)
Rating scale, mean (SD) score				
Mania rating (YMRS)	32 (9)	32 (8)	32 (10)	29 (10)
Depression rating (HAM-D)	21 (9)	26 (10)	20 (9)	23 (8)
Psychotic symptoms (SAPS)	12 (3)	12 (4)	10 (3)	10 (4)
Negative symptoms (SANS)	12 (5)	12 (5)	11 (4)	12 (5)
Global psychopathology (GAF)	25 (7)	25 (10)	26 (9)	26 (10)

[a]Significant difference among groups, $F = 4.2$, $df = 3,75$; $p < .009$; African American men < all other groups.
[b]Significant difference among groups, $F = 3.8$, $df = 3,75$; $p < .02$; African American men < all other groups.
[c]Significant difference among groups, $F = 3.9$, $df = 3,75$; $p < .02$; African American < white.
[d]Values represent mean (SD) number categorized in a ranking system described in Method section of text.
[e]Information regarding drug and alcohol use could not be obtained from 1 African American man.
[f]Significant difference between men and women, $\chi^2 = 7.6$, $df = 1$, $p = .006$
[g]Significant difference between whites and African Americans, $\chi^2 = 6.0$, $df = 1$, $p < .02$.
Abbreviations: GAF = Global Assessment of Functioning scale, HAM-D = Hamilton Rating Scale for Depression, SANS = Scale for the Assessment of Negative Symptoms, SAPS = Scale for the Assessment of Positive Symptoms, YMRS = Young Mania Rating Scale.

METHOD

Subjects

Adult patients were randomly selected for recruitment from consecutive admissions to the University of Cincinnati Hospital (Cincinnati, Ohio) from January 1, 1998, through May 31, 2001. To be included, patients were required to meet the following inclusion criteria: (1) aged 18 to 45 years (the upper age limit was incorporated to minimize the likelihood that psychotic symptoms were secondary to medical problems); (2) presence of at least 1 psychotic symptom (delusions, hallucinations, or prominent thought disorder); (3) no history of mental retardation or IQ < 70; (4) ability to communicate in English; and (5) ability to understand study procedures and provide written informed consent as determined by study personnel and clinicians participating in the patients' care. Patients were excluded from this study if their symptoms appeared to be secondary to drug or alcohol intoxication or withdrawal or medical illness.

Since the number of admissions of patients with psychotic symptoms far exceeded the ability of the investigators to recruit every potential subject (i.e., more than 1500 patients admitted per year), subjects were recruited as follows. Beginning Monday morning each week, patients admitted to the hospital during the previous week were identified and reviewed with inpatient staff for possible inclusion in this study. The most recently admitted patient who appeared to meet inclusion and exclusion criteria was approached to provide informed consent. If the patient provided informed consent and met study criteria, recruitment for that week ended. If the patient refused to participate, could not provide informed consent, or did not meet study criteria, then the patient admitted immediately prior was approached. This process continued with the goal of recruiting approximately 1 patient per week during the recruitment period.

For brevity in this article, "white" refers to persons "having origins in any of the original peoples of Europe, the Middle East, or North Africa" and excludes Hispanic (Latino) patients; "African American" refers to "a person having origins in any of the black racial groups of Africa" (from U.S. Department of Health and Human Services grant application, Form PHS 398).

A total of 195 African American and white patients were recruited. Other ethnic groups are too infrequent in the population served by the University of Cincinnati Hospital to permit study. Of these 195 patients, 79 (41%) met criteria for a DSM-IV affective disorder as determined by ethnicity-blinded expert-consensus diagnosis

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(described subsequently), and are the subjects of this report. Sociodemographic information for these patients is provided in Table 1. All subjects provided written informed consent after the study procedures were explained in full. This research protocol was approved by the University of Cincinnati Institutional Review Board.

Diagnostic Procedures

Each subject received 3 independent diagnoses as part of this study: (1) a clinical diagnosis, (2) a structured-interview diagnosis, and (3) an expert-consensus diagnosis in which the psychiatrists were blinded to the patient's ethnicity.

Clinical diagnoses were obtained from the discharge summary for each subject as recorded by the patient's primary inpatient psychiatrist. Psychiatrists at University Hospital use DSM-IV criteria when assigning diagnoses. Patients were recruited from 4 separate inpatient units. Each unit is managed by a psychiatrist and employs resident physicians and nurse clinicians who are supervised by that psychiatrist. The sex and ethnicity of these personnel were diverse and regularly changing during the time this study occurred. These clinicians were blinded to the specific hypotheses of this study, although they were aware of the study procedures and they assisted with subject identification.

Structured interview diagnoses were obtained by personnel who were kept blinded to the specific aims and hypotheses of the study, although these personnel were aware that the study was examining clinical and sociodemographic variables. The Structured Clinical Interview for DSM-IV Axis I Disorders, Patient Version (SCID-I/P),[17] was completed by Ph.D.- or Master's-level psychologists (D.E.F., K.B.C.) or a licensed Master's-level social worker (J.A.) with extensive training in this interview. Interrater reliability among raters and an experienced psychiatric investigator (S.M.S.) was high (kappa > 0.90), as obtained from joint evaluations of nonstudy patients. The SCID-I/P was augmented with the Young Mania Rating Scale (YMRS),[18] the Hamilton Rating Scale for Depression (HAM-D),[19] the Scale for the Assessment of Negative Symptoms (SANS),[20] and the Scale for the Assessment of Positive Symptoms (SAPS).[21] Total SAPS and SANS scores were obtained by summing the individual global item scores.[7,8] From the SAPS, a first-rank symptom score was obtained by summing the scores of 6 items: (1) auditory hallucinations of voices commenting on the patient's behavior, (2) auditory hallucinations of voices talking about the patient among themselves, (3) delusions of being controlled by an outside force, (4) delusions of thought broadcasting, (5) delusions of thought insertion, and (6) delusions of thought withdrawal.[7,8] Additionally, from all of the available information, interviewers were asked to rate the presence and severity of first-rank symptoms based on a 3-point ordinal scale in which 0 = not present, 1 = present but not prominent, and 2 = present and prominent. A rating of overall psychiatric impairment for the worst period of the current episode was obtained using the Global Assessment of Functioning (GAF) scale.[22] Finally, the interviewer scored the course of illness as having or not having periods of recovery (i.e., at least 8 weeks with minimal or no symptoms). The investigators have established high interrater reliability with these instruments (intraclass correlations [ICC] among reviewers for total scores, ICC > 0.70). The Addiction Severity Index[23] was completed to supplement the SCID-I/P assessment of substance use disorders. These scales were integrated within the SCID-I/P to provide a comprehensive assessment of symptoms.

When completing the SCID-I/P and symptom measures, investigators used all available clinical information in addition to the actual interview. Therefore, SCID-I/P interviewers were aware of the clinical working diagnosis, although the discharge diagnosis was assigned after the SCID-I/P had been completed, so that the structured-interview and clinical diagnoses were independently recorded by different individuals. The individuals who completed the structured interviews were debriefed at the conclusion of the study, and none could correctly state the study's specific aims or hypotheses, suggesting that the blind of study intent had been maintained.

Every structured interview was audiotaped. As part of this audiotape, the person completing the SCID-I/P provided a description of the patient's behavior during the interview to compensate for blinded reviewers' not being able to see the patient. This audiotape was then transcribed and the transcription given to 2 investigators (R.M.W., S.M.S.), 1 African American and the other white, who removed all references to patient ethnicity as well as edited the language to be "ethnically neutral" (essentially modeled after a Midwestern newscaster), including the description of patient behavior. Additionally, the medical records available at the time of the SCID-I/P interview were photocopied and all references to the patient's ethnicity were removed. The patient's name and any other specific identifying information (e.g., address, telephone number) were also deleted. The edited medical records and transcript were then assigned to expert psychiatrists for a final diagnostic assessment.

Four board-certified psychiatrists (P.E.K., J.C., L.M.A., V.R.A.) served as expert diagnosticians. Two of these 4 psychiatrists were randomly assigned to each patient so that all combinations of individuals occurred regularly. These psychiatrists included an African American man and woman and a white man and woman in order to provide different ethnicity and sex combinations in expert assignments. For each subject, the experts would review all of the edited medical records and transcript and complete an augmented SCID-I/P from that information. The 2 assigned experts would then discuss the patient and

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agree on a consensus diagnosis, consisting of an ordinal rating for first-rank symptoms and a course rating (with or without periods of recovery). As noted, this expert diagnosis, blinded to patient ethnicity and identity, served as the defining diagnosis for this study.

To determine whether the experts were blinded to patient ethnicity, each was asked to independently make a best guess from the information available as to the ethnicity of the patient. Agreement between the 2 experts assigned to each patient for this guess was not significantly different from chance (58%; $\chi^2 = 2.4$, df = 1, $p > .1$). Additionally, the ability of the experts to correctly identify African American patients was not significantly different from chance (46%–52% correct; $\chi^2 < 1.0$, df = 1, $p > .3$). These results indicate that the ethnicity blind was maintained.

Sociodemographic Variables

Sociodemographic variables were obtained during the course of the structured diagnostic interview and included age, ethnicity, education (in years), best income the patient earned (typically before the onset of their illness), and parental employment level. Patients were asked to estimate the most money they made in any year as an estimate of their best job performance. Patient income was ordinally categorized as 1 = ≤ $10,000; 2 = $10,001–20,000; 3 = $20,001–35,000; 4 = $35,001–50,000; 5 = $50,001–75,000; 6 = $75,001–100,000; and 7 = ≥$100,001. Parental job level served as an estimate of the patient's premorbid socioeconomic status and was rated as 1 = high executive/professional; 2 = lesser professional; 3 = administrative personnel; 4 = clerical/sales; 5 = skilled manual labor; 6 = semi-skilled manual labor; 7 = unskilled manual labor; and 8 = unemployed. Parental job level ratings were identified from the best job either the patient's father or mother had (corresponding to the lowest score on the scale).

Statistical Analysis

All analyses were performed using the Statistical Analysis System for the PC (SAS Institute, Cary, N.C., 2001). The specific 2-part hypothesis tested in this study was that (1) African American men with an expert-consensus diagnosis of an affective disorder (physician blinded to patient ethnicity) would be significantly more likely than other patients to have received a clinical discharge diagnosis of a schizophrenia spectrum disorder; and (2) this excess of clinical schizophrenia spectrum diagnoses in African American men could be explained by increased rates of first-rank symptoms.

For this study, we defined *schizophrenia spectrum disorders* to include all subtypes of schizophrenia, schizophreniform disorder, delusional disorder, and psychosis not otherwise specified (i.e., so-called nonaffective psychoses). However, a number of patients were diagnosed with schizoaffective disorder by clinical assessment and structured interview (Table 2). The diagnosis of schizoaffective disorder is problematic for this analysis since it bridges the schizophrenia spectrum and affective disorder diagnoses. In particular, since patients diagnosed with schizoaffective disorder receive treatments that are similar to treatments for patients with affective disorders (defined as bipolar disorder, all phases, with psychotic features and major depressive disorder with psychotic features), superficially it would seem that ethnic differences in rates of schizoaffective disorder misdiagnoses would be less problematic than misdiagnoses of schizophrenia spectrum disorders. However, recent studies have suggested that African American patients are not only more likely than white patients to be given a diagnosis of schizophrenia at an index assessment, but are also more likely to have an affective disorder diagnosis changed to schizophrenia over time.[24] Therefore, although a misdiagnosis of schizoaffective disorder in a patient with affective disorder may not significantly alter treatment initially, the label "schizoaffective disorder" may increase the likelihood that a patient's diagnosis will be changed to schizophrenia. With these thoughts in mind, we analyzed the data in 2 ways. First, we excluded patients with a diagnosis of schizoaffective disorder and examined ethnic differences of schizophrenia spectrum disorders as defined previously. Second, we combined schizoaffective and schizophrenia spectrum disorders (i.e., broadly defined schizophrenia) to determine if this approach altered the ethnic differences in diagnosis observed in the first analysis.

Rates of schizophrenia spectrum and affective disorder clinical diagnoses were compared between the African American men and the remaining patients using logistic regression. Differences in sociodemographic variables were controlled in this regression model by including age, education, income, and parental job level as covariates. Additionally, rates of lifetime alcohol and drug use disorders as well as symptom ratings were evaluated for inclusion as potential covariates. Any of these variables that exhibited significant differences among the different ethnic and sex categories and significant associations with the rates of clinical diagnoses were included in the regression model. As illustrated in Table 1, none of the symptom measures significantly differed among patient subgroups. Alcohol use disorders were significantly more common in white patients than in African Americans ($\chi^2 = 6.0$, df = 1, $p < .02$) but were not significantly associated with clinical diagnosis or ratings of first-rank symptoms. Drug use disorders were more common in men than in women ($\chi^2 = 7.6$, df = 1, $p = .006$) and were also associated with the presence of first-rank symptoms ($\chi^2 = 4.9$, df = 1, $p < .03$). Therefore, lifetime history of a drug use disorder was included as a covariate in the regression model.

Rates of first-rank symptoms were compared between African American men and other patients using logistic

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Table 2. Clinical Diagnoses and Presence of First-Rank Symptoms, Mood-Incongruent Psychosis, and Bizarre Delusions in 79 Patients Receiving an Ethnicity-Blinded Expert-Consensus Diagnosis of an Affective Disorder

	African American		White	
Characteristic	Men (N = 17)	Women (N = 22)	Men (N = 25)	Women (N = 15)
Clinical diagnosis, N (%)				
Affective disorder	8 (47)	18 (82)	20 (80)	10 (67)
Schizophrenia spectrum disorder[a]	4 (24)	1 (5)	1 (4)	1 (7)
Schizoaffective disorder[b]	4 (24)	1 (5)	3 (12)	2 (13)
Other diagnoses	1 (6)	2 (9)	1 (4)	2 (13)
Structured-interview diagnosis, N (%)				
Affective disorder	9 (53)	19 (86)	22 (88)	13 (87)
Schizophrenia spectrum disorder[c]	5 (29)	1 (5)	1 (4)	2 (13)
Schizoaffective disorder[d]	3 (18)	2 (9)	2 (8)	0 (0)
SAPS first-rank symptoms, mean (SD)[e]	7.8 (7.4)	5.7 (6.3)	3.5 (4.9)	3.1 (2.6)
Structured-interview first-rank symptoms, N (%)[f]				
Prominent	5 (29)	4 (18)	5 (20)	0 (0)
Present, not prominent	8 (47)	9 (41)	4 (16)	10 (67)
Absent	4 (24)	9 (41)	16 (64)	5 (33)
Expert-consensus first-rank symptoms, N (%)				
Prominent	2 (12)	0 (0)	1 (4)	0 (0)
Present, not prominent	9 (53)	15 (68)	11 (44)	11 (73)
Absent	6 (35)	7 (32)	13 (52)	4 (27)

[a]Significant difference African American men > other subjects, Fisher exact test, p = .02, excluding schizoaffective disorder.
[b]Significant difference African American men > other subjects, $\chi^2 = 8.4$, df = 1, p < .004, schizoaffective and schizophrenia spectrum disorders combined.
[c]Significant difference African American men > other subjects, Fisher exact test, p < .03, excluding schizoaffective disorder.
[d]Significant difference African American men > other subjects, $\chi^2 = 9.6$, df = 1, p < .002, schizoaffective and schizophrenia-spectrum disorders combined.
[e]Significant difference among groups, F = 2.8, df = 3,73; p < .05; African American men > white men and women.
[f]Significant difference among groups, $c^2 = 7.7$, df = 3, p = .05; African American men more first-rank symptoms than white men.
Abbreviation: SAPS = Scale for the Assessment of Positive Symptoms.

regression with these covariates. For these analyses, first-rank symptoms were categorized as either present (i.e., prominent or present but not prominent) or absent. Finally, to determine whether differences in first-rank symptoms explained differences in clinical diagnoses, this measure was added to the logistic regression models to determine whether differences in clinical diagnoses no longer persisted after adjusting for first-rank symptoms ratings. Other statistical comparisons were performed for completeness and to extend findings as indicated.

RESULTS

Significant differences in rates of structured interview first-rank symptoms (from the ordinal scale) were observed among groups (Table 2; $\chi^2 = 7.7$, df = 3, p = .05); specifically, African American men had first-rank symptoms identified by structured interview more commonly than white men (76% vs. 36%; $\chi^2 = 6.6$, df = 1, p < .01). Group differences were also observed for the SAPS-derived first-rank symptoms scores (F = 2.8, df = 3,73; p < .05); again, African American men exhibited significantly higher scores than white men and women (p < .03). However, these group differences did not persist after controlling for covariates for either the ordinal-scale ratings (adjusted odds ratio = 3.07, 95% confidence interval = 0.73 to 12.82, p > .1) or the SAPS-derived scores (F = 1.5, df = 3,68; p > .2). Rates of expert-consensus ordinal-scale first-rank symptoms did not significantly differ among groups ($\chi^2 = 3.3$, df = 3, p > .3).

Nearly one quarter of the African American men received clinical diagnoses of schizophrenia spectrum disorders, compared with 7% or less of the other patient groups (Table 2; Fisher exact test, p = .02). Moreover, when schizoaffective disorder was considered, 47% of the African American men were diagnosed with schizophrenia spectrum or schizoaffective disorders compared with 15% of the remaining patients ($\chi^2 = 8.4$, df = 1, p < .004) with these disorders. After controlling for demographic variables and lifetime history of drug use disorders in a logistic regression model, African American men remained significantly more likely to receive a clinical diagnosis of a schizophrenia spectrum disorder than the remaining subjects (adjusted $\chi^2 = 5.0$, df = 1, p = .02). This difference in clinical diagnoses between African American men and the remaining patients was minimally affected by adding to the model the SAPS-derived first-rank symptoms scores (adjusted $\chi^2 = 5.1$, df = 1, p < .03) or either of the first-rank symptoms ordinal ratings (structured-interview–derived: adjusted

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$\chi^2 = 5.1$, df = 1, p = .02; expert-consensus–derived: adjusted $\chi^2 = 4.0$, df = 1, $p < .05$). Including schizoaffective disorder in the analysis (i.e., adding it to the schizophrenia spectrum disorders) did not alter any of these findings (statistics available from the authors upon request).

Notably, the African American men showed a similar pattern of differences in structured-interview diagnoses (Table 2). Again, 29% of the African American men were diagnosed by structured interview with a schizophrenia spectrum disorder compared with less than 15% of any other patient groups (Fisher exact test, $p < .03$). Adding schizoaffective disorder to this analysis showed that, again, 47% of the African American men were diagnosed with schizoaffective or schizophrenia spectrum disorders compared with less than 13% of any other group ($\chi^2 = 9.6$, df = 1, $p < .002$). The difference in schizophrenia spectrum disorder diagnoses persisted after controlling for the covariates (adjusted $\chi^2 = 6.8$, df = 1, $p < .01$) and did not appreciably change by controlling for structured-interview (adjusted $\chi^2 = 6.7$, df = 1, $p < .01$) or expert-consensus (adjusted $\chi^2 = 7.5$, df = 1, $p < .01$) ordinal first-rank symptoms ratings. Nor did it change after adjusting for SAPS-derived first-rank symptoms scores (adjusted $\chi^2 = 6.7$, df = 1, $p < .01$). The African American men diagnosed with a schizophrenia spectrum disorder by SCID/IP were not entirely the same individuals clinically diagnosed with a schizophrenia spectrum disorder (agreement = 57%). Again, combining the patients with schizoaffective disorder with those in the schizophrenia spectrum group did not alter these findings.

To extend the logistic regression models, we examined associations between clinical diagnosis and covariates in the African American men. Specifically, there were no significant differences between patients, with or without a clinical diagnosis of a schizophrenia spectrum disorder, in age (23 ± 5 vs. 26 ± 4, t = 1.46, p > .15), years of education (10 ± 3 vs. 11 ± 2, t = 0.69, p > .5), income ratings (1.5 ± 0.6 vs. 1.7 ± 0.7, t = 0.41, p > .6), or parental job level (6.5 ± 1.0 vs. 4.1 ± 2.6; t = 1.76, p = .10). Similar findings were observed in these variables comparing patients with or without a structured-interview diagnosis of a schizophrenia spectrum disorder (age, 25 ± 5 vs. 24 ± 4 years, t = 0.62, p > .5; years of education, 10 ± 3 vs. 11 ± 2, t = 1.05, p > .3; income, 1.4 ± 0.5 vs. 1.4 ± 0.7, t = 0.12, p > .9; and parental job level, 5.6 ± 1.7 vs. 4.7 ± 2.8, t = 0.68, p > .5).

Post Hoc Analyses

Since our hypothesis that ethnic differences in clinical diagnoses would be related to the presence of first-rank symptoms was not supported, we performed several post hoc analyses to further explore associations among ethnicity, symptom presentation, and diagnosis. To increase the number of subjects in these analyses, we combined schizoaffective disorder with the schizophrenia spectrum disorders (called "broadly diagnosed schizophrenia" in this section). Our findings that ethnic differences in the rates of schizoaffective disorder diagnoses mirrored those of schizophrenia spectrum disorder diagnoses support this approach for these post hoc analyses.

As a first step, we examined whether the structured interviewers and expert diagnosticians scored the DSM-IV mania and depression syndrome criteria differently on the SCID-I/P in African American men. There were no significant differences in the scoring of any of the SCID-I/P DSM-IV affective syndrome criteria between patients with or without a SCID-I/P diagnosis of broadly diagnosed schizophrenia ($\chi^2 < 1.95$, $p > .15$). However, significant differences were noted on the item that required the interviewer to determine whether the patient had exhibited psychotic symptoms in the absence of "significant" affective symptoms. This item was scored as positive more often by the structured interviewer than by the experts (47% vs. 15%, respectively; $\chi^2 = 5.9$, $p = .015$). Specifically, in all of the African American men broadly diagnosed with schizophrenia, this item was scored positively by the structured interviewers. Although 1 of the 2 experts also scored this item positively in 3 (38%) of these 8 patients, the expert consensus scored this item negatively in all cases (by definition in this analysis). Finally, African American men were scored by the structured interview as being less likely to have had periods of recovery during their course of illness than the remaining patients (24% vs. 50%; $\chi^2 = 3.8$, df = 1, $p = .05$), but this difference was not reported by the expert consensus (59% African American men with recovery vs. 65% of remaining subjects; $\chi^2 < 0.2$, df = 1, $p > .6$). The difference in course ratings between the structured interview and the expert consensus was also significant ($\chi^2 = 4.4$, df = 1, $p < .04$).

To further extend this post hoc finding, we examined differences in individual symptom items between African American men with or without a structured-interview broad diagnosis of schizophrenia. There were no significant differences in YMRS, HAM-D, GAF, SAPS (including the first-rank symptoms), or SANS ($t < 1.3$, $p > .2$) despite this large number of comparisons.

As a final post hoc analysis, we examined associations among the individual item ratings from the symptom rating scales (excluding the first-rank symptoms in the SAPS already reviewed) and sex, ethnicity, and a broad diagnosis of schizophrenia in the entire sample. None of the symptoms were significantly associated with these dependent variables (statistics available upon request). The inclusion of any of these scores in the logistic regression models had minimal effect on the differences between African American men and other patients in structured-interview or clinical diagnoses (statistics available upon request).

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DISCUSSION

To our knowledge, this is the first study of ethnicity effects on clinical evaluations to use assessments blinded to patient ethnicity in order to assign a diagnosis. In previous studies in which patients were classified on the basis of research diagnostic assignments in order to evaluate clinical diagnostic patterns,[1,3,6–10] the research assessments were made with full awareness of the patients' ethnicity. This previous approach introduces the possibility that differences in clinical and research assessments might be secondary to the influence of ethnicity on the research rather than on clinical assessment. In the current study, we have removed this potential confound by blinding the expert diagnosticians to the patients' ethnicity. Moreover, since psychiatric disorders lack objective markers to make diagnostic assignments, the consensus of 2 expert psychiatrists based on all of the available clinical information is considered the gold standard.[25] We employed this standard, which has been rarely used in previous studies of ethnicity effects on clinical assessment. We believe that these methodological advances extend previous work.

As has been consistently reported by others,[1–10] we observed that African American men with affective psychoses appear to be at higher risk than other patient groups for a misdiagnosis of schizophrenia. However, our hypothesis that this higher rate of schizophrenia misdiagnosis could be explained by more severe first-rank symptoms in African American men was not supported. Indeed, particularly after blinding for ethnicity, there appeared to be minimal differences in first-rank symptoms among these patient groups. Additionally, there was no evidence that these diagnostic differences could be attributed to any of the symptoms assessed in this study, as ratings of mania, depression, psychosis, negative symptoms, and global psychopathology did not distinguish among patient subgroups, nor did they affect logistic regression models of factors associated with diagnosis. Moreover, the use of a structured clinical interview, which requires a complete symptom assessment, did not diminish the finding that African American men were more likely to be diagnosed with a schizophrenia spectrum disorder. Patient sex and ethnicity were the primary predictors of receiving a clinical and structured-interview diagnosis of a schizophrenia spectrum disorder.

An alternative possibility, however, is that the ethnicity-blinded expert diagnosis lacked critical information that was obtained in the face-to-face interview such that it was the expert diagnosis, rather than the structured-interview and clinical diagnoses, that was in error. However, the African American men who received a clinical diagnosis of a schizophrenia spectrum disorder were not the same ones who received a structured-interview diagnosis of schizophrenia. Moreover, there were minimal symptom differences among patient groups, suggesting that they shared similar diagnoses. Further, the ethnicity-blinded diagnosticians had much of the same information as the other ethnicity-unblinded diagnosticians, including an edited patient description, clinical records, and an audiotape of the structured interview, so that it is unlikely they were missing critical clinical information.

Although this study provides additional, carefully controlled support for the observation that African American men with affective illness are at risk for being misdiagnosed with schizophrenia, it does not explain why this occurs, as the hypothesized association was not supported. However, the post hoc analyses suggest that psychotic symptoms are overemphasized, or conversely that affective symptoms are underemphasized, in African American men such that they are more likely to be identified as having psychosis in the absence of "significant" affective symptoms. This finding is important, for the relative duration and severity of psychotic and affective symptoms are used in DSM-IV to differentiate affective disorders from both schizoaffective disorder (criterion B) and schizophrenia (criterion D). Additionally, the African American men were perceived to have more chronic courses of illness by the structured interviewer than by the ethnicity-blinded experts, despite both diagnosticians having the same medical records and clinical information available. Since these findings were not a hypothesized result, they should be considered preliminary. Nonetheless, these observations suggest that studies are warranted that specifically examine how clinicians interpret the relative importance and chronicity of affective and psychotic symptoms among different ethnic groups.

When interpreting these results, it is important to consider the clinical implications of both the findings and the methods. In this study, we removed ethnic cues from records and transcripts with the specific intent of examining how these cues might influence the manner in which clinicians consider symptoms when assigning diagnoses, which we believe is an important manipulation for understanding this process within a research perspective. However, this approach may be misleading to clinicians if not carefully considered. Although removing ethnic cues was useful for answering our specific research questions, we do not intend to imply that this approach has utility when evaluating patients clinically. In fact, paradoxically, this approach reminds us that in order to properly interpret symptoms, the ethnic and cultural context surrounding the patient must be carefully understood and clearly considered in order to prevent diagnostic errors. In the end, it is not possible to make accurate diagnoses in the absence of cultural information. Research studies like this one help to identify specific areas in psychiatry (e.g., the interpretation of affective symptoms) that appear to be sensitive to cultural factors, although this study was not designed to specifically delineate those factors. This delineation is the next step to be taken in this line of research.

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Several limitations should also be considered when interpreting these findings. First, all patients were recruited from a single site, so these results need to be replicated across different sites and geographic locations to determine generalizability. Previous studies[1–10] from a wide variety of clinical settings, however, have similarly reported the excess of schizophrenia diagnoses in African American men that was observed in the current study, suggesting that our results are not a site-specific artifact. Second, although the overall patient sample is relatively large, subgroups of patients are of modest size, which could introduce risks of statistical error. Third, at our site there are insufficient numbers of subjects from other ethnic groups such that we cannot be certain whether the differences are unique to African-Americans or might extend to other minorities as well. Together, these limitations suggest that future studies should incorporate a multisite design of larger numbers of subjects in several ethnic groups. Nonetheless, the results suggest that differences in how clinicians interpret affective and psychotic symptoms based on patient ethnicity might contribute to ethnic differences in rates of misdiagnoses. This report supports the importance of investigations of cultural and ethnicity effects on clinical decision making in psychiatry and medicine. We are hopeful that this report will stimulate additional research in this important area of investigation.

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