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ORIGINAL ARTICLE – GLOBAL HEALTH SERVICES RESEARCH

Association of County-Level Racial Diversity and Likelihood of a Textbook Outcome Following Pancreas Surgery

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ABSTRACT

Introduction. Residential racial desegregation has demonstrated improved economic and education outcomes. The degree of racial community segregation relative to surgical outcomes has not been examined.

Patients and Methods. Patients undergoing pancreatic resection between 2013 and 2017 were identified from Medicare Standard Analytic Files. A diversity index for each county was calculated from the American Community Survey. Multivariable mixed-effects logistic regression with a random effect for hospital was used to measure the association of the diversity index level with textbook outcome (TO).

Results. Among the 24,298 Medicare beneficiaries who underwent a pancreatic resection, most patients were male (n = 12,784, 52.6%), White (n = 21,616, 89%), and had a median age of 72 (68–77) years. The overall incidence of TO following pancreatic surgery was 43.3%. On multivariable analysis, patients who resided in low-diversity areas had 16% lower odds of experiencing a TO following pancreatic resection compared with patients from high-diversity communities (OR 0.84, 95% CI 0.72–0.98). Compared with patients who resided in the high-diversity areas, individuals who lived in low-diversity areas had higher odds of 90-day readmission (OR 1.16, 95% CI 1.03–1.31) and had higher odds of dying within 90 days (OR 1.85, 95% CI 1.45–2.38) (both $p < 0.05$). Nonminority patients who resided in low-diversity areas also had a 14% decreased likelihood to achieve a TO after pancreatic resection compared with nonminority patients in high-diversity areas (OR 0.86, 95% CI 0.73–1.00).

Conclusion. Patients residing in the lowest racial/ethnic integrated counties were considerably less likely to have an optimal TO following pancreatic resection compared with patients who resided in the highest racially integrated counties.

The average life expectancy of individuals in the USA can vary by up to 30 years between neighboring counties.[1] Specifically, higher income has been associated with greater longevity and life expectancy.[2,3] Furthermore, lower socioeconomic status has also been linked to operative mortality, higher burden of chronic disease, and worse self-reported health status.[4–6] Importantly, low socioeconomic status is more prevalent among the Black population, which may contribute to racial and ethnic health disparities observed across a myriad of health conditions, including surgical outcomes.[7–9] Because residential segregation is considered a key factor in perpetuating socioeconomic disparities,[10] there is an emerging belief that residential segregation is also an underlying cause of health inequalities.[11–13]

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Racial and ethnic disparities in access to surgical care as well as variations in postoperative outcomes have been previously described.[7–9,14] Strategies to mitigate disparities, however, remain poorly understood.[15] Desegregation has resulted in improved economic and educational outcomes for minority populations.[16–18] According to Williams and Collins, residential segregation can affect health outcomes in several major ways.[19] In particular, segregation can determine the quality of education and employment opportunities, contribute to the creation of pathogenic neighborhoods and housing conditions, constrain the practice of health behaviors and encourage unhealthy ones, and adversely affect access to high-quality health care. In contrast, more integrated communities may have greater economic and educational opportunities, which may lead to improved social determinates of health, increased access to health care, and greater overall health. In turn, desegregation of communities may help improve health-related outcomes, including surgical care. Racial and ethnic health disparities may, however, persist even within the most integrated communities because of other underlying factors. As such, evaluation of the extent of racial/ethnic diversity within a patient's area of residence relative to surgical outcomes may be important to identify disparities, as well as to define mitigation strategies.

The impact of residential segregation on health care outcomes has recently been highlighted by the coronavirus disease 2019 (COVID-19) epidemic, which has had a vastly greater impact on Black and Latino communities.[20] While examined relative to COVID-19 and a small set of other medical conditions,[12,13] the impact of residential segregation on postoperative surgical outcomes has largely not been investigated. Pancreatic resection is a complex surgical procedure with a high incidence of morbidity and mortality that is particularly sensitive to variations in care leading to disparate outcomes.[21–23] As such, we designed a national cohort study to characterize postoperative outcomes after pancreatic surgery among patients in different counties with varying degrees of racial/ethnic diversity. In particular, we hypothesized that patients residing in areas of high diversity were more likely to have optimal "textbook outcomes" following pancreatic surgery compared with patients from less diverse areas.

METHODS

Data Source

Data from 2013 through 2017 were retrieved from the Medicare Inpatient and Outpatient Standard Analytic Files (SAFs), which are maintained by the Centers for Medicare and Medicaid Services (CMS). The SAFs include patient-level data on demographic characteristics, diagnoses, procedures, and expenditures. Patients who underwent a pancreatic resection were identified using the procedure codes (Appendix 1) of the ninth and tenth revision of the International Classification of Diseases (ICD-9-CM and ICD-10-CM). Primary diagnosis codes and the related frequencies are provided in Appendix 2. Because Medicare beneficiaries enrolled in HMOs have some or all their care paid for by payers other than Medicare, these claims are often not complete. As such, including beneficiaries enrolled in HMOs would introduce unknown missingness into the data and bias the results. Excluding Medicare beneficiaries enrolled in HMOs is well established and commonly utilized by investigators. If a patient underwent multiple procedures over the course of the study period, only the first procedure was included for the purposes of analysis. Approval was obtained from the institutional review board at the Ohio State University Wexner Medical Center.

Variables

The independent variable of interest was racial diversity at the county level. Using the county-level 2018 American Community Survey: 5-Year Data (2014–2018), obtained from the National Historical Geographic Information System (NHGIS),[24] a *diversity index (DI)* was calculated for each county based on the Shannon' Diversity Index (H) approach.[25] The Shannon's diversity index (H') is one of the most notable multigroup diversity measures that enable researchers to account for both richness (the number of species present) and evenness (the relative abundance of species). The index is obtained using the equation:

$$H' = -\sum_{j=1}^{s} P_j \ln\left(P_j\right)$$

where s represents the total number of species present, P_j represents the proportion of individuals who belong to species j, and H' represent the level of uncertainty regarding the identity of a randomly selected individual. In other words, in a highly diverse community, predicting the species of any given individual should involve a high level of uncertainty; thus, we should have a relatively high H' compared with a less diverse community.[26,27] To put in context, letting s represent the number of races, P_j the proportion of each race, we obtained H', the level of diversity in each county. Of note, the US Census Bureau proposed several measures of evenness to quantify racial segregation, one of which was developed by Theil.[28] It has been demonstrated that the symmetric Theil index is related to the Shannon's diversity index.[29]

Population size information was obtained for nine different racial/ethnic group: "White alone," "Black or African American alone," "American Indian and Alaska Native alone," "Asian alone," "Native Hawaiian and Other Pacific Islander alone," "some other race alone," "two or more races," "two races including some other race," and "two races excluding some other race, and three or more races." For purposes of the current study, those that identified as two or more races/ethnicities were combined into one group. The diversity index values were standardized and categorized into three different levels: low segregation (below one standard deviation), average diversity (within one standard deviation), and high diversity (above one standard deviation). The dataset was then merged with the Medicare data for all subsequent analyses. Preoperative patient comorbidities were accounted for using the Charlson Comorbidity Index (CCI); additional independent variables included age, sex, minority status, hospital type (teaching versus nonteaching), hospital volume, expenditure, and surgery type (elective versus nonelective).

Textbook outcome (TO), a composite measure of surgical outcome based on several postoperative outcomes, was the main outcome of interest.[22,30] A patient was categorized as having a TO if the patient did not experience any of the composite elements including no extended length of stay (LOS) (> 75th percentiles LOS), did not have any complication,[31] was not readmitted into any hospital within 90 days from discharge, and did not die within 90 days. ICD-9-CM and ICD-10-CM codes were used to identify postoperative complications including pulmonary failure, pneumonia, myocardial infarction, deep venous thrombosis, pulmonary embolism, renal failure, surgical site infection, gastrointestinal bleeding, and postoperative hemorrhage. These complications represent a subset of codes from administrative claims with the greatest sensitivity and specificity.[31]

Statistical Analysis

Descriptive statistics such as median (IQR) and proportions were calculated for continuous (nonnormal) and categorical variables, respectively. At the bivariate level, possible associations among patient demographics (e.g., age, minority status), clinical factors (e.g., CCI, elective surgery), and postoperative outcomes (e.g., TO and its components) as well as the diversity index (low, average, high) were assessed using Kruskal–Wallis test for interval (nonnormal) variables and χ^2 tests for categorical variables. Multivariable mixed-effects logistic regression with a random effect for hospital was performed to measure the association of diversity index level with TO and its components while adjusting for confounding factors such as age, sex, minority status, hospital type (teaching versus nonteaching), hospital volume, expenditure, and surgery type (elective versus nonelective). Minority status was defined as any individual who did not identify as White (i.e., non-White). To assess a possible interaction effect of race and diversity, analyses using the mixed effects model were repeated to include a minority* diversity interaction as well as the main effects for diversity. To test for potential colinearity between race and the diversity index, a one-way analysis of variance and a multiple comparison test using the Bonferroni method were performed to assess pairwise differences for different race/ethnicity categories. These results were all statistically significant at *alpha* = 0.05, indicating that the mean of the diversity index was different across races. Additionally, when both race/ethnicity and the diversity index were included in the final model, there was model convergence. Finally, to test for variance inflation, the minority variable was removed from the final model for TO, and there was no evidence of variance inflation. These points have been added to the methods section. All statistical analyses were performed using SAS v 9.4 (SAS Institute, Cary, NC), and a statistical significance of $p = 0.05$ was used.

RESULTS

Among the 24,298 Medicare beneficiaries who underwent a pancreatic resection, most patients were male (n = 12,784, 52.6%), were White (n = 21,616, 89%), and had a median age of 72 (68–77) years (Table 1). The majority underwent an elective operation (n = 20,807, 85.6%) at a teaching hospital (n = 18,649, 76.8%). Overall, 16,864 (69.4%) patients resided in a county with average diversity, while 3912 (16.1%) patients resided in a county with low diversity and 4042 (16.2%) with high diversity. Of note, there was a slightly larger proportion of male patients from low-diversity areas (low diversity: n = 1856 (54.7%) versus average diversity: n = 8855 (52.5%) versus high diversity: n = 2073 (51.3%); p = 0.011). While there was a similar proportion of non-White patients (Black, n = 104, 3.1%; other race/ethnicity, n = 105, 3.1%) in low-diversity counties, there was a smaller proportion of non-White patients who resided in high-diversity counties (Black, n = 180, 4.5% versus other race/ethnicity, n = 374, 9.3%; $p <$ 0.001). In addition, the overall proportion of patients who underwent elective surgery was lower in the low-diversity counties (low diversity: n = 2829 (83.4%) versus average diversity: n = 14,395 (85.4%) versus high diversity: n = 3583 (88.6%); $p < 0.001$).

The overall incidence of TO following pancreatic surgery was 43.3%. Figure 1 shows the proportion of patients who achieved each component of a TO, as well as the

TABLE 1 Bivariate analyses of patient characteristics versus level of diversity using the Shannon Diversity Index (*H*)

Variable	Total *n* = 24,298	Low diversity *n* = 3392	Average diversity *n* = 16,864	High diversity *n* = 4042	*p*-value
Age, median (IQR)	72 (68–77)	73 (69–77)	72 (68–77)	72 (68–77)	0.09
Male	12,784 (52.6%)	1856 (54.7%)	8855 (52.5%)	2073 (51.3%)	0.011
Race					< 0.001
White	21,616 (89%)	3183 (93.8%)	14,945 (88.6%)	3488 (86.3%)	
Black	1503 (6.2%)	104 (3.1%)	1219 (7.2%)	180 (4.5%)	
Other	1179 (4.9%)	105 (3.1%)	700 (4.2%)	374 (9.3%)	
Elective surgery	20,807 (85.6%)	2829 (83.4%)	14,395 (85.4%)	3583 (88.6%)	< 0.001
Teaching hospital	18,649 (76.8%)	2549 (75.1%)	12,921 (76.6%)	3179 (78.6%)	0.001
LOS, median (IQR)	8 (6–14)	9 (6–15)	8 (6–14)	8 (6–13)	< 0.001
CCS, median (IQR)	2 (2–8)	3 (2–8)	2 (2–8)	3 (2–8)	< 0.001
Expenditure index (kUSD)	22.5 (16.9–37.0)	21.8 (16.8–36.6)	23.4 (17.0–37.4)	21.0 (16.7–35.1)	< 0.001

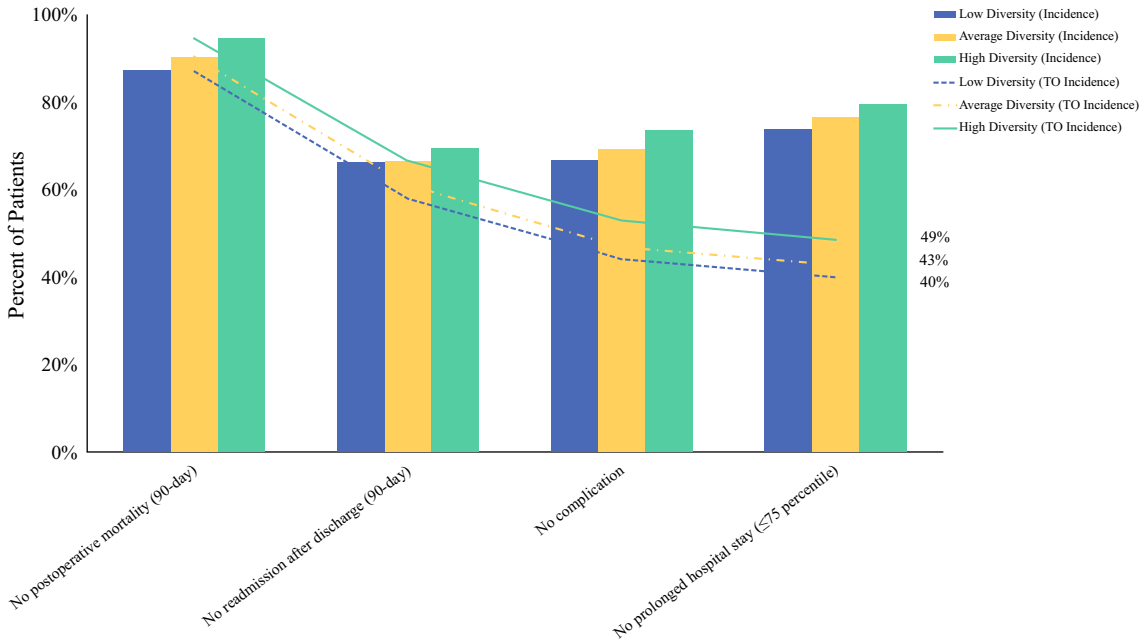

FIG. 1 Proportion of patients achieving TO and individual components of TO stratified by Diversity. *TO* textbook outcome

proportion of patients who achieved a TO stratified by diversity index (Fig. 1). While not experiencing a complication had the greatest impact on the ability to obtain a TO (no complications, *n* = 16,902, 30.4%), no mortality within 90 days (*n* = 22,034, 90.7%) was the outcome most commonly achieved among patients. In addition, 76.8% (*n* = 18,651) of the patients did not have an extended LOS, and 67.0% (*n* = 16,287) did not experience a hospital readmission within 90 days of discharge. The unadjusted likelihood of achieving a TO was lower among patients in low-diversity areas (low diversity: *n* = 1354 (39.9%) versus average diversity: *n* = 7204 (42.7%) versus high diversity: *n* = 1964 (48.6%); $p < 0.001$) (Table 2). In particular, several TO components varied markedly according to county diversity status. For example, patients who resided in low-diversity areas had a longer median LOS (low diversity: 9 days (IQR 6, 15) versus average diversity: 8 days (IQR 6, 14) versus high diversity: 8 days (IQR 6, 13); $p < 0.001$), and had a higher likelihood of 90-day mortality (low diversity: *n* = 427 (12.6%) versus average diversity: *n* = 1618 (9.6%) versus high diversity: *n* = 219 (5.4%); $p < 0.001$). In contrast, patients who resided in high-diversity areas had better outcomes across the range of individual TO component metrics including risk of complications, 90-day readmission, and death within 90 days following pancreatic surgery (all $p < 0.05$) (Table 2).

TABLE 2 Bivariate analyses of postoperative outcomes versus level of diversity using the Shannon Diversity Index (*H*)

Outcomes	Total *n* = 24,298	Low diversity *n* = 3392	Average diversity *n* = 16,864	High diversity *n* = 4042	*p*-value
Textbook outcome	10,522 (43.3%)	1354 (39.9%)	7204 (42.7%)	1964 (48.6%)	< 0.001
Extended LOS	5647 (23.2%)	878 (25.9%)	3945 (23.4%)	824 (20.4%)	< 0.001
Complication	7396 (30.4%)	1128 (33.3%)	5201 (30.8%)	1067 (26.4%)	< 0.001
Readmission					
30 days	5478 (22.5%)	774 (22.8%)	3852 (22.8%)	852 (21.1%)	0.051
90 days	8011 (33%)	1148 (33.8%)	5637 (33.4%)	1226 (30.3%)	< 0.001
Mortality					
30 days	1455 (6%)	290 (8.5%)	1023 (6.1%)	142 (3.5%)	< 0.001
90 days	2264 (9.3%)	427 (12.6%)	1618 (9.6%)	219 (5.4%)	< 0.001

After adjustment for other competing risk factors on multivariable analyses including age, sex, non-White status, preoperative comorbidities, hospital type, and volume, the diversity index remained strongly associated with TO. Specifically, patients who resided in low-diversity areas had 16% lower odds to experience a TO following pancreatic resection compared with patients from high-diversity communities (OR 0.84, 95% CI 0.72–0. 98) (Table 3). The effect of community diversity on likelihood to achieve TO persisted among patients from average versus high-diversity areas, albeit with the impact of diversity being slightly less than for low-diversity areas (OR 0.87, 95% CI 0.77–0.99). Readmission within 90 days as well as mortality within 90 days were strongly associated with diversity. Specifically, compared with patients who resided in high-diversity areas, individuals who lived in low-diversity areas had higher odds of 90-day readmission (OR 1.16, 95% CI 1.03–1.31) and higher odds of dying within 90 days (OR 1.85, 95% CI 1.45–2.38) (both $p < 0.05$). While patients from an average-diversity community also had an increased risk of 90-day readmission (OR 1.15, 95% CI 1.04–1.26) and 90-day mortality (OR 1.55, 95% CI 1.25–1.92) compared with patients from high-diversity areas, the size of the effect was not as pronounced as among patients from low-diversity areas.

Of note, additional stratified analyses to examine the interaction of race/ethnicity and community diversity demonstrated an increased probability to achieve a TO as the diversity index increased among both White and non-White patients (Fig. 2). Specifically, in assessing patients stratified by minority status, non-White patients who lived in low-diversity areas had lower odds of achieving a postoperative TO following pancreatic resection compared with non-White patients who resided in high-diversity areas (OR 0.69, 95% CI 0.48–0.99) (Table 4). The lower probability to achieve a TO was largely attributable to higher odds of 90-day readmission (OR 1.51, 95% CI 1.08–2.13) and 90-day mortality (OR 2.97, 95% CI 1.70–5.17). A similar, albeit less pronounced, association of neighborhood diversity with postoperative outcomes was noted among White patients. Specifically, White patients who resided in low-diversity areas had a 14%

TABLE 3 Multivariable logistic regression assessing the effect of level of diversity on postoperative outcomes (against reference high diversity)

Outcomes	Low diversity		Average diversity	
	OR	95% CI	OR	95% CI
Textbook outcome	**0.84**	**0.72–0.98**	**0.87**	**0.77–0.99**
Extended LOS	0.91	0.74–1.12	0.95	0.80–1.14
Complications at index	1.15	0.97–1.37	1.13	0.97–1.31
90-day readmission	**1.16**	**1.03–1.31**	**1.15**	**1.04–1.26**
90-day mortality	**1.85**	**1.45–2.38**	**1.55**	**1.25–1.92**

Bold values are statistically significant ($p < 0.05$)

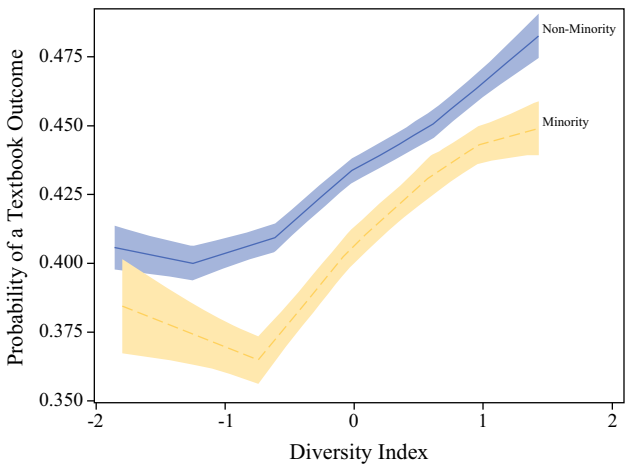

FIG. 2 Plot of probability of achieving a textbook outcome based on diversity stratified by minority status

TABLE 4 Multivariable logistic regression assessing the effect of level of diversity on postoperative outcomes stratified by minority status (against reference high diversity)

Outcome	Low diversity		Average diversity	
	OR	95% CI	OR	95% CI
Minority				
Textbook outcome	**0.69**	**0.48–0.99**	0.84	0.67–1.04
Extended LOS	1.13	0.75–1.69	1.03	0.78–1.35
Complications at index	1.42	0.98–2.05	1.28	1.00–1.63
90-day readmission	**1.51**	**1.08–2.13**	1.15	0.93–1.43
90-day mortality	**2.97**	**1.70–5.17**	**1.78**	**1.16–2.74**
Nonminority				
Textbook outcome	0.86	0.73–1.00	0.88	0.77–1.00
Extended LOS	0.88	0.71–1.09	0.94	0.78–1.12
Complications at index	1.12	0.93–1.34	1.10	0.94–1.28
90-day readmission	1.14	1.00–1.29	**1.14**	**1.03–1.27**
90-day mortality	**1.76**	**1.35–2.28**	**1.51**	**1.20–1.90**

Bold values are statistically significant ($p < 0.05$)

decreased likelihood to achieve a TO after pancreatic resection compared with White patients in high-diversity areas (OR 0.86, 95% CI 0.73–1.00). In particular, White patients in low-diversity areas had higher odds of 90-day mortality compared with individuals who lived in high-diversity areas (OR 1.76, 95% CI 1.35–2.28).

DISCUSSION

Societal racial/ethnic disparities are important determinants of health that can drive variation in health care outcomes.[7,9,12,32,33] The fact that some populations experience more social determinants of health than others can result in health disparities and health inequity.

Whereas health disparities are the patterns one observes related to health among different patient populations, health equity, or health inequity, is related more to the causes of health disparity. In essence, health inequity relates to the structural or institutional patterns that ultimately result in health disparities.[34] One such structural mechanism may be racial/ethnic residential segregation.[10,11] To this point, Arcaya and Schnake-Mahl have argued that residential segregation independent of race and/or income has an adverse impact on health.[35] While this topic has garnered considerable interest relative to the novel coronavirus epidemic, the impact of residential segregation on health care outcomes among a surgical population has not been previously examined. The current study was therefore important because we specifically examined surgical outcomes after pancreatic resection relative to county-level diversity. Pancreatic resection was used as the index procedure given its relatively high morbidity and mortality, as well as data suggesting variation in outcomes relative to access to care.[36–38] In addition, we used the diversity index, which was a validated tool utilized by the Census Bureau to measure residential segregation.[28] Of note, patients from the lowest racially integrated counties had 16% lower odds to experience a TO following pancreatic resection compared with patients from high-diversity communities. Differences in the odds to achieve a TO were largely attributable to differences in the odds of perioperative death, as well as readmission, among patients in low-integrated neighborhoods. Interestingly, the effect of diversity was incremental as patients from counties with an average diversity index had lower odds of an optimal outcome following pancreatic resection compared with individuals from high-diversity areas, yet not as pronounced as patients from low-diversity neighborhoods. In addition, while the impact of poor diversity was more pronounced among non-White patients, both non-White and White patients in the lowest racially integrated counties had worse outcomes, including higher odds of mortality.

Racial/ethnic segregation has a long and troubled history in the USA that has perpetuated systemic disparities and unequal community investment.[39,40] For example, Blacks and Hispanics who live in highly segregated and isolated neighborhoods have lower housing quality, higher concentrations of poverty, and less access to good jobs and education. Disciplines outside of health care have demonstrated how lack of racial diversity can be associated with worse economic and educational attainment,[17,18] both of which are considered important factors of social determinants of health. Social determinants of health—the conditions in the environments in which people are born, live, learn, work, play, worship, and age—can affect a wide range of health, functioning, and quality-of-life outcomes and risks.[41] Patients living in areas heavily influenced by social determinants of health may experience greater stress and have a higher risk of illness and death.[42] To this point, our group and others have demonstrated an association between social determinants of health in a particular geographic area and a myriad of health outcomes.[14,43–46] In particular, Azap et al. recently reported that social vulnerability was associated with adverse postoperative surgical outcomes after hepatopancreatic surgery.[44] The current study built off this prior work to demonstrate that county-level racial diversity itself was associated with postoperative outcomes following complex surgical procedures such as pancreatectomy. Specifically, patients who resided in communities with low diversity had roughly a 1 in 6 lower chance to achieve an optimal TO following pancreatic resection.

The lower incidence of TO among patients from low-diversity counties was largely attributable to a higher incidence of readmission and 90-day mortality in those communities. Faiz et al. had noted that variation in readmission after complex surgery was associated with patient-level factors, including race/ethnicity.[47] In addition, risk of readmission has been strongly linked to resources available at the time of discharge including home health services, rehabilitation, and personal/familial finances/support.[48–50] Pancreatic resection is also a surgical procedure that is highly sensitive to the volume–outcome relationship, as well as the overall quality of the hospital in which the procedure is performed.[21,38,51] As such, disparities in 90-day mortality following pancreatectomy may be attributed to differences in access to high-quality hospitals. For example, Sarrazin et al. reported that Medicare beneficiaries who were from highly segregated areas were more likely to be hospitalized for acute myocardial infarction in a high-mortality hospital.[52] In a separate study, Dimick et al. reported that Black patients were 58% more likely than White patients to undergo high-risk surgical procedures in lower-quality hospitals despite living in close proximity to high-quality centers. The chance of having surgery at a low-quality hospital further increased among Black individuals who lived in segregated communities.[53] In the current study, after controlling for several factors including hospital teaching status and hospital volume, the diversity index remained associated with worse postpancreatectomy outcomes and a lower incidence of TO. In turn, the data collectively suggest that achieving better outcomes for patients will require a focus not only on hospital-specific factors, but also community-level social determinants of health such as residential diversity.

Several limitations should be considered when interpreting the results of the current study. As with other studies using administrative data, the findings were subject to residual confounding due to unmeasured factors such as noncoded comorbidities. Additionally, the administrative claims database utilized did not have patient-level information on socioeconomic status. The diversity index was calculated at only one point in time (i.e., cross sectional analysis); therefore, the study was unable to assess longitudinal changes in county-level diversity and any potential effects on postoperative outcomes. The analytic cohort was also limited to patients over the age of 65 years. In turn, the findings may not be generalizable to younger patients. Despite these limitations, the observed differences in TO between high- versus low-diversity counties were notable and should compel further research to mitigate racial/ethnic disparities.

In conclusion, patients residing in low racial/ethnic integrated counties were considerably less likely to have an optimal TO following pancreatic resection compared with patients who resided in the more integrated counties. Importantly, differences in mortality were observed across levels of racial diversity for minority and nonminority patients. These findings highlight the important and far-reaching implications of increasing residential racial/ethnic diversity and diversity. The data also serve to emphasize the need for health care leaders to invest in addressing social determinants of health through equitable community investment.[54–57] Future research should seek to investigate the role of specific demographic information such as socioeconomic status (SES) and educational attainment on the association between diversity index and postoperative outcomes. In addition, future studies could consider how longitudinal changes to racial diversity may affect patient-specific risk factors to ensure access to surgical care, as well as equitable outcomes among all patients.

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