Reducing Racial Disparities in Surviving Gastrointestinal Cancer Will Require Looking Beyond the Fact That African-Americans Have Low Rates of Surgery

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ABSTRACT

This article by Bliton and colleagues in this issue of the journal concludes that disproportionately low surgery rates among Black patients contribute to the known survival disparity between Blacks and Whites. Using data from the National Cancer Database (NCDB), they were able to address the implicit hypothesis that the measured outcome disparities are partly attributable to failure to deliver surgical care equitably. As with most good research on difficult and complex topics, it also raises interesting and provocative questions about the role of race in poor survival among African-American patients with gastrointestinal cancer. The main limitation of the NCDB is its inability to account for individual-level factors. Those things related to health behaviors, such as diet, physical activity, and tobacco use, but that also include characteristics of the built environment, comprehensive access to care measures, clinical decision-making, racial discrimination and other forms of psychosocial stress, and environmental contamination, would influence both the likelihood of getting cancer and the probability of having aggressive disease with poor prognosis. These factors also may be related to clinical decision-making. Suggestions are made to design studies and collect data that would help to inform future investigations to deepen our understanding of racial disparities in cancer survival.

See related article by Bliton et al., p. 529

This well-written and informative article, by Bliton and colleagues in this issue of *Cancer Epidemiology, Biomarkers and Prevention* (1), raises interesting and provocative questions about the role of race in poor survival among African-American patients with gastrointestinal cancer in the United States. For their analyses, they used data covering years 2004–2015 from the National Cancer Database (NCDB) on mid-esophageal, distal esophagus/gastric cardia, non-cardia gastric, pancreatic, and colorectal cancers. They conclude that the disproportionately low surgery rates among Black patients contribute to the known survival disparity between Black and White patients.

Although most arise from adenomatous lesions of the epithelium (2), there is considerable heterogeneity among the gastrointestinal cancers studied with respect to etiology (3). Despite this, the survival disparities are remarkably consistent in disfavoring African Americans; a pattern we see with many cancers (4). It is well known that Black patients have worse mortality, given cancer incidence, than their White counterparts (5). This is reflected in higher mortality-to-incidence ratios (MIRs) for gastrointestinal cancers (4, 6). While race and, to some extent, ethnicity are poor surrogates for genetic determinants of cancer incidence and disease severity, we see consistent differences by race and ethnicity for many cancers that have persisted for a very long time (7, 8). While there may be some real, biological differences by race or ethnicity, it is well recognized that most of the variability that we see in cancer statistics are due to other factors (9). These include a wide variety of environmental influences ranging from diet and physical activity to characteristics of the built environment, access to care, clinical decision-making, racial discrimination and other forms of psychosocial stress, and environmental contamination (10, 11). So, this begs the question: "What is it about these other factors, which are distributed differentially by race and/or ethnicity, that influences susceptibility, prognosis and, ultimately, survival after cancer?"

Bliton and colleagues hypothesize "that the measured outcome disparities are partially attributable to failure . . . to deliver surgical care equitably." They also acknowledge the obvious conceptual and methodologic complexity posed by differences in underlying perioperative risk. These include comorbidities, later presentation due to differences in access to appropriate screening, and medical distrust among minorities that is based on historical discrimination; all of which may influence both the likelihood of receiving surgery and length of survival, in general (i.e., in addition to any survival benefit from surgery). Of course, the list grows even longer when one expands to consider the array of environmental factors that operate well before the "perioperative" period but still could be related both to the decision to perform surgery and to other determinants of survival.

The use of the NCDB data, while limited in their ability to describe or account for individual-level exposures, did provide an opportunity to test their hypothesis regarding racially biased surgical treatment decisions. For example, the NCDB data on socioeconomic status (SES) is limited to ZIP-code-level income quartiles. This represents a higher level of aggregation than census block, which gets us closer to the geographical scale that we typically associate with neighborhood. Even neighborhood-level factors, which may be important predictors of health outcome, sometimes out-performing individual-level covariates (12–14), probably are incapable of identifying individual-level factors related to racial discrimination (15).

Clinical decisions represent complex interactions between the provider and patient. Clinicians come to these interactions with life experiences that go well beyond their training in medicine (16). Like anyone faced with a decision they will inevitably make assumptions where data are either unavailable or hard to come by. These may

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include biases based on SES, race/ethnicity and attitudes about worth, value and commitment (17). What implications would an assumption about a patient's willingness to participate in their care based on an expression of health fatalism (18) have for selecting a less aggressive therapy or one that entailed less follow-up care? It is conceivable that one could base a decision on assumptions that may be deeply racist, however well-intentioned, regarding one's perceived ability to deal with postoperative care.

Patients come to these interactions on more tenuous ground. The individual often is in a state of shock from having received a potentially life-threatening diagnosis. Few patients will know much about the disease with which they have been diagnosed, the treatments available or the implications for choosing one treatment rather than another. The news about a cancer diagnosis appears against the background of other life experiences that may include discrimination based on a variety of factors including SES, education, race/ethnicity, and sexual or gender identity. All of these personal background factors have the potential to act as confounders and effect modifiers of more obvious and easily measured factors influencing treatment decisions. To understand how they work would require measuring these individual-level factors.

The NCDB precludes examining individual-level factors. Still, it is important to consider how this might be operationalized, and Bliton and colleagues open the door to this line of inquiry in the Discussion section of the paper. Delineating these factors would inform future research that could explore the underlying reasons for making a surgical decision and how those factors might influence other processes that determine survival. Risk factors such as diet, physical activity, and tobacco use, which are associated with cancer etiology, disease progression, and survival (19, 20), are inter-correlated (21, 22). They also are associated with stress which, in turn, is associated with race, ethnicity, and SES (10). As Bliton and colleagues mention, discrimination can lead to worse cancer outcomes through biological mechanisms, such as stress-induced immunosuppression (23). Bliton and colleagues acknowledge that how individuals might deal with stress in relation to decision making that occurs in the patient–surgeon interaction is an important issue.

Even at the level of U.S. congressional districts, which are much larger than ZIP codes, we can see the effects of rurality and race (4) on cancer survival. This is important because the treatment decision may be related to real or perceived barriers associated with access to care, which would be influenced both by physical distance and SES factors, such as car ownership. In addition, there are systemic challenges such as states' lack of Medicaid expansion, which co-occur with concentrations of low-SES individuals and persons of color (4, 6, 24). Regional differences also are important to consider. For example, African Americans make up a large proportion of the rural South (e.g., 39% of rural dwellers in South Carolina are African American; ref. 25); which is a much different situation than other places in the United States (4, 26), where African Americans are nearly exclusively urban dwellers. As Bliton and colleagues point out, while the NCDB captures the majority of cancer diagnoses in the United States, those it does not capture are less likely to reside near urban academic centers, and that may have biased their findings (27).

There is a large and consistent literature on the reluctance of African-American patients to participate in medical research (17). This reluctance is consistent with Bliton and colleagues's finding that Black patients were more likely to be classified as having refused surgery. The decision to participate in a cancer treatment trial represents a process that is similar in many ways in that it entails complex decision-making that, in turn, requires interacting with the medical care delivery system; usually with an individual physician having the power to influence the decision. It should be relatively easy to visualize how factors associated with self-selection into a cancer treatment trial or selecting a particular cancer treatment are related to self-care in general (e.g., diet, physical activity, stress reduction). Considering that factors associated with relative value and worth may exert effects independent of such behaviors adds yet more subtlety. The work by Marmot on status syndrome (28) is illustrative of how deeply ingrained social status is, both in terms of institutionalized biases and personal behavior.

In summary, the paper by Bliton and colleagues highlights important racial differences in surgery. In this they acknowledge the limitations in the approach they used, thus setting the stage for addressing these limitations as a challenge. With this as background, future work should focus on:

- Racial discrimination as a substrate on which distrust of the medical system functions – this might include focusing on race-concordant medical homes, which we have found increases compliance for receiving a colonoscopy among African-Americans (29).
- The interaction between rurality and race as barriers to care; for example, are African-Americans in the rural South more distrustful of the medical care delivery system, or report lower satisfaction with their care?
- Examining time-by-region-by-race interactions; that is, secular trends in decision-making that differ from place to place, over time, and according to race.
- Strategically adding fields to cancer registry databases that could enable addressing the underlying reasons for these disparities directly.
- Designing and conducting studies of incident cancer patients in real time such that we can look at personal decisions related to things such as diet, physical activity, and other aspects of self-care.
- Focusing on type of surgery performed, even though the current analysis found that this did not play a role in the disparity and, therefore, was not included in the presentation of their results.

Authors' Disclosures

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