Identifying Asian American Lung Cancer Disparities: A Novel Analytic Approach

Objective: Asian Americans (AsAm) include heterogeneous subpopulations with the unique burden as the only racial group with cancer as the leading cause of death. This study compares lung cancer stage and survival in AsAm relative to White Non-Hispanic (WNH), Black (AA), and Hispanic (HSP) Americans.

Methods: Lung cancer patients from 2004 - 2016 National Cancer Database were analyzed and included East Asian [(EA) Chinese, Japanese, and Korean], Southeast Asian [(SEA) Filipino, Vietnamese, Laotian, Hmong, Thai], South Asian [(SA) Asian Indian, Pakistani, and Asian Indian/Pakistani NOS], WNH, AA, and HSP. Exclusion criteria included unknown race, AJCC clinical Stages 0, 0A, or 0is, and unknown/unavailable. Chi-square analyses were conducted to explore distributional differences across demographic and clinical variables (SPSS V.28).

Results: 825,448 patients were analyzed and included 697,763 WNH (84.5%), 101,813 AA (12.3%), 17,063 HSP (2.1%), 4,697 EA (0.6%), 2,364 SEA (0.3%), and 1,748 (0.2%) SA. The cross-tabular analysis of ethnic group by stage was statistically significant (X2=3051, 30 df, P < .001) yielding Stage 4 standardized residuals (SR) of -36.5 (WNH), 30.8 (AA), 10.5 (HSP), 5.8 (EA), 10.7 (SEA) and 5.9 (SA). Stage 4 diagnostic percentages of all other demographic groups were significantly higher than WNH (p < 0.05). Stage 2B lung cancer included 28,720 WNHs (4.1%, SR=2.6.), 3,904 AA (3.8%, SR=-3.5), 608 HSP (3.6%, SR=-3.2), 132 EAs (2.8%, SR=-4.2), 58 SEAs (2.5%, SR=-3.9), and 45 SAs (2.6%, SR=3.1). All groups were significantly lower than WNH (p < 0.05). Vital status survival for Stage 2B trended toward increased survival compared to WNH but was not significant (P > 0.5), EA [62, 52.1%], SEA [19, 37.3%] and SA [16, 40%] vs. WHN [7149, 27.3%]. Stage 4 vital status survival was significantly (p < .05) greater in all AsAm groups compared to WNH [19,560;7.3%]: EA [503;26.0%], SEA [219;17.9%], and SA [215;26.6%].

Conclusion: This is the first study separating out heterogenous subpopulations of AsAm and demonstrated two notable aspects of AsAm with lung cancer: 1) application of z-score columnar analysis with SRs to discern lung cancer stage/survival in smaller disparate populations; 2) despite being over- and under-represented in stages 4 and 2B, respectively, AsAm live significantly longer. Further study to investigate the health disparities in AsAm is ongoing to examine other contributing factors leading to this increased survival.
Proportion of Patients Diagnosed at Clinical Stage 4
By Ethnic Group

A. White Non-Hispanic
B. Black
C. Hispanic
D. East Asian
E. Southeast Asian
F. South Asian

*All ethnic group stage 4 percentages significantly larger than WHN (p < .05)
** z-score reflects magnitude of difference (z = 3.96 ± 2 SD)
WHN = White Non-Hispanic

Proportion of Patients Diagnosed at Clinical Stage 2B
By Ethnic Group

A. White Non-Hispanic
B. Black
C. Hispanic
D. East Asian
E. Southeast Asian
F. South Asian

*All ethnic group stage 2B percentages significantly smaller than WHN (p < .05)
** z-score reflects magnitude of difference (z = 1.96 ± 1 SD)
WHN = White Non-Hispanic

Figure 1.