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Demographic, psychosocial, clinical, and neurocognitive baseline characteristics of Black Americans in the RAISE-ETP study

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ABSTRACT

This study compared baseline characteristics of Black Americans and Caucasians with first-episode psychosis in the Recovery After an Initial Schizophrenia Episode Early Treatment Program (RAISE-ETP). Black American (N = 152) and Caucasian (N = 218) participants were compared on demographic, psychosocial, clinical, and neurocognitive measures. Results indicated several notable racial differences in baseline characteristics: a greater proportion of Black Americans than Caucasians were female, and Black Americans reported less personal and parental education than Caucasians. Black Americans were also less likely to have private insurance, more likely to be homeless or transient, had significantly poorer quality of life, more severe disorganized symptoms, worse neurocognition, and were less likely to abuse alcohol than Caucasians. The implications of these findings are discussed, and suggestions are provided for future avenues of treatment and research on racial disparities in first-episode psychosis.

1. Introduction

The Recovery After an Initial Schizophrenia Episode Early Treatment Program (RAISE-ETP) was a 24-month cluster randomized controlled trial that compared NAVIGATE, a multidisciplinary team-based intervention for first-episode psychosis (FEP), to community care across 34 sites (Kane et al., 2016). The results showed that, as compared to community care, NAVIGATE participants improved more in quality of life (QoL), symptoms, and participation in work and school, but did not differ in hospitalizations.

Despite this evidence supporting the effectiveness of NAVIGATE as a treatment for FEP, its specific impact on individuals of different racial and ethnic backgrounds has not yet been comprehensively explored. Ethnic minorities have a modest increased risk of schizophrenia across countries (van Os et al., 2010). However, even as compared to other ethnic minorities in the US, Black Americans appear disproportionately affected by schizophrenia (Schwartz and Blankenship, 2014). As compared to Caucasians, Black Americans are more likely to be diagnosed with a nonaffective psychotic disorder, and exhibit distinct clinical presentations (e.g., more prominent first-rank symptoms), lower rates of treatment engagement, and poorer outcomes (Lawson, 2008). These findings suggest that Black Americans with psychosis have somewhat different and often-unmet treatment needs. However, the nature of these characteristics and the implications for differential treatment needs has not yet been comprehensively explored in individuals with FEP.

In the RAISE-ETP study, 38% (N = 152) of participants identified as Black American, providing an opportunity to examine racial differences in important factors, such as medication type and dosage, duration of untreated psychosis, baseline symptomatology, and neurocognition (Emsley et al., 2008; Buchanan et al., 2010). A recent analysis of baseline psychiatric prescriptions of RAISE-ETP participants revealed that Black Americans were more likely than Caucasians to receive prescriptions for first-generation antipsychotics in univariate but not multivariate analyses, and that there were no significant racial differences were

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found for dosage of medication in univariate or multivariate analyses (Robinson et al., 2015). However, the RAISE-ETP study collected a wealth of other data that may further illuminate race-based disparities in FEP. The current paper examines demographic, psychosocial, clinical, and neurocognitive baseline differences between Black American and Caucasian participants in RAISE-ETP, with the goal of highlighting key areas for intervention and research on racial disparities.

2. Method

2.1. Participants

The RAISE-ETP sample consisted of 404 individuals with FEP at 34 sites in the United States. The current paper examines the subset of Black American (N = 152) and Caucasian (N = 218) participants. The 34 participants with other race identification are not examined. Recruitment procedures and participant characteristics are detailed in the primary RAISE-ETP publication (Kane et al., 2016).

2.2. Measures

All measures described were collected at the time of study enrollment. Trained and blinded clinical raters assessed diagnosis, symptoms and quality of life via live, secure video connection. Other measures were assessed at the sites.

2.2.1. Demographic characteristics

Demographic variables in addition to race and ethnicity included age, gender, client and parental education, marital and residential status, insurance type, and number of criminal justice contacts in the 30 days prior to enrollment. For residential status, the "Homeless/Transient" cases reflect homelessness, as well as unstable or transient living situations (e.g., "extended family members or homeless", "brother's back yard", "living with friends"). Total income was not assessed, as the variable had large amounts of missing data (35.4%, N = 131).

2.2.2. Psychosocial functioning

Quality of life was measured with Heinrich's Quality of Life Scale based on the 30 days prior to study enrollment (Heinrichs et al., 1984). Self-reported student and work status was also obtained as an objective measure of functioning. Self-reported measures related to recovery were measured with the Mental Health Recovery Measure (Young and Bullock, 2003), a modified version of the Perceived Well-Being Scale (Ryff, 1989), the Stigma Scale (King et al., 2007) and the Brief Evaluation of Medication Influences and Beliefs scale (Dolder et al., 2004).

2.2.3. Clinical status

Diagnoses of psychotic and substance use disorders were assessed with the Structured Clinical Interview for the DSM-IV (SCID). Duration of untreated psychosis was assessed as part of the SCID interview and defined as the time between the onset of first psychotic symptom and initiation of antipsychotic medication treatment.

Symptoms were measured with the Positive and Negative Syndrome Scale, the Clinical Global Impressions - Severity Scale, and the Calgary Depression Scale for Schizophrenia (Addington et al., 1993) based on the seven days prior to the assessment. Information on psychiatric history was also collected (e.g., onset of symptoms, first psychiatric hospitalization).

2.2.4. Neurocognition

Neurocognition was measured with the Brief Assessment of Cognition in Schizophrenia (BACS) administered by trained raters at the sites (Keefe et al., 2004).

2.3. Data analytic strategy

Independent samples *t*-tests and chi-squares were used to analyze all variables except for neurocognition, which was assessed with a one-way ANCOVA with level of patient education entered as a covariate. Non-normal distributions in dependent variables for *t*-tests were bootstrapped using 5000 replicates. Significant omnibus results for chi-square tests were followed up by examining cell differences with adjusted standardized residuals (ASR) ± 2.00. Due to the strong positive skew of DUP, the non-parametric Mann-Whitney *U* Test was conducted to compare median values on this variable. Tests were conducted with and without outliers (defined as any values $\pm$ 3 SD the mean); however, no differences in significance tests emerged when outliers were excluded. Thus, all reported results include outliers.[1] Finally, given the large number of statistical tests, we first report on significant group differences, followed by a summary of trend-level findings.

3. Results

3.1. Demographic characteristics

Descriptive statistics are provided in Table 1. Black Americans were less likely to be male ($\chi^2 = 4.19$, $p < 0.05$) and to have obtained a college degree or higher ($\chi^2 = 9.90$, $p < 0.05$) than Caucasians. Moreover, a lower proportion of Black American participants' mothers ($\chi^2 = 12.46$, $p < 0.05$) and fathers ($\chi^2 = 35.14$, $p < 0.01$) had obtained a college degree or higher than the parents of Caucasian participants. There was also a significant difference in residential status ($\chi^2 = 8.32$, $p < 0.05$); a greater proportion of Black Americans than Caucasians were homeless or transient. Finally, Black Americans were less likely than Caucasians to have private insurance ($\chi^2 = 15.20$, $p < 0.01$). There were no significant racial differences in marital status, work or student status, or criminal justice contacts.

3.2. Psychosocial functioning

Black Americans demonstrated poorer functioning on the QoL total mean score as compared to Caucasians ($t = -2.56$, $p < 0.05$), including significantly lower scores on three out of four QoL subscales: Interpersonal Relations, ($t = -2.66$, $p < 0.01$), Intrapsychic Foundations ($t = -2.63$, $p < 0.01$), and Common Objects and Activities ($t = -2.65$, $p < 0.01$). Black American and Caucasian participants did not differ in scores on the QoL instrumental role subscale, or student or work status. There were no significant racial differences on the Perceived Well-Being Scale and the Brief Evaluation of Medication Influences and Beliefs.

3.3. Clinical status

On the PANSS, Black Americans exhibited significantly higher scores on the disorganization scale ($t = 2.07$, $p < 0.05$) than Caucasians. Groups did not differ on the PANSS total score or subscale scores of positive, negative, excited, and depressed symptoms. Additionally, Black Americans were significantly less likely to meet criteria for lifetime alcohol abuse than Caucasians ($\chi^2 = 13.15$, $p < 0.01$).

There were no significant group differences in diagnosis, duration of untreated psychosis, cannabis use, Calgary Depression Scale scores, age

[1] Analyses were also conducted to examine the potential impact of site effects. Linear and logistic regression models were used to analyze all variables except DUP, which was evaluated with a quantile regression to account for its strong positive skew. To assess the main effects of race while accounting for potential site effects, both race (Black American/Caucasian) and site (urban/rural) were entered as predictors into each regression model. Results were similar to those in the stated analyses with the exception that there were no significant racial differences in stigma. Additionally, Caucasians were found to display marginally more severe positive symptoms on the PANSS ($p = 0.08$), while the effects for disorganization were reduced from significant ($p < 0.05$) to marginally significant ($p = 06$).

Table 1
Descriptive statistics.

Variable	Black (N = 152) M (SD) or % (N)	White (N = 218) M (SD) or % (N)
Demographics		
Age, M (SD)	23.40 (5.06)	23.13 (5.16)
Gender (male)*, % (N)	66.4 (101)	76.1 (166)
Patient education*, % (N)		
Some college or higher	25.8 (39)	36.2 (79)
Completed high school	33.8 (51)	32.6 (71)
Some high school	32.5 (49)	28.4 (62)
Some or completed grade school	7.9 (12)	2.8 (6)
Maternal education*, % (N)		
Some college or higher	30.9 (47)	48.2 (105)
Completed high school	30.9 (47)	26.1 (57)
Some high school	13.2 (20)	7.8 (17)
Some or completed grade school	5.9 (9)	5.5 (12)
No school or unknown	19.1 (29)	12.4 (27)
Paternal education**, % (N)		
Some college or higher	19.7 (30)	41.3 (90)
Completed high school	26.3 (40)	28.4 (62)
Some high school	6.6 (10)	6.9 (15)
Some or completed grade school	1.3 (2)	3.7 (8)
No school or unknown	46.1 (70)	19.7 (43)
Marital status, % (N)		
Presently or previously married	9.2 (14)	13.3 (29)
Residential status*, % (N)		
Independent	5.9 (9)	10.6 (23)
Supported or structured living	5.3 (8)	2.3 (5)
Living with Family	78.3 (119)	82.1 (179)
Homeless/transient	10.5 (16)	5.0 (11)
Insurance type*, % (N)		
Private	10.1 (15)	26.6 (58)
Public	36.9 (55)	29.8 (65)
Uninsured	53.0 (79)	43.6 (95)
Criminal justice contact, % (N)	4.0 (6)	2.3 (5)
Psychosocial		
Quality of life total mean score*, M (SD)	2.37 (0.82)	2.61 (0.94)
Interpersonal relations**	2.30 (1.03)	2.60 (1.12)
Instrumental role	1.37 (1.48)	1.38 (1.70)
Intrapsychic foundations**	2.81 (0.93)	3.09 (1.04)
Common objects and activities**	3.06 (1.15)	3.38 (1.16)
Student status (enrolled), % (N)	20.4 (31)	18.8 (41)
Work status (employed), % (N)	11.8 (18)	15.6 (34)
Recovery, M (SD)		
Mental health recovery†	5.05 (1.31)	4.80 (1.20)
Well-being	4.03 (0.85)	3.94 (0.78)
Stigma†	3.86 (1.23)	4.08 (1.15)
Medication influences and beliefs	4.90 (1.05)	4.93 (1.01)
Clinical Status		
Diagnosis, % (N)		
Schizophrenia	53.9 (82)	51.4 (112)
Schizoaffective	21.7 (33)	19.3 (42)
Schizophreniform	14.5 (22)	17.4 (38)
Brief psychotic disorder or psychotic disorder NOS	9.9 (15)	11.9 (26)
Lifetime alcohol use** % (N)		
Abuse	6.6 (10)	17.0 (37)
Dependence	19.7 (30)	26.1 (57)
None	65.1 (112)	56.9 (124)
Lifetime cannabis use, % (N)		
Abuse	15.8 (24)	14.7 (32)
Dependence	19.1 (29)	20.6 (45)
None	65.1 (99)	64.7 (141)
PANSS composite, M (SD)	2.60 (0.49)	2.51 (0.51)
Positive	3.16 (0.93)	3.00 (0.97)
Negative	2.80 (0.81)	2.75 (0.90)
Disorganized*	2.71 (0.92)	2.51 (0.94)
Excited	1.68 (0.63)	1.69 (0.74)
Depressed	2.72 (1.15)	2.65 (1.06)
Clinical global impressions: severity†, M (SD)	4.14 (0.82)	3.98 (0.83)
Calgary depression scale mean total score, M (SD)	1.01 (0.90)	0.95 (0.94)
Psychiatric history, M (SD)		
Duration of untreated psychosis	89.00	70.00
(median & interquartile range)	(16.00–338.00)	(14.25–260.00)
Age of onset	18.42 (5.25)	19.40 (5.95)
Age in years of first psychiatric symptoms	16.79 (6.17)	16.23 (6.53)
Age in years of first psychotic symptoms	18.65 (5.73)	19.63 (6.46)
Age in years of first psychiatric hospitalization	20.90 (4.74)	21.32 (5.03)
Number of psychiatric hospitalizations	1.96 (1.52)	1.99 (2.37)
Total duration in days of hospitalizations	23.96 (29.06)	22.20 (36.39)
Neurocognition (BACS), M (SD)		
Composite *Z*-score**	−0.22 (0.72)	0.15 (0.67)
Verbal memory**	35.49 (10.56)	39.44 (11.87)
Digit sequencing**	16.82 (4.87)	18.68 (4.37)
Token motor**	55.02 (15.56)	60.61 (15.16)
Fluency**	39.88 (12.19)	43.94 (11.54)
Symbol coding†	46.36 (14.55)	49.93 (12.54)
Tower of London**	14.30 (4.24)	16.45 (4.49)

** $p < 0.01$.
* $p < 0.05$.
† $p < 0.10$.

of onset, age of first psychiatric and psychotic symptoms, first psychiatric hospitalization, and number and duration of total hospitalizations.

3.4. Neurocognition

A one-way ANCOVA demonstrated Black American participants performed more poorly on the BACS composite neurocognition score ($F = 18.41$, $p < 0.01$) after covarying for patient education. In addition, after covarying for patient education, Black American participants performed worse than Caucasians on five of the six subtests (Verbal Memory, $F = 7.52$, $p < 0.01$; Digit Sequencing, $F = 10.57$, $p < 0.01$; Token Motor, $F = 8.51$, $p < 0.01$; Fluency, $F = 6.87$, $p < 0.01$; Tower of London, $F = 16.31$, $p < 0.01$).

3.5. Trend level findings

Black Americans reported marginally higher scores on the Mental Health Recovery Measure, ($t = 1.85$, $p = 0.07$), marginally lower scores on the Stigma Scale, ($t = -1.74$, $p = 0.08$), and marginally higher ratings on the Clinical Global Impressions – Severity scale, ($t = 1.80$, $p = 0.07$). Additionally, Black Americans performed marginally worse than Caucasians on the Symbol Coding subtest of the BACS, after covarying for patient education ($F = 3.60$, $p = 0.06$).

4. Discussion

Black Americans with FEP begin treatment with disadvantages in known predictors of treatment outcome (i.e., neurocognition and education level), as well as poorer quality of life than Caucasians. Further, Black Americans' greater likelihood of homelessness or transience and lack of private insurance may pose practical barriers to treatment access and engagement. Impaired neurocognition and disorganized symptoms may also hinder the ability of Black Americans to fully benefit from therapeutic interventions. Thus, specific treatment targets for Black Americans with FEP could include an emphasis on case management to address practical barriers to care (e.g., homelessness, lack of private insurance) and quality of life, and greater use of cognitive remediation to improve neurocognitive deficits. Our results also highlight areas in which there are no significant differences between Black Americans and Caucasians who come to treatment for FEP. These include diagnosis, DUP, symptoms other than disorganization, paths to care indexed by number of prior hospitalizations, and the age at which psychiatric

illness was first diagnosed. Finally, they are less likely to have a diagnosis of co-occurring alcohol disorder.

Regarding symptom presentation, a robust body of research demonstrates that clinicians rate Black Americans higher than Caucasians on first-rank symptoms (Arnold et al., 2004; Strakowski et al., 1996; Strakowski et al., 2003), hallucinations and paranoia (Adebimpe et al., 1981; Barnes, 2008; Trierweiler et al., 2000), and negative symptoms (Chang et al., 2011; Li, Eack, Montrose, Miewald, & Keshavan, 2011). In contrast, the present study found that Black Americans were rated higher only on disorganized symptoms. There are several potential reasons for this discrepancy. First, previous studies included individuals with affective diagnoses as well as schizophrenia-spectrum disorders (Arnold et al., 2004; Barnes, 2008; Li et al., 2011; Trierweiler et al., 2000; Strakowski et al., 1996, 2003), while the current study excluded individuals with affective psychosis. Second, many studies on racial differences were conducted on inpatient samples (Arnold et al., 2004; Barnes, 2008; Chang et al., 2011; Strakowski et al., 2003; Trierweiler, 2000), who likely experience more severe symptoms than outpatient community samples. Third, the majority of prior studies included individuals with chronic psychotic disorders (Arnold et al., 2004; Barnes, 2008; Chang et al., 2011; Strakowski et al., 1996, 2003; Trierweiler et al., 2000) rather than exclusively evaluating people with first-episode psychosis. Thus, the current study may highlight unique characteristics of outpatient individuals with first-episode, non-affective psychosis.

While the current findings present important research and treatment implications, the cross-cultural validity of assessments should be carefully considered. For example, stereotype threat has been shown to deplete neurocognitive performance in Black Americans (Pennington et al., 2016; Steele and Aronson, 1995). Moreover, the majority of neurocognitive assessments bear the implicit assumption that test-takers are exposed to the same concepts, vocabulary, and life experiences as individuals from White, middle-class backgrounds (Pedraza & Mungas, 2008) and consequently may be sensitive to factors such as level of acculturation (Manly, 2008). Similar critiques may also be leveled at the assessment of disorganized symptoms. Additionally, a wealth of studies suggest that clinicians may overpathologize Black Americans with psychotic symptoms for several reasons, including neglecting to integrate contextual or situational information into symptom evaluation, misinterpreting culturally normative behaviors, and demonstrating differential applications of diagnostic standards based on race (Adebimpe, 1981; Eack et al., 2012; Neighbors, Trierweiler, Ford, & Muroff, 2003; Olbert et al., under review; Strakowski et al., 2003; Trierweiler et al., 2000, 2005; Whaley, 2001). Taken together, neurocognition and disorganized symptoms, as they are currently assessed, may not accurately reflect latent ability or symptomatology in Black Americans.

Despite being rated as significantly impaired on multiple quality of life dimensions, statistical trends suggested that Black Americans self-reported less stigma and more recovery than Caucasians. These seemingly contradictory results actually concur with findings that healthy Black Americans are more likely to separate global self-esteem from situation- or domain-specific self-appraisals (Twenge and Crocker, 2000). As a result, Black Americans with psychosis may be less likely than Caucasians to incorporate a schizophrenia diagnosis into their global self-concept. In turn, this may result in lower levels of stigma and a more hopeful sense of recovery. If this trend pattern of resiliency is confirmed in future studies, treatments specific to Black Americans that capitalize on this strength could be developed.

Another potential explanation for this trend is the "John Henryism" phenomenon recognized in Black American culture (Bennett et al., 2004), in which individuals respond to long-term psychosocial stressors with a high-effort and solution-oriented approach, often at the cost of physical health (Bennett et al., 2004). Thus, Black Americans with psychosis who face multiple psychosocial disadvantages may self-report greater orientation towards recovery, potentially at the cost of increased physiological stress. Again, some of these results were at trend levels of statistical significance; therefore, this conclusion is tentative. Future studies that examine culture-specific conceptualizations of recovery, and the role that John Henryism plays in responding to severe mental illness, may add important nuance to our understanding of racial disparities. The exploration of culture-specific factors, such as perceived racism and racial identity, will also be crucial to disentangling the effects of race from those of socioeconomic status.

Despite research that demonstrates that Black Americans are disproportionately affected by psychosis, racial disparities in this area remain understudied. The current study points to several domains in which Black Americans with first-episode psychosis are disadvantaged as compared to Caucasians, with the hope that future research will focus on the development of culturally-informed assessments and treatments for this underserved population.

Conflicts of interest

Dr. Kane has been a consultant for or received honoraria from Alkermes, Eli Lilly, EnVivo Pharmaceuticals (Forum), Forest (Allergan), Genentech, H. Lundbeck. Intracellular Therapeutics, Janssen Pharmaceutica, Johnson and Johnson, Otsuka, Reviva, Roche, Sunovion and Teva. Dr. Kane is also a Shareholder in MedAvante, Inc., Vanguard Research Group and LB Pharmaceuticals, Inc. All other authors declare no conflicts of interest pertinent to this study.

Contributors

JMK (Principal Investigator), NRS, DGR, KTM, SEE, JA, PA, & DLP served on the RAISE ETP Executive Committee, which spearheaded the project. AN wrote the first draft, conducted all analyses, and certifies the accuracy of the results. All authors provided edits and revisions to the manuscript and are in agreement with the final version.

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