GEOGRAPHIC, SEX, AND ETHNIC DISPARITIES IN US MORTALITY FROM NON-EPITHELIAL SKIN CANCERS, 1999-2021: A CDC WONDER ANALYSIS

Sonia Babu, MD[1]; Maslahuddin Hayat Ahmad Alhaque Roomi, MD[1]; Usman B. Itoo, MD[1]; Hira A. Jawed, MD[2]; Manzoor Rather, MD[1]; Rajesh Thirumaran, MD[1]

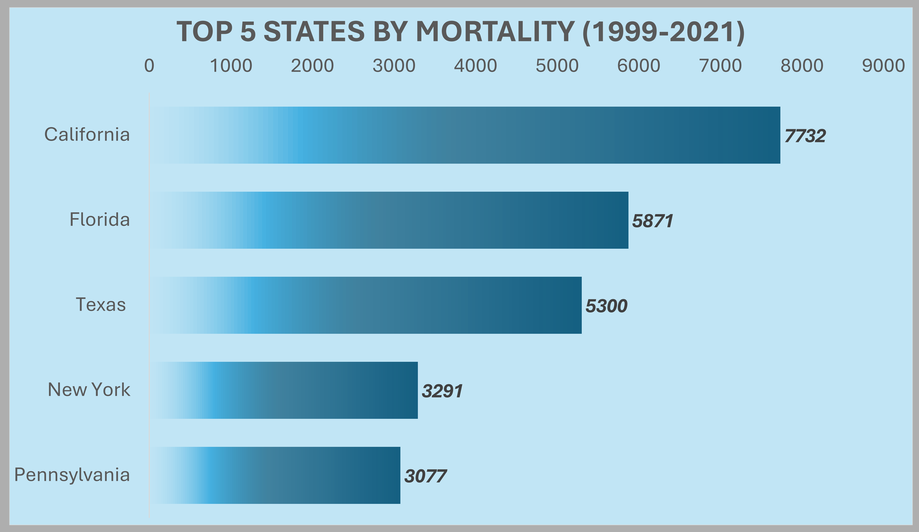
1. Department of Internal Medicine, Mercy Catholic Medical Center
2. UT Southwestern Medical Center

INTRODUCTION

- Non-epithelial skin cancers are rare, heterogenous, and often biologically aggressive malignancies.
- These tumors include cutaneous sarcomas, adnexal carcinomas, and Merkel cell carcinoma.
- Even though some subtypes have high stage-specific mortality, US population level mortality statistics are less commonly described.
- This study aimed to evaluate geographic, sex, and ethnic disparities in US mortality from non-epithelial skin cancers using CDC WONDER data.

METHODS

- Data Source: CDC WONDER, 1999-2021.
- Study design: Retrospective population-level mortality analysis.
- Variables analyzed:
  State, sex, and ethnicity
- Annual mortality counts were aggregated into cumulative state-level totals.
- Statistical analysis included contingency tables, chi-square testing, and odds ratio estimation.
- A chi-square test of independence was used to assess the association between sex and ethnicity.
- Data analysis was performed using Python-based workflows.



RESULTS

- A total of **64, 185 deaths** were identified across 43 states from 1999-2021**.**
- Overall, **48, 163 deaths (75%) occurred in men** and 16, 022 (25%) in women.
- By ethnicity, 63, 250 decendents (98.5%) were non-Hispanic and 935 (1.5%) were Hispanic.
- Among Hispanic decedents, **87.7%** of deaths occurred in men, compared with **74.9%** among non-Hispanic decendents.
- The chi-square statistic was 81.49 with df=1 with **p-value ($p<1*10^{-15}$)**, showing a highly significant association between ethnicity and sex among decedents.
- The **odds ratio was 2.4**, indicating that the odds of a decedent being a male was 2.4-fold higher in Hispanics compared to non-Hispanics.
- Mortality burden was seen in a few large states: California, Florida, Texas, New York, and Pennsylvania, accounting for nearly **40%** of all deaths.
- **The male proportion of deaths** was consistently high across states, with a median of **81.8%**.

DISCUSSION

- This study demonstrates marked sex and ethnic disparities in mortality from non-epithelial skin cancers in the US.
- Hispanic decedents showed a disproportionate higher male predominance compared to non-Hispanic decedents.
- Mortality was heavily concentrated in a subset of large states, suggesting possible geographic influences such as UV exposure, access to diagnosis, and access to specialty oncologic care.
- These findings encourage the need for improved surveillance and increased targeted prevention along with early detection strategies for rare but aggressive cutaneous malignancies.
- Further research is needed to clarify biological, social, and access to healthcare factors contributing to these disparities.

CONCLUSION

- US mortality from non-epithelial skin cancers shows striking sex, ethnic, and geographic disparities.
- Hispanic decedents showed a significantly greater male predominance compared to non-Hispanic decedents.
- Mortality was higher in a small number of large states.
- The findings from this study highlight the need for targeted prevention, earlier diagnosis, and improved surveillance for underserved populations.