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## How often do US-based schizophrenia papers published in high-impact psychiatric journals report on race and ethnicity?: A 20-year update of Lewine and Caudle (1999)

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### ABSTRACT

**Background:** Racial and ethnic disparities have been clearly documented in schizophrenia studies, but it is unclear how much research attention they receive among US-based studies published in high-impact journals.

**Aims:** The current paper updates Lewine and Caudle's (1999) and Chakraborty and Steinhauer's (2010) works, which quantified how frequently schizophrenia studies included information on race and ethnicity in their analyses.

**Method:** We examined all US-based papers on schizophrenia-spectrum, first-episode psychosis, and clinical high-risk groups, published between 2014 to 2016 in four major psychiatric journals: *American Journal of Psychiatry*, *Journal of the American Medical Association – Psychiatry*, *Schizophrenia Bulletin*, and *Schizophrenia Research*.

**Results:** Of 474 US-based studies, 62% ( $n = 295$ ) reported analyses by race or ethnicity as compared to 20% in Lewine and Caudle's (1999) study. The majority of papers (59%) reported sample descriptions, a 42% increase from Lewine and Caudle's (1999) study. Additionally, 47% matched or compared the racial/ethnic composition of primary study groups and 12% adjusted for race (e.g., as a covariate). However, only 9% directly analyzed racial and/or ethnic identity in relation to the primary topic of the paper.

**Conclusions:** While schizophrenia studies report analyses by race and ethnicity more frequently than 20 years ago, there remains a strong need for systematic, nuanced research on this topic. The authors offer recommendations for how to conceptualize and report upon race and ethnicity in schizophrenia research.

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### Introduction

The presence of racial and ethnic disparities in schizophrenia has been well documented in the US, especially with regard to Black and Latinx communities (see Schwartz & Blankenship, 2014, for a review). Research demonstrates that as compared to their White counterparts, people of color are substantially more likely to be diagnosed with schizophrenia (Olbert et al., 2018; Schwartz & Blankenship, 2014), underutilize treatment services (reviewed by Maura & Weisman de Mamani, 2017), experience lower quality of care (Oluwoye et al., 2018; Maura & Weisman de Mamani, 2017), and encounter more difficulties with psychosocial functioning (Nagendra, Schooler, et al., 2018; Salkever et al., 2009). Thus, people of color appear to be especially vulnerable to the deleterious effects of a schizophrenia diagnosis. This is a poorly-understood phenomenon that warrants

focused research attention. However, it is unclear how often schizophrenia researchers prioritize racial and ethnic identity as a variable of interest.

Twenty years ago, at the culmination of the “decade of the brain,” Lewine and Caudle (1999) quantified how frequently schizophrenia researchers considered racial and ethnic identity in their analyses. The authors examined all schizophrenia articles relating to neuropsychology and neuroscience published in the 3-year period between 1994 to 1996 in three major psychiatric journals. The results were striking: of 502 articles about neuropsychology and brain functioning, only 17% reported race and/or ethnicity in the composition of their sample. Moreover, only 3% of the articles reported racial/ethnic analyses beyond sample descriptions. In 2001, the National Institute of Health (NIH) revised its research guidelines to emphasize the importance of including women and people of

color, underscoring this as a key consideration for federal funding. In light of this NIH standard, Chakraborty and Steinhauer (2010) examined 637 articles relating to schizophrenia, psychophysiology, and their overlap, published between 2006 to 2008 in seven psychiatric journals. Of 452 schizophrenia-oriented papers, 33% reported the racial and ethnic composition of their sample, and 15% reported racial and ethnic effects beyond sample descriptions. Taken together, these findings revealed an improvement from the 1990s to the 2000s in the frequency of analyses on race and ethnicity in schizophrenia-oriented papers. However, they also highlighted that, despite documented racial and ethnic disparities in schizophrenia, the experiences and identities of people of color failed to emerge as a research priority.

This paper is a 20-year update of Lewine and Caudle (1999), and a follow-up to Chakraborty and Steinhauer (2010), with three notable changes in our approach. First, we examined all schizophrenia papers published between 2014 to 2016 in four high-impact psychiatric journals that frequently feature papers about individuals diagnosed with schizophrenia-spectrum disorders. We examined the same three journals as Lewine and Caudle (1999): *American Journal of Psychiatry*, *JAMA – Psychiatry*, and *Schizophrenia Bulletin*. In addition, we evaluated *Schizophrenia Research*, as it is a prominent psychosis-oriented journal with a high impact factor (4.57 in 2018), and could consequently contribute relevant information about reporting on race and ethnicity in schizophrenia publications. Second, we aimed to provide more methodological details than the prior two papers. Lewine and Caudle (1999) and Chakraborty and Steinhauer (2010) were published in *Schizophrenia Bulletin* as an *At Issue* article and a *Letter to the Editor*, respectively. Due to the brevity of these papers, there was limited information on the article selection process, the strategies used to identify schizophrenia-oriented papers, the terms used to define racial and ethnic identity, and the types of statistical analyses conducted regarding race and ethnicity. Thus, we sought to clearly characterize the current state of research and to provide a clear template for replication in the future. Lastly, while the prior two studies evaluated all papers regardless of geographical location, we prioritized depth over breadth and focused exclusively on US-based studies, as the process of identifying and interpreting information about people of color varies across different countries.

In summary, the current study had three primary goals: (a) evaluate how often schizophrenia researchers in the US report on race and ethnicity in high-impact psychiatric journals; (b) quantify the types of statistical analyses used in those publications; and (c) provide basic recommendations for researchers interested in conducting research on people of color and schizophrenia.

## Methodology

### Paper search and download

The first author (AN) conducted a literature search on PsycInfo and PubMed for English-language articles published between 2014 to 2016, with the search terms (*schizo\**

*OR psychotic OR psychosis OR prodrome*) in the title or abstract. Journals were identified through both print and digital International Standard Serial Numbers (ISSNs). On PubMed, a search was also conducted for MeSH Major Topic “Schizophrenia Spectrum and Other Psychotic Disorders.” All citations were downloaded from both search engines, then duplicates were identified and deleted via Zotero’s duplicate function as well as through a comparison of DOI numbers on Microsoft Excel. Next, PDFs of all papers were downloaded.

### PDF screening process

All papers were manually examined and double-coded by the primary author (AN), as well as one of the secondary authors (MOP, RS, or MM). We categorized the papers hierarchically as described below:

First, we identified all original, quantitative research studies. Secondary data analyses were included if they were not identified by the authors as meta- or mega-analyses. Meta-analyses, literature reviews, letters to the editor, commentaries, short communications, abstracts, errata, corrigenda, and qualitative studies were excluded.

Second, we screened all remaining papers and included papers in which at least 50% of the sample met criteria for schizophrenia-spectrum disorders (schizophrenia, schizoaffective disorder, schizophreniform disorder, or nonaffective psychosis). Additionally, we included papers in which at least 50% of participants met criteria for first-episode psychosis (FEP), prodromal psychosis, or clinical high risk (CHR) due to the salience of these diagnoses in current research (Bird et al., 2010; Cannon et al., 2008; Carpenter, 2016; Fusar-Poli et al., 2012). Familial or genetic high-risk samples were excluded, as papers did not consistently distinguish between familial high-risk versus unaffected first-degree relatives. Titles and abstracts were screened to identify whether the sample met the inclusion criteria. If this information was not provided, the sample description or supplemental materials were examined as available. If, after examination of these materials, the psychiatric diagnoses of the sample were not clear, the paper was excluded from analyses.

Third, remaining papers were evaluated to identify if at least part of the sample came from the US. This was done through examination of the methods section, ethics board approvals, contributors, supplemental materials, funding sources, and cited papers. If a country was not clearly identified through these sources, the author list was examined. If all authors were affiliated with US institutions, it was assumed that the study was conducted in the US.

Fourth, the remaining papers were screened for analyses conducted by race and ethnicity. A list of racial/ethnic terms was generated based on US census data as follows: *Black, African, American, African-American, Latino, Latinx, Latina, Hispanic, Ethnicity, Ethnic, Race, Racial, Races, White, Minority, Caucasian, Native, Eastern, Asian, Arab, and Multiracial*. These terms were searched for in each individual PDF on Adobe Acrobat Reader DC, using the “Match

Any of the Words” function. Any terms that emerged from the search were confirmed to be pertinent to race or ethnicity status via manual examination (e.g. ensuring that *White* did not pertain to *white matter*).

Fifth, we categorized the types of race/ethnicity analyses conducted. Analyses were identified by searching for the race- and ethnicity-related terms as well as the word “demographic” within the Methods and Results section of each paper. Types of analyses were coded as (a) sample description; (b) comparisons or matching of primary study groups (e.g. ensuring racial or ethnic identity were comparable in experimental vs. control conditions); (c) adjustment

for race or ethnicity (e.g. as covariates in primary analyses); or (d) primary analyses by race or ethnicity, operationalized as an examination of race or ethnicity in relation to variables included in the title of the study (e.g. racial differences in response to treatment). Intended analyses (e.g. examination of race as a potential covariate if there were group differences) were counted.

Because this study did not collect original data, information about ethical approval (e.g. name of the ethics committee, reference number) is not provided. For the same reason, information about participant consent is not included.

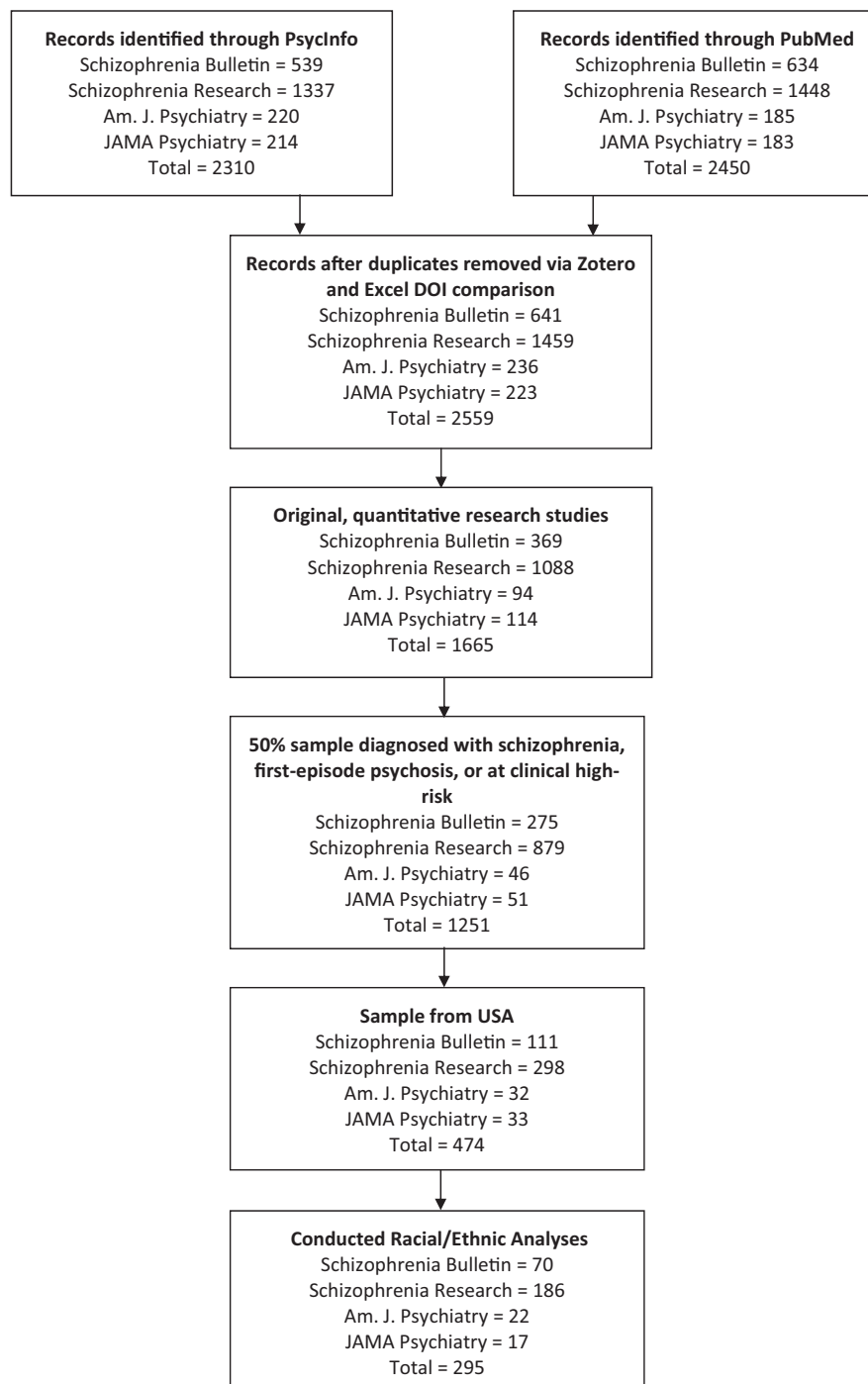


Figure 1. Article inclusion process.

**Table 1.** Frequency and types of analyses by race and ethnicity.

	<i>Schizophrenia Bulletin</i>	<i>Schizophrenia Research</i>	<i>JAMA - Psychiatry</i>	<i>American Journal of Psychiatry</i>	Total (Current Paper)	Total (Lewine & Caudle, 1999)	Total (Chakraborty & Steinhauer, 2010)
US studies	111	298	33	32	474	502 <sup>a</sup>	452 <sup>a,b</sup>
Any sort of race analysis	63% (70)	62% (186)	52% (17)	69% (22)	62% (295)	20% (98)	48% (216)
Types of analyses							
Sample description	59% (66)	60% (180)	42% (14)	66% (21)	59% (281)	17% (84)	33% (150)
Group comparisons/ matched groups	50% (55)	47% (140)	33% (11)	50% (16)	47% (222)	–	–
Adjustment for race	12% (13)	12% (36)	24% (8)	6% (2)	12% (59)	–	–
Primary analyses by race	8% (9)	8% (25)	15% (5)	13% (4)	9% (43)	–	–

Note: Papers with more than one type of REM analysis were counted more than once. Thus, the total for “types of analyses” may add up to more than 100%.

<sup>a</sup>Studies were from the US as well as other countries.

<sup>b</sup>Study examined papers on schizophrenia, psychophysiology, and their overlap. The presented numbers only include papers about schizophrenia or schizophrenia and psychophysiology.

## Results

Figure 1 presents a flow chart detailing the article selection process. Of the 2559 papers that were identified with our search criteria on PsycInfo and PubMed, 19% ( $n = 474$ ) were original research studies conducted in the US, with at least half of the sample meeting our inclusion diagnoses of SSD, FEP, or CHR.

Table 1 shows the total number of studies with US samples, the proportion and types of race- and ethnicity-oriented analyses, and results from Lewine and Caudle (1999) and Chakraborty and Steinhauer (2010) for comparison. Of the 474 US-based studies, 62% reported some type of race or ethnicity-oriented analysis. The majority of studies (59%) reported sample descriptions, 47% matched or compared the racial and ethnic composition of primary study groups, 12% adjusted for race or ethnicity (e.g. as a covariate) during analyses, and 9% conducted primary analyses by racial and ethnic identity.

As compared to prior studies, our results indicate a growth in the frequency of analyses by race and ethnicity. Specifically, the inclusion of any sort of racial or ethnicity analysis has increased by 42% as compared to Lewine and Caudle (1999) and 14% as compared to Chakraborty and Steinhauer (2010). The reporting of racial and ethnic identity in sample descriptions has increased by 42% since Lewine and Caudle (1999) and 26% since Chakraborty and Steinhauer (2010). Because the other two papers did not clearly quantify the frequency of other types of analyses by race or ethnicity, no further comparisons were possible.

## Discussion

The current paper examined 474 US-based studies on schizophrenia-spectrum disorder (SSD), first-episode psychosis (FEP), prodromal, and clinical high-risk (CHR) groups, with the goal of quantifying the frequency and types of analyses conducted on people of color. Taken together, our results show that the frequency of reporting on race and ethnicity has increased over the last 20 years. This is

especially the case in regard to sample descriptions, which included race and ethnicity in the majority of the papers we assessed. Beyond descriptive statistics, analyses consisted primarily of methodological (e.g. matched groups) or statistical (e.g. covariation) adjustments for race or ethnicity, which occurred in about half of the papers. Thus, our findings indicate that researchers are increasingly acknowledging the importance of race and ethnicity in schizophrenia studies. While we cannot ascertain the reasons for the growth of race and ethnicity analyses, it may have resulted from structural changes in the fields of psychology and psychiatry. Such changes include the introduction of Guidelines on Multiculturalism published by the American Psychological Association (2002), increased representation of people of color in psychology and psychiatry departments (Association of American Medical Colleges, 2019; Lin et al., 2018), and the introduction of minimum reporting standards for race and ethnicity provided by the National Institutes of Health (2001).

While we observed an increase in the frequency of reporting on people of color in schizophrenia papers, there is still room for substantial improvement. It is striking that, despite clear standards for reporting race and ethnicity in sample descriptions (American Psychological Association, 2008; Appelbaum et al., 2018) research papers neglect to do this approximately 40% of the time. Reporting at least the racial and ethnic composition of a sample is important, especially when considering the generalizability of research findings to people of color. Moreover, the bulk of inferential analyses continue to “control” for race or ethnicity, while only a small minority (i.e. 9%) of papers prioritize race or ethnicity as a primary variable of interest. This suggests that a key takeaway from Lewine and Caudle (1999) and Chakraborty and Steinhauer (2010) remains the same: the majority of schizophrenia studies approach racial and ethnic identity as a construct that may influence primary analyses, but not one that necessitates close consideration in and of itself. In other words, race and ethnicity are treated as “nuisance variables.”

The implications of this neglect are significant. Researchers have documented racial diagnostic disparities in schizophrenia for almost 40 years (Adebimpe, 1981; Olbert et al., 2018) and studies have demonstrated disparities across a variety of outcomes (Aggarwal et al., 2012; Maura & Weisman de Mamani, 2017; Nagendra, Schooler, et al., 2018; Oluwoye et al., 2018; Rost et al., 2011). However, we still do not understand the mechanisms through which these disparities arise or how to address them. Strikingly, this is not the case for other demographic variables, which have received nuanced research attention leading to treatment interventions. For example, another demographic variable, sex, was found to be included in sample descriptions 50% of the time by Lewine and Caudle (1999) and 86–91% of the time by Chakraborty and Steinhauer (2010). Studies on sex and gender in schizophrenia have led to estrogen therapy trials for women (Kulkarni et al., 2008; Lindamer et al., 2004). Similarly, studies on socioeconomic status (SES) in schizophrenia have generated theories about the etiology of the illness (Burns et al., 2014; Kwok, 2014; Sariaslan et al., 2015), as well as treatment strategies that directly target SES-related issues (e.g. supported employment; Cook et al., 2016; Dixon et al., 2010; Mueser et al., 2013). Unfortunately, the same level of attention has not yet been devoted to the role of racial and ethnic identity in schizophrenia, despite the potential to substantially improve outcomes for people of color.

We offer some recommendations to investigators interested in integrating race and ethnicity into US-based schizophrenia research. First, we urge researchers to report routinely-collected race and ethnicity data within sample descriptions, even if inferential analyses are not possible (e.g. due to small sample size or limited racial or ethnic variability). Additionally, we suggest following standardized guidelines for reporting on people of color in schizophrenia studies, such as the minimum reporting standards for race and ethnicity provided by the National Institutes of Health (2001). These guidelines include breaking race into defined and specific categories and ensuring that a distinction is made between race and ethnicity. In our review, we noted that these standards are not consistently followed. For example, many articles in the present review operationalized race as a dichotomous variable (i.e. White/non-White). Using common standards and language will improve our understanding and framing of issues related to race and ethnicity in schizophrenia, allow for easier aggregation of data (e.g. for meta-analyses), and enable readers to evaluate the generalizability of any given finding to people of color. Moreover, given recent evidence that White Americans are overrepresented in psychosis research samples as compared to treatment clinics (Kline et al., 2019), consistent reporting of the racial and ethnic composition of studies could illuminate important issues with recruitment and the ecological validity of findings.

Second, we encourage researchers to collect more nuanced race- and ethnicity-related data and conduct analyses beyond sample descriptions, group comparisons, and statistical adjustments. Racial and ethnic identity can be considered a proxy for a host of social, economic, environmental, and psychological experiences that are, at present,

rarely studied in schizophrenia research. For examples, increased perceived discrimination is associated with psychotic experiences in the US (Oh et al., 2014), family cohesion is associated with less emotional distress in Latinx but not White Americans with schizophrenia (Weisman et al., 2005), and interviewers' perception of the honesty of research participants partially mediates the relationship between race and diagnostic disparities (Eack et al., 2012). Examination of nuanced race and ethnicity-oriented variables such as these can help identify points for intervention. While a discussion of conceptual and methodological considerations for people of color in psychological research is beyond the scope of the current paper, we suggest readers review Helms et al. (2005).

Third, we recommend that researchers consistently evaluate the cross-cultural validity of widely-used assessments and interventions in schizophrenia research. Cross-cultural psychology has demonstrated that even established measures may not be valid for use with people of color (Iwata et al., 2002; Perreira et al., 2005). Within schizophrenia research, evidence suggests that factors independent of genuine impairment may artificially inflate racial differences in assessment scores. For example, clinicians may misinterpret normative cultural mistrust as pathological clinical paranoia in Black Americans (Whaley, 2001, 2011) and Black Americans perform worse on social cognitive tasks when tested by other-race experimenters (Nagendra, Twery, et al., 2018), or when stimuli consist solely of White individuals (Pinkham et al., 2008). Given that assessments are foundational to our understanding of schizophrenia, it is crucial to conduct race and ethnicity-focused analyses to ensure their cross-cultural validity.

Fourth, we suggest researchers assess the cross-cultural effectiveness of current interventions for schizophrenia. Widespread treatments for schizophrenia (e.g. CBT, psychoeducation, family therapy) are rooted in Western cultural values and models of mental illness (Degnan et al., 2018; Maura & Weisman de Mamani, 2017). At present, scant research has examined the effectiveness of these “gold standard” treatments for people of color, although a recent meta-analysis demonstrated that culturally-adapted treatments are more effective than usual care for individuals diagnosed with schizophrenia (Degnan et al., 2018). Researchers could examine trajectories and outcomes for people of color using existing treatment study datasets, compare the effectiveness of culturally-adapted treatments to existing gold standard interventions, and conduct dismantling studies to identify which components of current treatments necessitate cultural adaptation. The evaluation and development of interventions for people of color is an understudied area that has powerful potential to ameliorate racial and ethnic disparities in schizophrenia.

Fifth, future studies could examine reasons why race and ethnicity are not evaluated more often in schizophrenia research. Potential avenues include examining which topic areas (e.g. neuroscience, psychosocial treatments, cognition, medicine) are more or less likely to consider people of color in analyses, as well as the reasons that researchers may opt to include or exclude race and ethnicity from their papers.

For example, researchers may evaluate race and ethnicity but omit nonsignificant findings from their papers (Chakraborty & Steinhauer, 2010) or believe that their studies are insufficiently powered to reach nuanced conclusions about people of color. Moreover, researchers may experience discomfort and hesitance about analyzing race and ethnicity (Lewine & Caudle, 1999), or believe that studying people of color is the domain of “race researchers” rather than a collective responsibility of the schizophrenia research community (Mote & Fulford, 2020). An exploration of the reasons behind the dearth of reporting on people of color in schizophrenia studies would facilitate our ability to understand and hopefully address this problem.

Lastly, the paucity of schizophrenia studies about people of color reflects a broader problem within psychological research, as demonstrated by Roberts et al. (2020). This points to the need for larger structural shifts within the field. Roberts et al. (2020) provide several suggestions for change at the level of academic journals, including the addition of diversity statements, diversifying participants across all levels of the publishing process (e.g. editors, reviewers, authors), placing greater value on study sample diversity, releasing annual diversity reports, and establishing diversity task forces. If implemented, these structural changes would emphasize that race and ethnicity are important constructs to study and likely increase the number of schizophrenia publications focused on people of color.

The current paper has several limitations that should be noted. First, our race- and ethnicity-oriented search terms may not encapsulate the varied language that researchers use to define people of color. Second, the current study provides a “snapshot” of papers published between 2014 and 2016, rather than encompassing the entire duration of time since Lewine and Caudle (1999). As such, this paper does not provide a comprehensive review of the current state and history of racial and ethnic analyses in schizophrenia papers. Third, this study assessed papers from four high-impact psychiatric journals, but it is possible that racial and ethnic analyses are more prevalent in lower-impact journals and specialized journals that focus primarily on people of color. Our goal was to examine how often race- and ethnicity-related analyses are conducted in high-impact journals that emphasize psychosis (rather than people of color), as we believe this indicates the extent to which schizophrenia researchers prioritize this area. Regardless, our focus on high-impact journals means that our results may not fully represent the state of race and ethnicity reporting within schizophrenia research. Lastly, because we chose to focus only on the US in the current paper, the findings are not generalizable to other countries.

To summarize, the current paper shows that US-based schizophrenia papers in high-impact psychiatric journals report analyses on race and ethnicity more frequently than 20 years ago, but also indicates that there is still room for substantial improvement. We hope that this paper highlights both the importance and dearth of schizophrenia studies on people of color, and encourages researchers to integrate race and ethnicity into their studies.

Studies that reported analyses by race or ethnicity are listed in the [Supplemental Material](#).

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AN conceptualized and designed this paper, wrote the first draft, coded each of the papers, conducted all analyses, and certifies the accuracy of the results. MOP double-coded the majority of the articles analyzed in this study. RS and MM double-coded a substantial minority of the articles. RS also assisted with searching for and downloading the PDFs used in this study. ES provided consultation for the discussion section. AEP provided consultation while categorizing biologically-oriented papers. DLP was AN’s primary advisor and provided consultation at all stages of the project. All authors provided edits and revisions to the manuscript and are in agreement with the final version. The authors thank Matt Jansen of the UNC Chapel Hill Libraries. His help was invaluable during the article search process, as well as while generating the list of racial/ethnic identity search terms that were used in this study.

## Disclosure statement

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