The recent analysis of Albain et al. (1) suggests that African American patients with sex-specific cancers had worse survival than white patients, despite enrollment in Southwest Oncology Group phase III trials with uniform stage, treatment, and follow-up and after adjustment for socioeconomic status. However, there are a number of statistical and methodological approaches used that are inappropriate and render their analysis essentially uninterpretable.

A pivotal methodological problem is the authors' confounder adjustment approach. One of the study's key findings is that socioeconomic status does not explain the observed racial difference in survival, leading to the conclusion that " . . . unrecognized interactions of tumor biological, hormonal, and/or inherited host factors may be contributing to differential survival outcomes by race . . . " (1). By adjusting for some measures of socioeconomic status, the authors sought to make the African American patients and white patients more directly comparable and thereby exclude socioeconomic status as a possible alternative explanation for the observed disparities. The specific socioeconomic status adjustment undertaken by the authors guaranteed substantial residual confounding, however, rendering their adjustments inadequate and their conclusions therefore unsupported. First, no individual-level socioeconomic status adjustment was undertaken; rather, zip code–level socioeconomic status proxies were constructed and applied to all study subjects. But the claim that area-level socioeconomic status "controls" for individual-level socioeconomic status is known to be incorrect (2). The authors (1) cite Krieger et al. (3) to justify their socioeconomic status adjustment strategy. However, the article by Krieger et al. proposes that aggregated statistics be used for monitoring disease trends and not that they be used for individual-level control in racial disparity studies. Second, the socioeconomic status variables were dichotomized from a continuous to a binary form (high or low income), throwing away substantial information. Third, the socioeconomic status data were missing for between 27% and 79% of subjects depending on the clinical trial. Because the failure of the disparities to change after adjustment for these socioeconomic status variables is the major focus of the article, this level of missing data is a major problem for the authors' proposed interpretation. Although the authors attempted to overcome their missing data by constructing a missing

category, adjusting for missing data in this way is known to be invalid and potentially worse than the complete case analysis (4).

Lastly, many additional factors associated with both race and cancer survival may explain racial disparities and should be considered (eg, breast-feeding and other reproductive factors), as described previously (5,6). In fact, factors such as these may explain why the authors found particularly substantial disparities for sex-specific cancers.

Racial or ethnic disparities in cancer survival are a pressing public health problem that needs careful study, but appropriate statistical and methodological approaches are essential. Only with valid inferences will we learn how to intervene to reduce such disparities.

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## Notes


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