

National enrollment of lung cancer clinical trials is disproportionate based on race and health care access

OBJECTIVE

Despite declining lung cancer mortality in the United States, there are still inordinate differences in survival rates of racial and ethnic minorities. Financial barriers have also been shown to affect lung cancer screening rates with those in the lowest socioeconomic status (SES) having higher risk of death. Improvements in lung cancer treatment can be obtained through clinical trials, yet it has been shown there are disparities in clinical trial enrollment of other cancer types. The purpose of this study was to evaluate disparities in clinical trial enrollment specifically in lung cancer to aid in future enrollment initiatives.

METHODS

We identified patients diagnosed with lung cancer from 2004-2018 in the National Cancer Database. Patients were categorized in two groups: enrolled and not enrolled in clinical trial based on the "rx_summ_other" data element. We evaluated clinical, demographic, and institutional characteristics associated with trial enrollment using bi- and multivariate analysis adjusting for clustering at the institutional level.

RESULTS

Among 1.7 million patients with lung cancer, 7813 (0.5%) patients enrolled in clinical trials. Patients enrolled in clinical trials were more likely to have higher SES levels and identified as non-Hispanic White (n=6064, 83.5%) compared to non-Hispanic Black (n=722, 9.2%) and Hispanic (n=201, 2.6%, $p<0.001$). Black patients were the most disproportionately represented racial group when comparing ratios of those diagnosed with lung cancer to trial enrollment. Enrolled patients were more frequently treated at academic programs (n=3358, 43%, $p<0.001$), had private insurance (n=2397, 31%) or Medicare (n=4392, 56%), $p<0.001$, and travelled further for treatment compared to unenrolled patients (36 miles (CI 33-39) vs 27 miles (CI 27.1-27.4), $p<0.001$).

After adjusting for demographic and clinical factors, lung cancer trial enrollment was significantly less likely among Blacks and Hispanics, patients with Medicaid or uninsured, or treatment received at community-based cancer programs (Table). Patients in the lowest SES group were the least likely to enroll (OR 0.82, CI 0.7-0.9, $p<0.001$).

CONCLUSION

Enrollment in lung cancer trials disproportionately excludes black patients, those in the lowest SES, community cancer programs, and the uninsured and underinsured. These disparities in demographic and clinical trial access for trial participation suggest a need for improved enrollment strategies.

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Table. Multivariable regression analysis of factors associated with patient enrollment in clinical trials adjusted by lung cancer stage, sex, age, Charlson-Deyo score, race, insurance status, socioeconomic status, facility type, and distance travelled to receive care, among patients diagnosed with lung cancer in the National Cancer Database (2004-2018).

Cofactor	Odds Ratio	95% CI		p value
Lung Cancer Stage				
Stage 1	-	-	-	-
Stage 2	1.47	1.29	1.67	<0.001
Stage 3	2.22	2.03	2.43	<0.001
Stage 4	4.77	4.41	5.15	<0.001
Male	0.96	0.92	1.01	0.11
Age				
40-44	1.2	0.99	1.46	0.06
45-49	1.16	1.02	1.32	0.02
50-54	1.05	0.95	1.17	0.33
55-59	1.02	0.93	1.11	0.74
60-64	-	-	-	-
65-69	0.98	0.89	1.07	0.58
70-74	0.91	0.83	1.0	0.06
75-79	0.91	0.82	1.0	0.047
80-84	0.86	0.77	0.95	0.005
85-89	0.99	0.87	1.13	0.87
≥90	1.12	0.91	1.38	0.3
Charlson-Deyo Score				
Score of 0	-	-	-	-
Score of 1	1.13	1.08	1.20	<0.001
Score of 2	1.02	0.93	1.04	0.73
Score of ≥3	1.00	0.89	1.13	0.95
Race				
White	-	-	-	-
Non-Hispanic Black	0.8	0.74	0.87	<0.001
Hispanic	0.83	0.72	0.96	0.01
Insurance Type				
Private	-	-	-	-
Medicare	0.97	0.9	1.03	0.31
Medicaid	0.85	0.77	0.94	0.001
Uninsured	0.7	0.6	0.81	<0.001
Socioeconomic Status				
1 (lowest)	0.82	0.7	0.9	<0.001
2	0.93	0.85	1.02	0.12
3	1.02	0.94	1.11	0.57
4	-	-	-	-
5	1.03	0.95	1.12	0.47
6	1.01	0.93	1.09	0.88
7 (highest)	0.97	0.89	1.05	0.39
Facility Type				
Academic / Research Programs	-	-	-	-
Community Cancer Program	0.5	0.45	0.55	<0.001
Comprehensive Community Cancer Program	0.56	0.53	0.59	<0.001
Integrated Network Cancer Program	0.61	0.57	0.65	<0.001
Distance Traveled	1.0004	1.0002	1.0005	<0.001