Racial and Ethnic Effects on Psychotic Psychiatric Diagnostic Changes From Admission to Discharge: A Retrospective Chart Review

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Objective: Different cultural norms for paranoia that exist among African Americans may be misconstrued and fuel the overdiagnosis of schizophrenia. The present study examined whether the frequency of psychotic psychiatric diagnoses differs by race/ethnicity, particularly with regard to paranoid schizophrenia. We examined the frequency upon admission and at discharge and further explored the pattern of diagnostic changes that occurred by racial/ethnic group.

Method: The present study is a secondary analysis of diagnostic data obtained on inpatients admitted to a research unit from 1990 to 2003 with a typical length of stay from 3 to 6 months. Admission and discharge diagnoses were obtained from each chart on the sample of 238 patients, 55% (N = 130) of whom were white; 24% (N = 58), African American; and 21% (N = 50), Latino. Inpatients were grouped into 4 diagnostic categories: schizoaffective disorder, paranoid schizophrenia, schizophrenia-undifferentiated or -disorganized type, and other psychotic disorder.

Results: Upon admission, African American patients were more likely to receive a less-defined diagnosis, such as psychosis not otherwise specified, in part because they tended on average to be younger. Over the course of hospitalization, diagnoses for white patients were more likely to move toward schizoaffective at discharge (OR = 6.85, 95% CI = 1.53 to 30.66). African American patients were more likely to experience a diagnostic change to paranoid schizophrenia (OR = 4.58, 95% CI = 1.70 to 13.36). Interestingly, Latino patients were the least likely group to experience diagnostic changes during their hospitalization stay.

Conclusions: The present preliminary findings reveal an interesting pattern of diagnostic changes that occurred over the course of hospitalization that should be followed up in a comprehensive study.

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Racial and ethnic disparities have been found in the frequency of chronic psychiatric disorder diagnoses, particularly with schizophrenia. In general, African Americans are more likely than whites and Latinos to receive a schizophrenia diagnosis and less likely than both groups to receive affective disorder diagnoses, such as bipolar disorder, in treatment settings.[1–5] Many of these clinical studies examine admission diagnoses, but racial differences have also been found with studies that examine discharge diagnoses,[2,6,7] albeit less consistently.[8] In contrast, epidemiologic surveys in community samples generally find no racial/ethnic differences in schizophrenia diagnoses.[9,10]

A number of possible explanations for these discrepancies across studies have been offered, one of which is the contention that racial/ethnic biases among clinicians admitting patients in mental health settings lead to misdiagnosis.[11] With some exceptions,[3] most of the studies that examine racial differences in clinicians' symptom attributions in relation to diagnoses tend to lump patients with different subtypes of schizophrenia into 1 group. Yet studies suggest that the overdiagnosis of schizophrenia in African Americans may be largely explained by the schizophrenia, paranoid subtype, diagnosis.[12] This finding poses concern because milder, nonpathologic forms of paranoia may occur more commonly in African Americans than in whites.[13,14] This may be attributed to the idea that cultural norms for paranoia are different for African Americans due to a unique legacy of oppression and racism.[13] The distrust and suspiciousness that African Americans may hold in interracial encounters, which have been labeled "cultural paranoia,"[15,16] are considered

a normative adaptive response to daily encounters of racism and discrimination. This culturally adaptive response tends to be more strongly related to the milder end of the paranoia continuum than the pathologic end.[17] Furthermore, traditional views of paranoia suggest that paranoia is strongly associated with depression and even consider some forms of paranoid schizophrenia to be camouflaged depression.[18]

In addition, Whaley[19] found a stronger relationship between depression and mild paranoia among African Americans compared to whites. Even though "paranoia" per se is not a necessary characteristic of paranoid schizophrenia, individuals with paranoid schizophrenia tend to have persecutory delusions.

An initial step in investigating the possibility of misdiagnosis is to examine whether the frequency of psychiatric diagnoses actually differs by race/ethnicity. Given that racial differences in diagnosis tend to be more prevalent upon admission than at discharge, we examine the frequency at both time points and further explore the frequency and pattern of diagnostic changes that occurred from admission to discharge by racial/ethnic group in a sample of inpatients with psychotic disorders. We hypothesize that there will be racial/ethnic differences in diagnostic changes involving paranoid schizophrenia and schizoaffective diagnoses.

METHOD

The study involves a retrospective medical chart review of inpatients admitted to the Schizophrenia Research Unit (SRU) at the New York State Psychiatric Institute in New York City from 1990 to 2003. The SRU is a 12-bed inpatient unit that is part of a research program that provides inpatient evaluation and clinical treatment for patients with severe mental illness. The average length of stay in the unit is 3 to 6 months, and, during this time, patients may participate in any number of research studies designed to study diagnostic, neurologic, biochemical, physiologic, and psychosocial aspects of severe mental illness. Patients who met the study criteria and provided written informed consent for the study (~64% of the admitted cases) were evaluated by the research team. They participated in research studies under a National Institute of Mental Health Clinical Research Center grant.[20] Typically, the patients screened into the SRU were English speaking or bilingual (Spanish and English), did not have primary active substance abuse problems or significant histories of violence, and had a psychotic condition.

The treating clinician's diagnoses are made using typical clinical data obtained from hospital settings (i.e., patient report of current symptoms, past psychiatric records obtained from previous hospitalizations at other hospitals in New York City, and any accompanying family or friends' report of patients' functioning). The treating clinician's primary admission diagnosis, which is given to patients within 2 days of the admission, was obtained from the admission note of each chart. The treating clinician's primary discharge diagnosis, which is given upon discharge, was obtained from the discharge summary note of each chart. The treating clinician was typically a psychiatric resident supervised by an attending board-certified psychiatrist.

For each patient, we also recorded demographic characteristics and the Global Assessment of Functioning (GAF) score indicated on the chart upon admission and at discharge. Demographic information at admission included race/ethnicity, age, gender, and completed years of education. Race/ethnicity was determined by the admitting physician or self-identified by the patient. This secondary analysis study was approved by the human subjects committee and all patients provided written informed consent to participate in the research studies.

Data Analyses

We examined the distribution of the primary admission and discharge diagnoses in patients grouped by race/ethnicity by using Pearson χ^2 test. Originally, there were 7 diagnostic categories represented among the diagnoses, but 3 were excluded in the present study due to too small numbers of cases represented in each category (i.e., schizophrenia-catatonic type, schizophrenia-residual type, and substance abuse). The remaining diagnostic groupings (i.e., schizoaffective disorder, paranoid schizophrenia, schizophrenia-undifferentiated or -disorganized type, and other psychotic disorder) are shown in Table 2. The schizoaffective disorder category includes depressed and manic subtypes. The most frequent diagnosis in the other psychotic disorder category was psychosis not otherwise specified (NOS), but this category also includes a variety of other diagnoses, including major depression with psychotic features, depressive disorder NOS, and personality disorder. We tested the relationship between race/ethnicity and frequency of diagnostic change from admission to discharge and the pattern of diagnostic change by using Pearson χ^2 test. Finally, we conducted logistic regression analyses to determine whether relevant demographic and clinical variables significantly influenced the relationship between race/ethnicity and diagnostic change.

RESULTS

Table 1 shows the demographic and clinical data for each racial/ethnic group. The study sample was ethnically diverse: 50.6% (N = 130) were white; 22.6% (N = 58), African American; 19.5% (N = 50), Latino (mostly Puerto Rican or Dominican ancestry); 6.6% (N = 17), Asian/Pacific Islander; and 0.8% (N = 2), other ethnicities. For statistical purposes, the present analyses

Table 1. Demographic and Clinical Characteristics of a Sample of 238 White, African American, and Latino Inpatients With Psychosis

Variable	White, N = 130[a]	African American, N = 58[a]	Latino, N = 50[a]	Analysis[b] F	Analysis[b] p Value
Education, y	13.6 (2.7)	12.3 (2.3)	12.1 (3.2)	7.13	.001
Age, y	34.5 (10.2)	29.0 (9.1)	31.9 (10.0)	6.40	.002
Age at onset, y	20.7 (5.9)	21.3 (5.5)	21.7 (8.2)	0.42	.660
Age at first treatment, y	19.3 (7.4)	21.6 (7.3)	22.9 (7.8)	4.78	.009
GAF score at admission	37.3 (11.3)	35.1 (9.0)	36.1 (10.1)	0.94	.391
GAF score at discharge	48.7 (13.7)	52.1 (11.6)	54.2 (12.0)	3.67	.027

[a]Values are presented as mean (SD).
[b]df = 2.
Abbreviation: GAF = Global Assessment of Functioning.

Table 2. Distribution of Diagnostic Categories by Racial/Ethnic Group Upon Admission and at Discharge

	Frequency, N					
	White		African American		Latino	
Diagnostic Category	Initial	Discharge	Initial	Discharge	Initial	Discharge
Schizoaffective	30	37	8	6	15	17
Paranoid schizophrenia	45	31	20	27	21	17
Schizophrenia-disorganized/undifferentiated	44	51	18	18	11	12
Other (eg, psychosis, NOS)	11	11	12	7	3	4
Total	130	130	58	58	50	50

Abbreviation: NOS = not otherwise specified.

focused on the white, African American, and Latino patients (N = 238). As indicated in Table 1, whites were significantly older and more educated than Latinos and African Americans. The gender distribution of the patient sample was similar across racial/ethnic groups (χ^2 = 0.97, df = 2, p = .616). Clinically, there was no significant racial/ethnic difference in mean age at onset of symptoms; however, whites entered treatment at significantly younger ages than Latinos. There was no significant difference in GAF scores upon admission between the racial/ethnic groups; however, Latinos were discharged with a significantly higher GAF score than whites.

Admission Diagnoses

Table 2 shows the distribution of the 4 admission and discharge diagnostic categories for white, African American, and Latino patients. There was a trend toward significance in the distribution of admission diagnostic groupings between racial/ethnic groups (χ^2 = 12.40, df = 6, p < .06). African Americans were significantly more likely (χ^2 = 11.41, df = 2, p < .01) to be diagnosed with other psychotic disorder (20.7%, N = 12) than were white (8.5%, N = 11) or Latino (6.0%, N = 3) cases. The frequency of schizoaffective disorder, paranoid schizophrenia, and undifferentiated or disorganized schizophrenia were not statistically different between racial/ethnic groups upon admission (Table 2).

We examined whether relevant demographic (i.e., mean age, years of education) and clinical variables (i.e., GAF score) explained the higher frequency of other psychotic disorder diagnoses among African Americans, who were significantly younger than the other racial/ethnic groups. We conducted logistic regression analyses, with receiving an other psychotic disorder diagnosis as the dependent variable, African American race/ethnicity as the independent variable, and age, education, and GAF score at admission as the covariates. These continuous variables were centered in the models. Our results indicated that age (OR = 0.92, 95% CI = 0.87 to 0.98) explained part of the relationship between being African American and receiving an other psychotic disorder diagnosis, as being African American was not significantly related to receiving an other psychotic disorder diagnosis when the effect of age was taken into account. However, the odds of being diagnosed with an other psychotic disorder diagnosis was still more than 2 times as likely for African Americans compared to whites and Latinos in the adjusted model (OR = 2.19, 95% CI = 0.90 to 5.33).

Discharge Diagnoses

The distribution of diagnostic groupings was significantly different between racial/ethnic groups at discharge (χ^2 = 17.18, df = 6, p < .01). More specifically, while 34.0% (N = 17) of Latinos and 28.5% (N = 37) of whites received a diagnosis of schizoaffective disorder, only 10.3% (N = 6) of African Americans received this diagnosis (χ^2 = 9.58, df = 2, p < .01). The frequency of paranoid schizophrenia was significantly different by group (χ^2 = 9.76, df = 2, p < .01). While only a quarter of whites (23.8%, N = 31) and a third of Latinos (34.0%,

N = 17) were considered to have paranoid schizophrenia, almost half of African Americans (46.6%, N = 27) were diagnosed with paranoid schizophrenia. In contrast, the frequency of other psychotic disorder diagnoses and undifferentiated or disorganized schizophrenia diagnoses did not differ between racial/ethnic groups at discharge (Table 2).

We again conducted logistic regression analyses to examine whether the same relevant demographic or clinical variables explained the relationship between race/ethnicity and receiving paranoid schizophrenia or schizoaffective disorder diagnoses. We found that mean age (OR = 1.03, 95% CI = 1.00 to 1.07) and GAF score at discharge (OR = 1.03, 95% CI = 1.00 to 1.06) were significantly related to receiving a schizoaffective disorder diagnosis, but that did not explain the decreased odds of being African American (OR = 0.28, 95% CI = 0.10 to 0.75) and receiving the diagnosis. For paranoid schizophrenia, we found that mean age, education level, and GAF score at discharge were not related to the probability of receiving a paranoid schizophrenia diagnosis and thus did not reduce the higher odds of receiving this diagnosis for African Americans (OR = 3.31, 95% CI = 1.69 to 6.48).

Diagnostic Changes

During the course of hospitalization, primary admitting diagnoses changed in 31.5% (N = 74) of cases. Diagnostic changes occurred in 34.5% (N = 20) of African American cases, 32.3% (N = 42) of white cases, and, in the least amount, 26.0% (N = 13) of Latino cases. The frequency of diagnostic change was not statistically different between the racial/ethnic groups ($\chi^2 = 0.98$, df = 2); however, different types of diagnostic changes occurred for the different racial/ethnic groups. Of the 42 white cases in which the primary diagnosis changed at discharge, the 2 most common types of change were the change from paranoid schizophrenia to schizoaffective disorder (N = 9 [21.4%]) and the change from paranoid schizophrenia to undifferentiated or disorganized schizophrenia (N = 10 [23.8%]). Of the 20 African American cases in which the primary diagnosis changed to a different diagnostic grouping, the 2 most common types of change were the change from undifferentiated or disorganized schizophrenia to paranoid schizophrenia (N = 6 [30%]) and the change from other psychotic disorder to paranoid schizophrenia (N = 5 [25%]). Of the 13 Latino cases that underwent a diagnostic change, the 2 most common types of change were the change from paranoid schizophrenia to other psychotic disorder (N = 3 [25%]) and the change from paranoid schizophrenia to undifferentiated or disorganized schizophrenia (N = 4 [33%]).

We used logistic regression analyses to examine the relationship between race/ethnicity and patterns of diagnostic change in unadjusted and adjusted models. We focused our analyses on predicting diagnostic changes toward paranoid schizophrenia and schizoaffective disorder. We found that African Americans were more likely than whites and Latinos to undergo a change toward a diagnosis of paranoid schizophrenia (OR = 4.58, 95% CI = 1.70 to 13.36). Mean age and education level were not related to a diagnostic change toward paranoid schizophrenia in adjusted models; however, GAF score at discharge (OR = 1.04, 95% CI = 1.00 to 1.09) was significantly related. African American race/ethnicity remained significant in this adjusted model. In terms of schizoaffective disorder, whites were more likely than African Americans and Latinos to undergo a change toward this disorder (OR = 6.85, 95% CI = 1.53 to 30.66). Mean age and education level were not related to a diagnostic change toward schizoaffective disorder in adjusted models; however, GAF score at discharge (OR = 1.05, 95% CI = 1.00 to 1.09) was significantly related. White race/ethnicity remained significant in this adjusted model.

DISCUSSION

The purpose of the present study was to compare diagnostic frequencies and changes in white, African American, and Latino patients with psychosis. Unlike those previously found in some studies,[7,8] racial/ethnic differences in diagnostic frequency among psychotic patients were most prominent at discharge. This racial difference was driven by the diagnostic pattern evidenced by the African American patients. Upon admission, they were more likely to receive a less-defined diagnosis, such as psychosis NOS, in part because they tended on average to be younger; and during hospitalization, they were more likely to experience a diagnostic change to paranoid schizophrenia. Concurrently, diagnoses for white patients were more likely to move toward schizoaffective at discharge. If over the course of hospitalization diagnoses for African American and white patients change in different directions, then that likely explains why a difference in diagnostic frequency emerged at discharge. Interestingly, psychotic Latino patients were least likely to experience diagnostic changes during their hospitalization. They were more likely to start with an affective psychotic diagnosis (i.e., schizoaffective disorder) and maintain that diagnosis over the hospital stay.

Unlike Sohler and Bromet's[8] study, our patient population has a myriad of illness histories, including first-onset cases, as opposed to their study that limited the sample to these cases. As was found in the Sohler and Bromet[8] study, we found that African American patients were more likely to receive other psychotic disorder diagnoses. In our controlled analyses, we determined that African Americans did not necessarily receive less-defined other psychotic disorder diagnoses because they were higher functioning than the other patients. Furthermore, the

Latino patients were discharged with the highest GAF scores of the racial/ethnic groups.

African Americans were less likely to receive affective psychotic diagnoses (i.e., schizoaffective disorder) and more likely to receive a diagnosis of schizophrenia, paranoid subtype, at discharge, which is interesting given the literature on African Americans and "cultural paranoia."[13] The present study could not determine whether "cultural paranoia" was exhibited by the African American patients, but paranoid schizophrenia was the most prevalent subtype among African American patients, which has been found in previous studies.[12] It is possible that, initially, African American patients present ambiguously to clinicians, and that, over time, clinicians perceive African American patients as paranoid, which may make it more difficult to attend to affective symptoms. Strakowski and colleagues[3,12] suggest that affective symptoms in African American patients tend to be overlooked by clinicians, especially when they are also psychotic. In their study, they found that African American patients were more likely than white patients to be diagnosed with schizophrenia than with schizoaffective and bipolar disorder, despite the presence of psychotic mania.[3]

This propensity to overlook affective symptoms does not appear to occur among Latino patients. Latino patients in our study had a higher proportion of schizoaffective diagnoses compared to African Americans. Similarly, Minsky et al.[5] found that Latinos were more likely than African Americans to receive an affective diagnosis, despite their having more self-reported psychotic symptoms. African Americans, on the other hand, were more likely to receive a psychotic diagnosis, despite their having fewer self-reported psychotic symptoms.

Limitations and Future Implications

Whether psychotic patients present differently by racial/ethnic group or similar symptoms among racial/ethnic groups are perceived differently by clinicians cannot be determined in the present study. This is a preliminary investigation and thus is limited by small racial/ethnic subgroup categories as well as the range of psychopathology evidenced among the patients. It is unclear whether our findings would generalize to other hospital populations given that our patient sample was drawn from a specialized research unit. The small sample size also limits our ability to conduct time-sensitive analyses to assess the impact of the long event horizon under which the data were gathered. Schizophrenia subtypes may change over the course of illness, especially in response to medications. That said, the present findings highlight the importance of examining longitudinally as opposed to at single time points the relationship between race/ethnicity and diagnostic frequency. Investigating both admission and discharge diagnoses revealed an interesting pattern that needs to be followed up in a comprehensive study with a broader range of psychopathology. Are African American psychotic patients more likely to present with symptoms of paranoia and less likely with affective symptoms? On the contrary, are some of these African American patients exhibiting "cultural paranoia" that is misconstrued as pathologic? Examining patterns of diagnostic change over time may help clarify racial/ethnic differences in psychiatric diagnostic patterns. For example, Mukherjee et al.[21] examined the relationship between race/ethnicity and diagnostic changes over a span of years and found that 86% of the African American bipolar patients compared to 51% of their white bipolar patients were previously misdiagnosed with schizophrenia.

Future research needs to critically examine the diagnostic process over the course of hospitalization by also attending to symptoms and symptom patterns. If African Americans are more likely than whites to move toward a paranoid schizophrenia diagnosis, then a larger follow-up study needs to critically investigate this finding at the symptom level. Were African American patients who received a diagnosis of paranoid schizophrenia also more likely to present with depressive symptoms? If so, that would lend more credence to the hypothesis that African American compared with white patients get misdiagnosed with schizophrenia more often and diagnosed with affective disorders less often because the depressed African American patients with psychosis are more likely to look paranoid to clinicians. In the present study, we can only assume that clinicians were more likely to perceive paranoia among the African American psychotic patients.

In conclusion, the present study represents an initial step in a series to evaluate the extent to which diagnostic error or bias may influence racial discrepancies in the frequency of psychiatric diagnoses. Our findings, while preliminary, suggest the importance of studying ethnicity and psychiatric diagnostic patterns further, with particular attention to paranoid and affective symptoms among psychotic patients. In an era when genetic and environmental exposures are being proposed to explain ethnic disparities in the prevalence of disease, it is imperative to resolve whether diagnostic errors or biases have a strong influence on the prevalence of psychiatric disorders among racial/ethnic groups of color, particularly African Americans.

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