Enrollment of Black, Indigenous, and Other People of Color in Multicountry Randomized Controlled Trials of Diabetes Conducted in North America and Europe

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Diabetes Care 2022;45:e116–e117 | https://doi.org/10.2337/dc22-0261

Lack of representative enrollment of Black, Indigenous, and other people of color (BIPOC) in clinical trials could affect trial generalizability and health equity (1). Although organizations such as the National Institutes of Health and U.S. Food and Drug Administration (FDA) have recognized the importance of representativeness in clinical trials, only a few multicenter trial results could be translated into race- and ethnicity-specific treatment recommendations (2). The status of and change in the BIPOC enrollment in diabetes randomized controlled trials (RCTs) over the past two decades remain largely unclear. Therefore, we performed a comprehensive literature search to examine the status and temporal trends of the enrollment of BIPOC in diabetes RCTs. We specifically focused on multicountry trials conducted in North American and European regions, given the dominant amount and steadily growing number of multicountry RCTs in these two regions.

We systematically searched the Cochrane Library, MEDLINE (via PubMed), and EMBASE to identify relevant diabetes RCTs in English between 2000 and 2020. We included articles regarding multicountry diabetes RCTs (i.e., trials conducted in two or more countries) in North American or European regions with enrollment of patients with diabetes (non–gestational diabetes mellitus) aged ≥18 years, with a sample size of ≥400 participants (because trials with small sample sizes were more likely to be early-stage or single-center studies), and with involvement of two or more racial/ethnic groups. We described trial characteristics and BIPOC enrollment by using median (1st quartile, 3rd quartile) for continuous variables and count (percentage) for categorical variables. We used the Jonckheere-Terpstra proportion trend test to explore whether there was a significant trend of BIPOC enrollment temporally.

We identified 18,278 records in the literature search, with a total of 42 eligible trials included for analyses (24 in North America and 18 Europe). As Table 1 shows, the majority of North American trials were published after 2010, while most of the European trials were published before 2010. The median sample size and age were 726 and 57 years, respectively, for North American trials and 572 and 61 years for European trials. For most trials conducted in North America and Europe, type 2 diabetes was the focus, glycemic control was an objective, the intervention of medications was explored, and funding from industry was received. The durations of intervention and follow-up were 6.5 and 18 months for North American trials and 6.5 and 12 months for European trials.

The North American trials had an overall BIPOC enrollment rate of 27.4% (12.4% for Black, 3.2% for Asian, 8.6% for Hispanic, and 3.5% for other BIPOC), while the European trials had a BIPOC enrollment rate of 2.9% (1.0% for Black, 1.0% for Asian, 3.4% for Hispanic, and 1.6% for other BIPOC). No significant temporal trends in enrollment of groups or subgroups of BIPOC were detected from 2000 to 2020 in North America ($P = 0.71$) or Europe ($P = 0.52$).

In this analysis of multicountry diabetes RCTs, we identified that the enrollment of BIPOC had not been improved temporally in either North America or Europe. In one study, with a focus on trials of FDA-approved technologies in type 1 diabetes, it was reported that the BIPOC enrollment rates were significantly lower than the prevalence in the U.S. from 2015 and 2020 (3). However, we could not map the BIPOC enrollment rates with stratification by individual participating countries or define underenrollment that was calculated with use of the participation-to-prevalence ratio (4), due to lack of detailed data from individual countries available for extraction from the multicountry RCTs conducted in North America and Europe.

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Received 7 February 2022 and accepted 25 April 2022

Table 1—Descriptions of the included multicountry diabetes RCTs published between 2000 and 2020 in North America and Europe

Characteristics of trials	Trials conducted in North America (n = 24)	Trials conducted in Europe (n = 18)
Year of publication		
2000–2004	5 (20.8)	3 (16.7)
2005–2009	4 (16.7)	8 (44.4)
2010–2014	11 (45.8)	4 (22.2)
2015–2020	4 (16.7)	3 (16.7)
Sample size	726.0 (528.75, 1,409.5)	571.5 (506.3, 697.0)
Age, years	57.2 (54.5, 61.7)	60.5 (58.3, 61.6)
Proportion of subjects female	45.1 (40.3, 48.7)	40.7 (34.8, 45.4)
Trial aim of glycemic control	12 (50.0)	10 (55.6)
Type 2 diabetes focus	18 (75.0)	15 (83.3)
Individual randomization	24 (100)	17 (94.4)
Intervention of medications	19 (79.2)	14 (77.8)
Intervention frequency of >1 time/week	18 (75.0)	14 (77.8)
Duration of intervention, months	6.5 (4.0, 13.0)	6.5 (6.0, 13.0)
Face-to-face follow-up	14 (58.3)	4 (22.2)
Duration of follow-up, months	18.0 (3.3, 39)	12.0 (10.5, 14.6)
Funded by industry	15 (62.5)	13 (72.2)
Percentage BIPOC enrollment		
Overall	27.4 (20.9, 37.3)	2.9 (1.5, 7.4)
Black ethnicity	12.4 (9.6, 16.3)	1.0 (0.5, 1.3)
Asian ethnicity	3.2 (2.3, 5.0)	1.0 (0.8, 4.9)
Hispanic ethnicity	8.6 (7.2, 13.3)	3.4 (1.9, 4.8)
Other BIPOC	3.5 (1.8, 7.9)	1.6 (1.2, 2.9)

Data are n (%) or median (1st quartile, 3rd quartile).

FDA-published guidance emphasized collecting racial and ethnic data in clinical trials. Given that most included North America trials in this study involved different sites in the U.S., more BIPOC enrollment data were reported and thus extracted in trials conducted in North America than Europe. A higher BIPOC enrollment rate may thus be observed in North America than in Europe. Therefore, further advocations of enhancing BIPOC enrollment and adequately collecting and reporting race and ethnicity data may help with efforts to improve BIPOC enrollment in diabetes trials and should be encouraged in guidelines.

Physicians or researchers may have implicit biases against BIPOC preventing them from effective communications with participants and including BIPOC in trial enrollment. Structural racism and socioeconomic disadvantages may also affect the willingness of BIPOC to participate in trials (5). Culturally competent measures and strategies are required to enhance participant equity and encourage BIPOC enrollment within diabetes clinical trials. Efforts of journals and editors to require data collection and detailed reporting of race/ethnicity in publications and on clinical trial registration platforms may also help improve BIPOC enrollment and enhance generalizability of trial findings.

Acknowledgments. The authors thank Likang Li (Guangdong Second Provincial General Hospital, Guangzhou, China) and Qianyu Wu (The Sixth Affiliated Hospital of Sun Yat-Sen University, Guangzhou, China) for their help with double-checking the data to ensure accuracy.

Funding. This research was supported by the Science and Technology Program of Guangzhou (grant 202002030252 [to G.L.]) and the Science Foundation of Guangdong Second Provincial General Hospital (grant YY2018-002 [to G.L.]).

Duality of Interest. No potential conflicts of interest relevant to this article were reported.

Author Contributions. J.Z., L.T., and G.L. conceived and designed the study. J.Z., Y.W., L.T., and G.L. acquired data, performed statistical analyses and interpretation, and drafted the manuscript. H.G.C.V.S., R.W., and L.T. provided professional and statistical support and made several critical revisions to the manuscript. All authors read and approved the final manuscript. G.L. is the guarantor of this work and, as such, had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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