

RESEARCH LETTER

Racial and Ethnic Group Underrepresentation in Studies of Adverse Pregnancy Outcomes and Cardiovascular Risk

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Adverse pregnancy outcomes (APOs), including hypertensive disorders of pregnancy, gestational diabetes, and preterm delivery are pathologic adaptations to pregnancy. These events place women at increased risk of peripartum cardiomyopathy, stroke, seizure, and stillbirth in the short term and chronic kidney disease or cardiovascular disease (CVD) in the long term.^{1,2} Recent guidelines on APOs have highlighted stark racial and ethnic disparities in cardiovascular risk and outcomes.³ Hypertensive disorders of pregnancy occur more frequently in Black women (including a 3-fold higher mortality from preeclampsia) compared with White women.^{3,4} Asian (especially Indian, Filipina, and Southeast Asian) women experience the highest rates of gestational diabetes of any racial or ethnic group.^{3,4} Peripartum cardiomyopathy has a prevalence of ≈ 11.8 in 10 000 births, disproportionately impacting Black women.⁴ Given these documented disparities, diverse racial and ethnic representation in studies of APOs and CVD is crucial to ensure generalizability and equity when developing preventive strategies and treatment recommendations.

We aimed to evaluate gaps in the reporting and representation of participant-level race and ethnicity in studies of APOs and CVD informing the most contemporary guidelines, namely those cited in the 2021

American Heart Association's (AHA's) scientific statement on APOs and CVD risk.²

Data supporting the findings of this study are available on request from the corresponding author. Two authors (S.E.G. and A.S.) reviewed cited studies in the 2021 AHA statement.² Original studies and those within cited meta-analyses were evaluated for study type (trial versus cohort), location (United States versus non–United States), and participant-level racial and ethnic data. Racial and ethnic representation among pooled US studies was compared with 2010 and 2020 US Census estimates using the two-proportion z test. Institutional review board approval was not obtained because public articles were reviewed.

We reviewed 85 studies published between 2000 and 2019; all were observational studies investigating the correlation between APOs and either composite CVD (coronary artery disease, myocardial infarction, stroke, congestive heart failure), CVD mortality broadly (77 studies), or coronary artery disease and stroke (7 studies). Only 16 (19%) reported participant-level racial and ethnic information. Only 12 reported White representation, 9 reported Black representation, 8 reported Hispanic representation, 5 reported Asian representation, 2 reported Aboriginal representation, 1 reported Jewish/Bedouin representation, and 7 reported “other” representation.

Key Words: adverse pregnancy outcomes ■ cardiovascular risk factors ■ racial and ethnic disparities

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No studies reported Pacific Islander, American Indian, or Alaska Native participation. Only 1 study disaggregated Asian data; none disaggregated Hispanic data. Fourteen (16%) studies included a US cohort, and 11 reported participant-level race and ethnicity.

Among US studies, White representation was 94.7% and 120.4% of expected compared with 2010 and 2020 US Census data, respectively (Figure, studies: 74.2%; 2010 Census: 78.4%; 2020 Census: 61.6%; $P < 0.001$). Black representation was 75.4% and 79.2% of expected compared with 2010 and 2020 Census data, respectively (studies: 9.8%; 2010 Census: 13.0%; 2020 Census: 12.4%; $P < 0.001$). Hispanic and Asian participants were also underrepresented compared with 2010 and 2020 Census estimates, with participation of 82.5% and 72.0% of expected for Hispanic groups and 63.4% and 51.9% for Asian groups, respectively.

Contemporary studies of APOs and CVD cited in the 2021 AHA statement on APOs and CVD risk were limited, observational, mostly non-US studies that underreported racial and ethnic data and lacked disaggregated race and ethnicity data. US studies underrepresented Black, Hispanic, and Asian groups compared with US Census population estimates.

APOs and CVD heterogeneously and disproportionately affect historically disenfranchised groups.³ Yet, guideline-informing evidence linking APOs and

CVD lacked adequate racial and ethnic reporting and representation. While a small number of studies provided detailed reporting, overall reporting was suboptimal with minimal disaggregation by subgroups. These findings are consistent with disparities seen in cardiovascular trials among major disease states including dyslipidemia.⁵ Moreover, US studies had no reporting for Pacific Islanders, American Indians, and Alaska Natives despite prior literature suggesting a high burden of adverse cardiovascular outcomes and limited access to prenatal care in these groups. The need to improve study reporting and representation may be most crucial among these underrepresented groups. Concerted scientific and public health efforts focused on APOs and cardiovascular health in these groups are warranted. Finally, limited US-based data (16% of total studies) further limits generalizability. Overall, inadequate national, racial, and ethnic representation may lead to inequitable study of the APO-CVD relationship.

This study has certain limitations. We included studies cited within the 2021 AHA statement, which have high visibility likely to guide clinical practice but may not be comprehensive. Given inconsistent reporting, we were unable to disaggregate data including for Asian participants and non-Hispanic versus Hispanic ethnicity. Since the APO-CVD relationship is understudied, available studies may be low

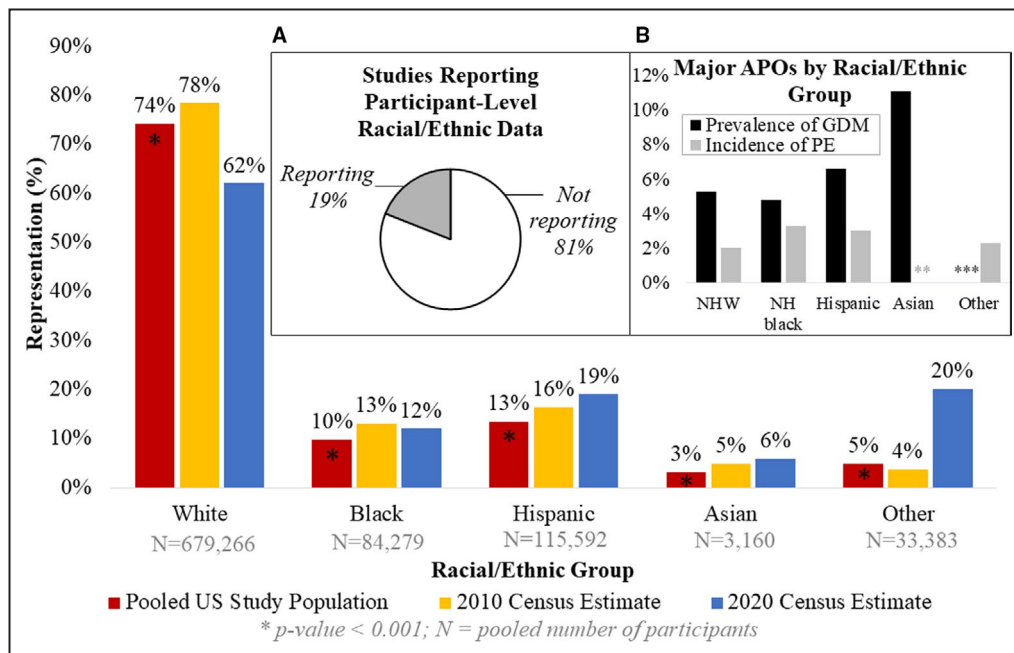


Figure 1. Racial and ethnic representation among pooled US study participants per 2010 and 2020 US Census estimates.

A, Proportion of studies reporting participant-level racial and ethnic data. **B**, Adverse pregnancy outcomes (APOs) by racial and ethnic group, using gestational diabetes prevalence data from Northern California cohort 1995 to 2004 and preeclampsia incidence data from New York City cohort 1993 to 2002.³ GDM indicates gestational diabetes; and PE, preeclampsia.

in number. Nevertheless, these findings are crucial indicators of current racial and ethnic disparities in study reporting and representation in women's cardiovascular health.

In conclusion, we found significant underreporting and underrepresentation of diverse racial and ethnic groups among guideline-informing studies of APOs and CVD. Improving diverse participant reporting and representation in studies on APOs and CVD across the life course is necessary to inform CVD prevention for these high-risk women.

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Disclosures

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