Racial Disparity and Utilization of Disease-Risk Genetic Testing: A Nationwide Sampling Survey Analysis

HPR70

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Background:

- Genetic tests for certain mutations provide opportunities to reduce cancer risk by offering preventive strategies to those with elevated risk to mitigate or even eliminate cancer development. [1]
- Racial-ethnic differences exist in utilization of genetic testing, [2-3] however there is a lack of up to date nationwide information.
- Sharing genetic test results, especially those associated with disease risk, can inform relatives' decisions regarding health risks, cascade genetic testing, and subsequent genetically informed disease prevention through increased surveillance or surgery. [4-5]

Objective:

This study aimed to examine the race/ethnicity disparity in disease-risk genetic testing (DRGT) utilization and post-test result sharing and health behavior changes in the United States and identify associated factors.

Methods:

- A retrospective cross-sectional analysis was conducted using 2022 Health Information National Trends Survey (HINTS) data. HINTS is a nationally representative survey that has been administered every few years by the National Cancer Institute since 2003. The HINTS target population is all adults aged 18 or older in the civilian non-institutionalized population of the United States and it is designed to collect data on the American public's need for, access to, and use of health-related information and health-related behaviors, perceptions, and knowledge.
- Utilization of DRGT and post-test result sharing and health behavior changes were defined based on response to HINTS survey questionaries.
- Survey-weighted descriptive analyses and logistic regressions with stepwise model selection were used to identify factors affecting disease-risk genetic testing utilization and post-test results sharing and behavior change. The potential variable list included age, gender, race, education level, income level, having health insurance, having a regular provider, access to internet, family history of cancer, region, urban, perceived genetic susceptibility, cancer worry, perceived progress of cancer treatment and prevention, fatalistic belief, prevention not possible, too many recommendations. A significance level of 0.35 is required to allow a variable entry into and remain in the model.
- Statistical analyses were performed with SAS software, version 9.4 (SAS Institute, Cary, NC, USA).

Results:

Utilization of DRGT

- Among 4586 respondents , 14.3% reported underwent DRGT in 2022.
- Compared with non-Hispanic white (nH-White) participants, non-Hispanic African American (nH-AA) (adjusted-OR=1.78, p-value=0.01) and Hispanic participants (adjusted-OR=1.31, p-value=0.28) are more likely and Asian American and Pacific Islander (AAPI) participants were less likely to have DRGT (adjusted-OR= 0.37, p-values=0.03). (**Figure 1, Figure 2**)
- Other than race/ethnicity, living in urban/rural area,, having perception of genetic importance in cancer treatment, and household income are significantly associated with awareness of DRGT (**Figure 1**)

Sharing DRGT results

- After DRGT, 91% participants reported sharing results: 57.9% sharing with healthcare providers or genetic counselors (HCP/GC), 50.2% with a spouse and 61.5% with a first degree relative (FDR). (**Figure 3**)
- Race/ethnicity disparity exists in the post-test results sharing. nH-AA and Hispanic participants are less likely to share results with HCP/GC (adjusted-OR=0.38, 0.50, p-value<0.05) than non-Hispanic nH-White. (**Figure 4**)
- Having a regular provider was strongly associated with result-sharing with HCP/GC and FDR (adjusted-OR=7.3, 4.7, respectively, p-value<0.05). (**Figure 4, Figure 5**)

Post-test behavior changes

- Among DRGT users, 45% reported post-test behavior changes including lifestyle modifications dietary supplement adjustments (28.5%), medication changes (10.2%), and increased health screenings (14.6%). (**Figure 6**)
- Interestingly, race/ethnicity was not a significant factor for post-test behavior changes.

Limitations:

- Response rate of 2022 Health Information National Trends Survey is only 28%.
- Comorbidity and family/genetic susceptibility to cancer may impact racial disparity among utilization of disease risk genetic testing. Further study including clinical susceptibility is warranted.
- Positive or negative test results may impact post-test behavior, however test result information is not available in the survey. Modeling selection process is limited by small sample size in subgroups.

Conclusion:

There are disparities in DRGT utilization and post-test behavior. It is important to further understand the mechanism of disparity, especially among AAPI population. Addressing these differences is crucial for reducing disparities and developing targeted promotion strategies

Figure 1. Adjusted odds ratio of utilization of disease risk genetic testing among all the responders

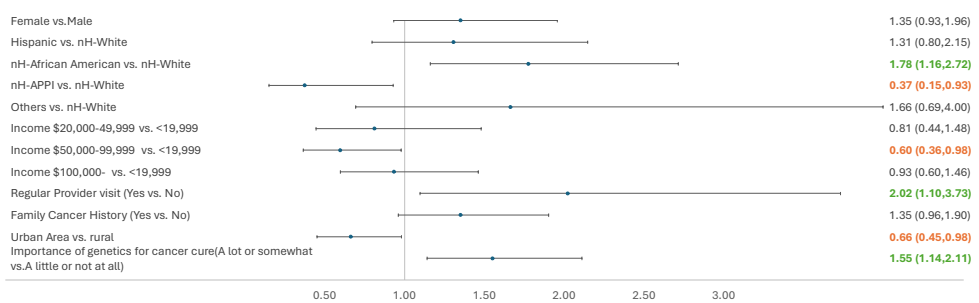


Figure 2. Utilization of disease risk genetic testing by race/ethnicity groups

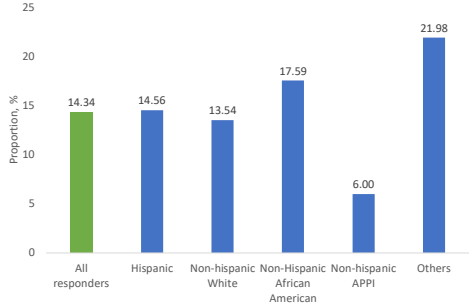


Figure 3. Patterns of post-test result sharing after DRGT

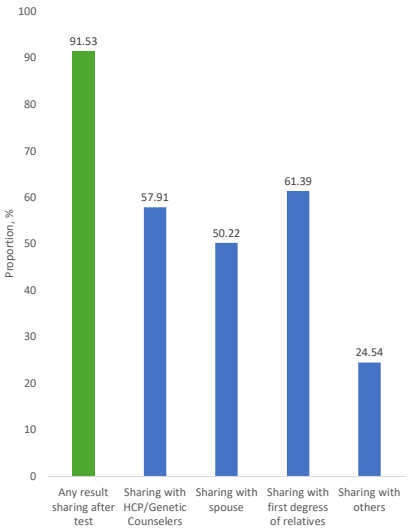


Figure 4. Adjusted odds ratio of sharing disease risk genetic test result with first degree relatives among all the responders

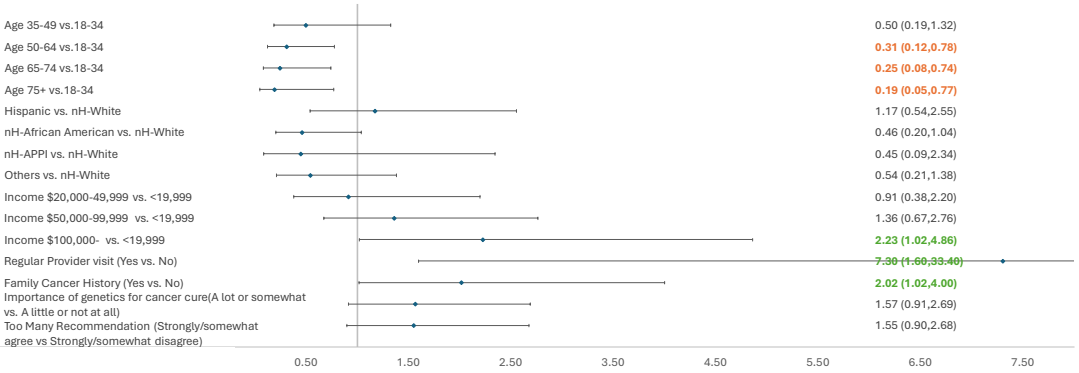


Figure 5. Adjusted odds ratio of sharing disease risk genetic test result with healthcare providers or genetic counselors among all the responders

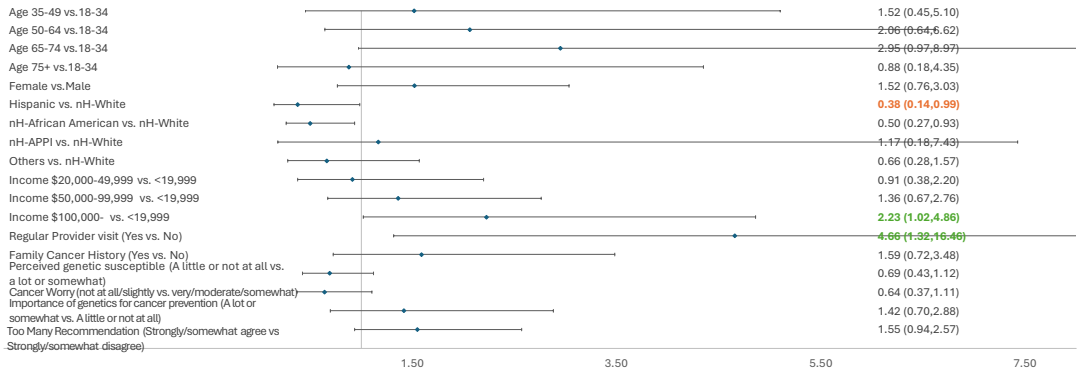
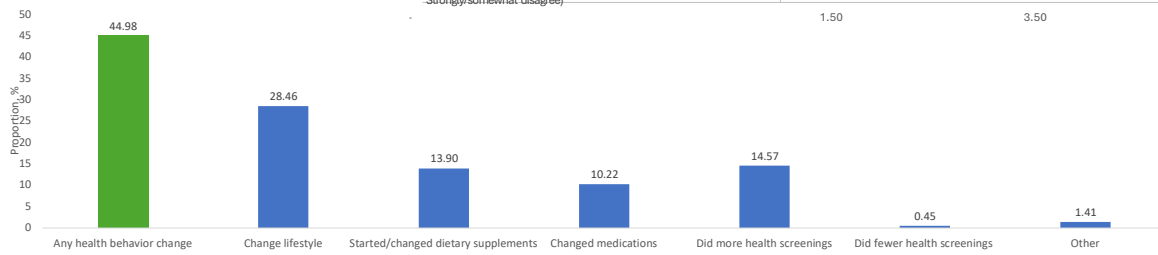


Figure 6. Patterns of health behavior change sharing after DRGT



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