

An Analysis of Diversity Based on Race and Ethnicity in the Radiation Oncology Physician Workforce

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Background

The American Association for Cancer Research (AACR) has created initiatives to increase the participation of minority scientists in cancer research, while the American Society of Clinical Oncology has similarly set the objective of diversifying the clinical oncology workforce as a “requisite to improving cancer care for the underserved.” Studies indicate racial/ethnic minority providers are more likely to serve in minority and medically underserved communities and more likely to pursue research on health disparities. The Association of American Medical Colleges (AAMC) recently examined diversity in the oncology workforce in *Forecasting the Supply of and Demand for Oncologists*, however, data on Radiation Oncology, specifically, were not included. To our knowledge, no published studies have examined racial/ethnic diversity within Radiation Oncology. Nearly two-thirds of all cancer patients will undergo radiation therapy during their treatment course.

Purpose

The purpose of this study was to assess the diversity of the Radiation Oncology workforce, with particular attention to the resident trainee level, and compare the findings to that of medical school graduates, Hematology/Medical Oncology (Medical Oncology) fellows, and the general population.

Methods

The most recent available public registries (2004-2010) from the American Medical Association, AAMC, and United States Census were used to assess racial/ethnic diversity. AMA FREIDA was used to identify Radiation Oncology residency programs. Significant differences in race/ethnicity were investigated between Radiation Oncology residents and: 1) medical school graduates, 2) Medical Oncology fellows, and 3) Radiation Oncology practicing physicians. All levels were compared to the general population. Additionally, differences were investigated between race/ethnicity groups with respect to enrollment in a medical school with an affiliated Radiation Oncology residency program. Statistical analyses were performed using chi-squared test and relative risk calculation for comparing student attendance of medical schools without an affiliated Radiation Oncology Residency program.

Results

Based on 2007 data, there was a significant decrease in representation of Blacks from medical school graduates to Radiation Oncology residents (6.7% vs. 3.4%, $p=0.0038$), an increase of Asians (20.4% v. 29.1%, $p<0.0001$) and no change for Hispanics (6.8% vs. 7.2%, $p=0.91$). Blacks submitted on average less Radiation Oncology residency applications (28.5) than did Whites (35.4), Asians (35.7), or Hispanics (36.0); overall mean 34.3.

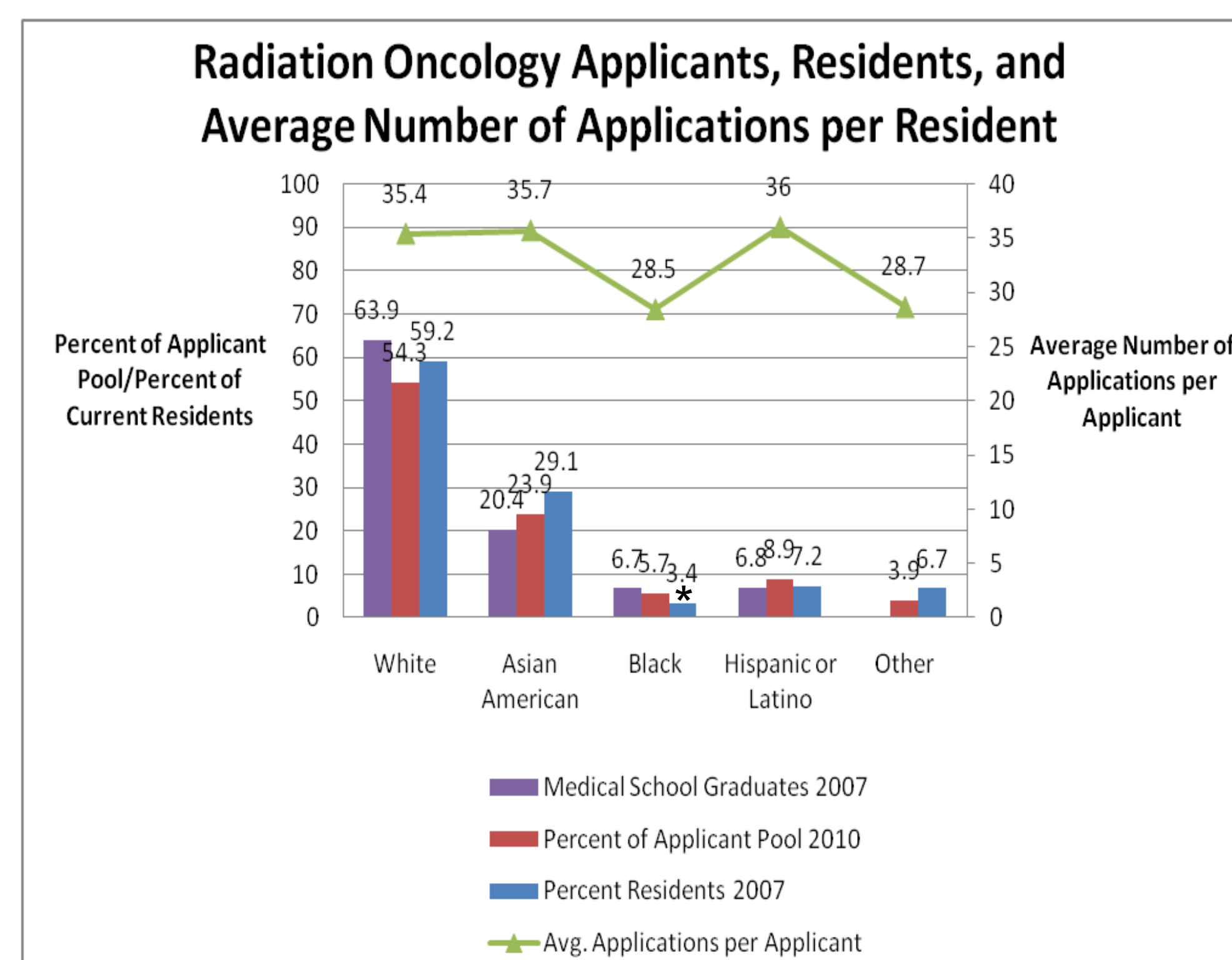
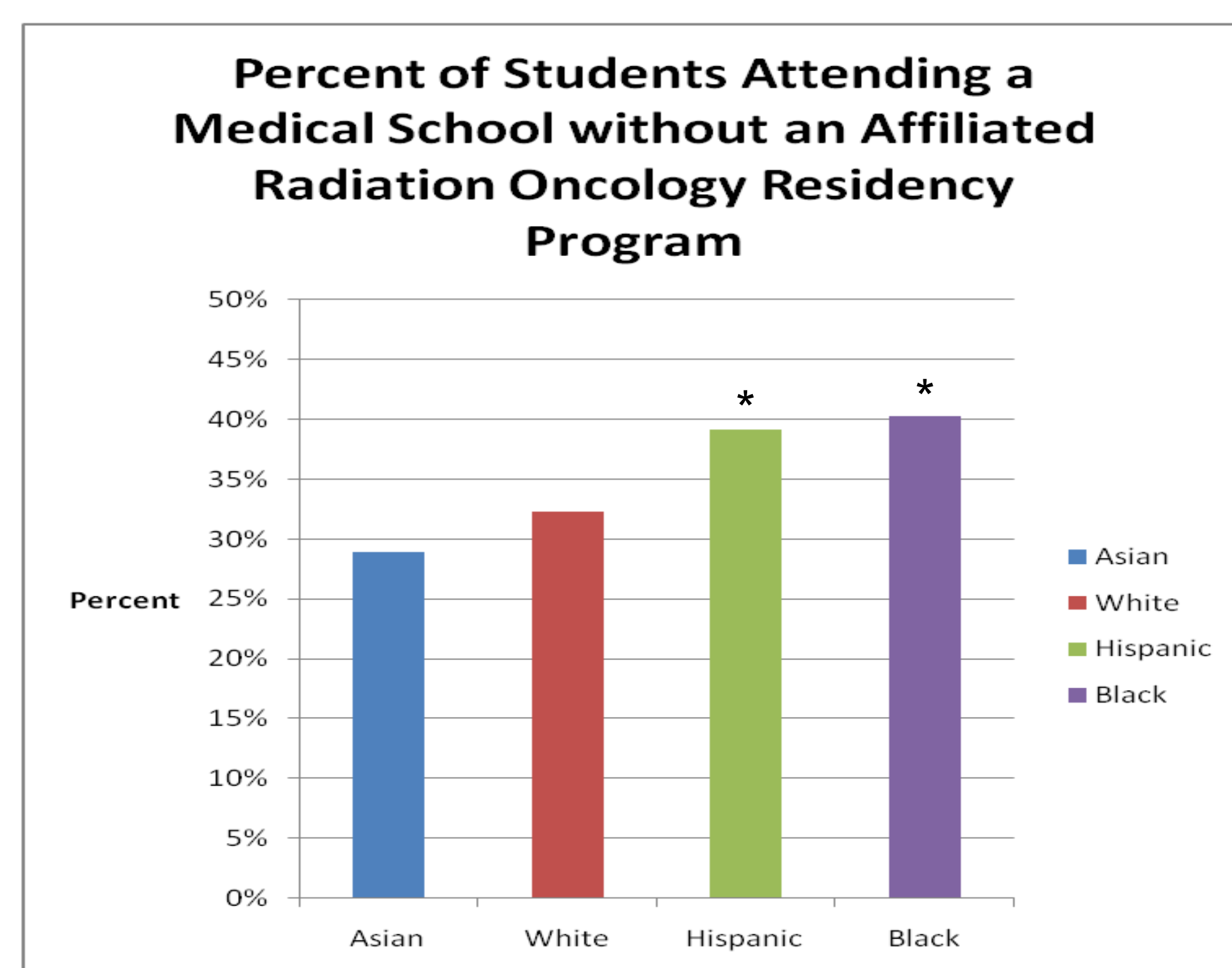


Chart 1: Medical school graduates, Radiation Oncology applicants, Radiation Oncology residents and average number of applications per Radiation Oncology applicant

Compared to Whites, Blacks and Hispanics were more likely to attend a medical school that did **not** have an affiliated Radiation Oncology residency program (RR 1.25 and 1.21, 95% CI 1.16-1.35 and 1.12-1.31, $p<0.0001$).



Race/Ethnicity	Number attending medical school without affiliated Radiation Oncology Residency (%)	Number attending medical school with affiliated Radiation Oncology Residency (%)	RR	95% CI	Z	p
Asian	966 (28.9)	2377 (71.1)	0.9	0.84-0.95	3.62	0.0003
White	3483 (32.3)	7311 (67.7)	1			1
Hispanic	440 (39.1)	685 (60.9)	1.21	1.12-1.31	4.84	<0.0001
Black	448 (40.3)	664 (59.7)	1.25	1.16-1.35	5.68	<0.0001

Chart 2: Percent of students attending a medical school **without** an affiliated Radiation Oncology residency program by race and ethnicity.

Table 1: Number and percent of students attending a medical school with or **without** an affiliated Radiation Oncology residency program by race and ethnicity

When comparing Radiation Oncology and Medical Oncology trainees, there was no difference in Blacks (3.4 vs. 3.7%, $p=0.87$) and Hispanics (7.2 vs. 7.4%, $p=0.90$), less Asians (29% vs. 36%, $p=0.006$), and more Whites (59.2% vs. 52.9%, $p=0.019$).

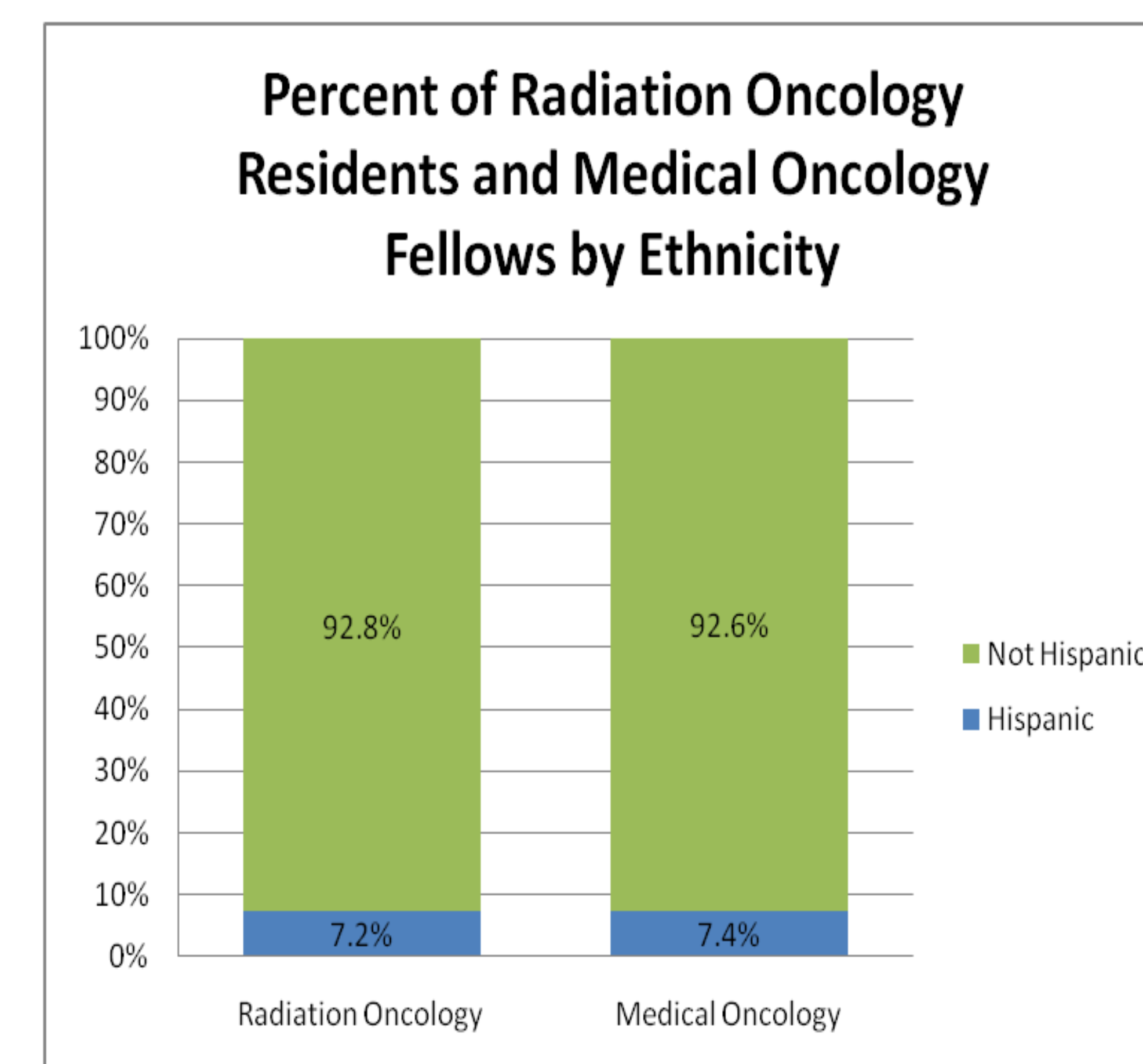


Chart 3: Percent of Radiation Oncology residents and Medical Oncology Fellows by Ethnicity

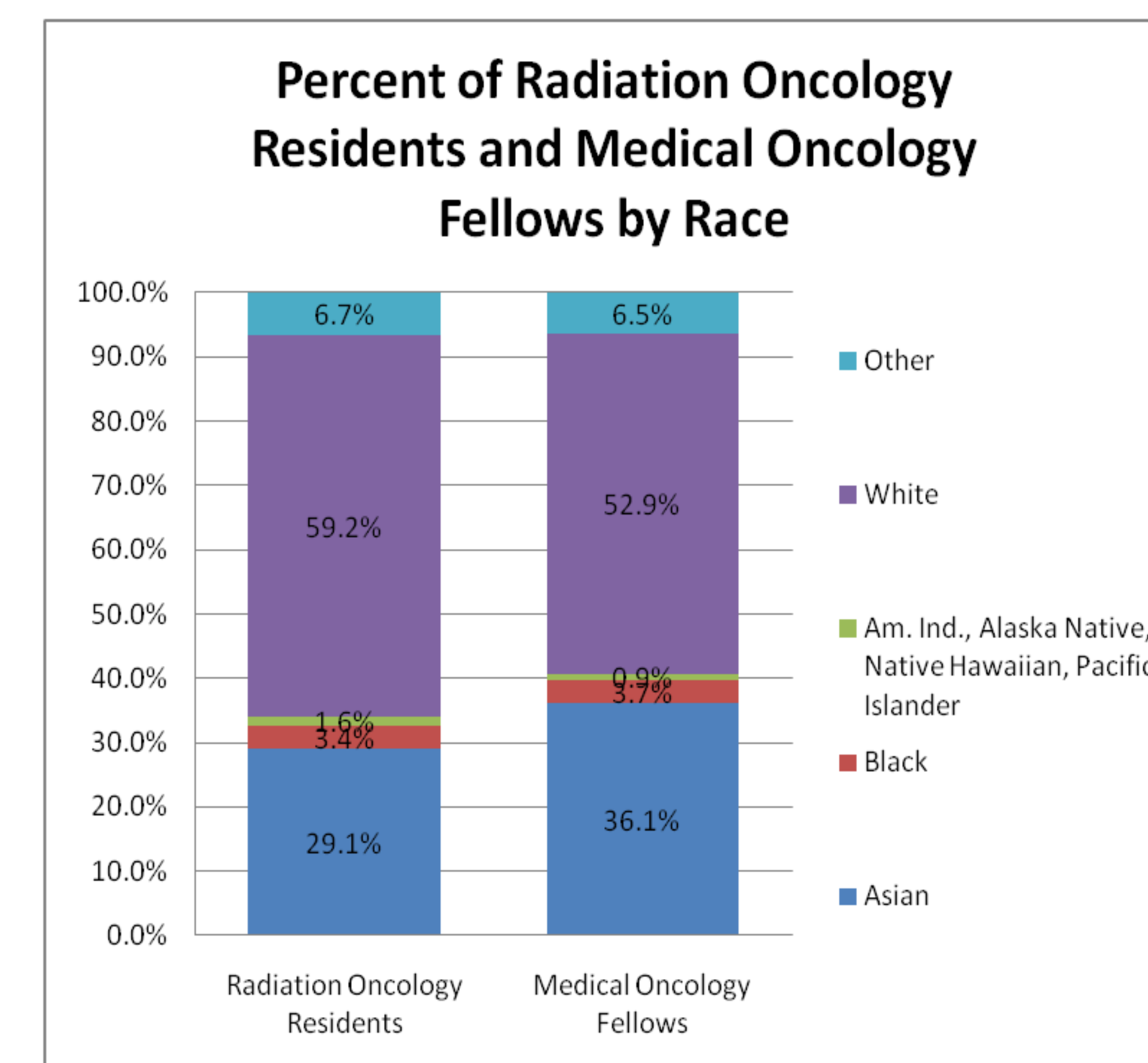


Chart 4: Percent of Radiation Oncology residents and Medical Oncology fellows by Race

When comparing the pool of Radiation Oncology residents to practicing physicians, there were no significant differences for Blacks and Hispanic, while Asians were increased (35.5% vs. 14.9%, $p<0.0001$).

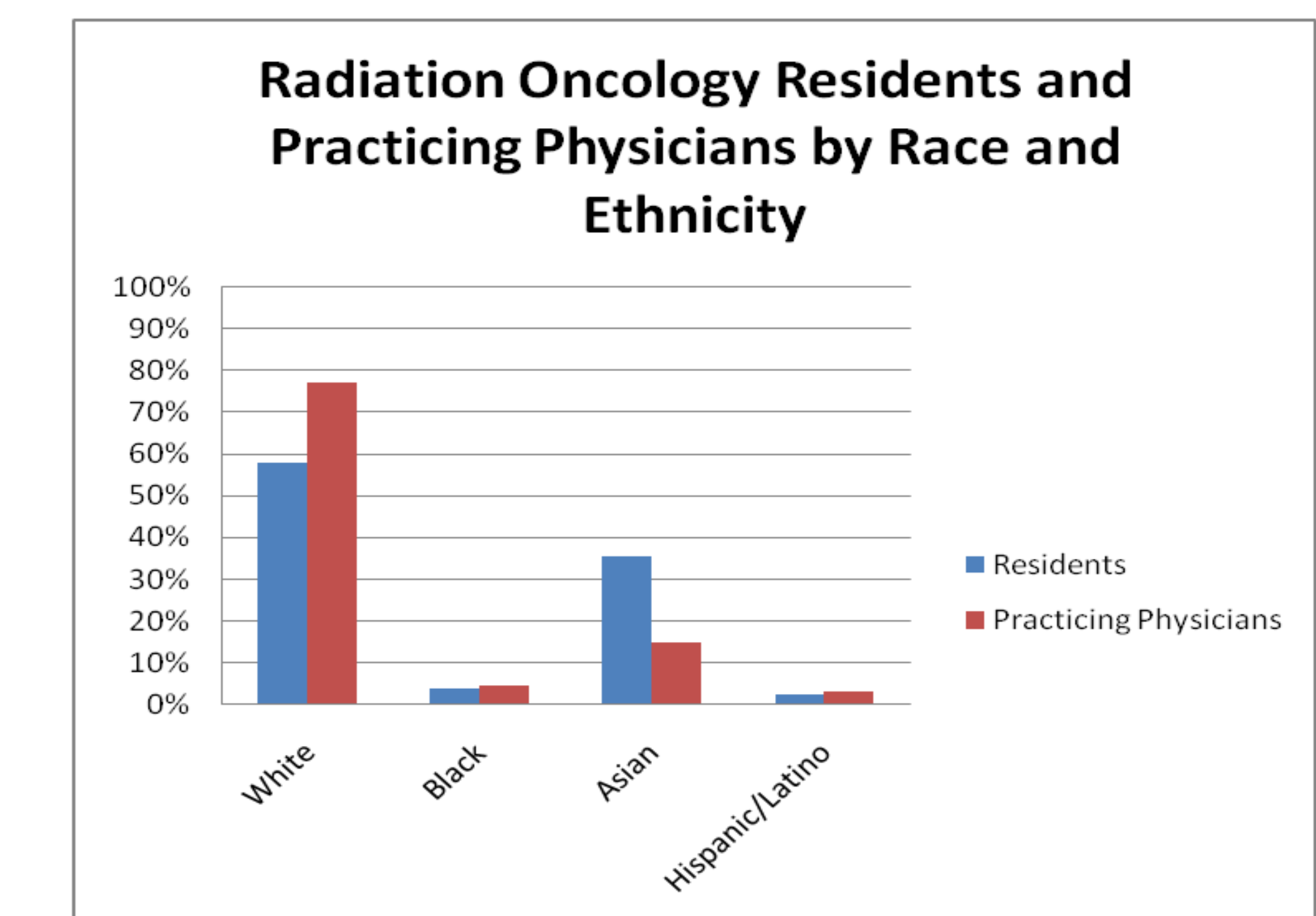


Chart 5: Radiation Oncology residents and Practicing Physicians by Race and Ethnicity

Conclusions

- Blacks and Hispanics are underrepresented in Radiation Oncology at the residency and practicing physician levels compared to the overall population.
- Blacks remain underrepresented in the Radiation Oncology resident trainee level when compared to their proportions as medical school graduates
- Blacks and Hispanics are more likely to attend medical schools without an affiliated Radiation Oncology Residency Program
- The fact that the percentage of Black and Hispanic Radiation Oncology residents is no greater than their percentages as practicing physicians suggests that the underrepresentation of these groups is not projected to close
- Given existing cancer disparities and the potential to address them through diversification of the physician workforce, further research is needed to investigate whether these disparities simply represent different preferences in specialty choice, or other factors such as:
 - differences in exposure,
 - selection,
 - recruitment,
 - mentorship,
 - research, and/or
 - real vs. perceived ability to successfully attain residency positions.

Acknowledgements

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