

ABSTRACT NO:12
RESEARCH ARTICLE**Temporal Trends and Disparities in Malignant Brain Neoplasms and Cardiac Arrest- Associated Mortality in the United States, 1999-2024: A Retrospective Analysis**Muhammad Owais Shaikh¹, Farkhanda Maqbool², Tunjeena Shaikh³, Vishan Das⁴, Kashf Younas⁵, Hanozia Shah⁶**Abstract**

Objective: Malignant brain neoplasms and cardiac arrest represent significant causes of mortality with potentially shared pathophysiological mechanisms and disparate population impacts. This study examines trends and disparities in mortality associated with these conditions in the United States from 1999 to 2024.

Methods: We obtained data for U.S. adults aged ≥ 45 using CDC WONDER spanning 1999 to 2024 with ICD-10 codes C71 (malignant brain neoplasms) and I46 (cardiac arrest). Age-adjusted mortality rates (AAMRs) per 100,000 individuals were categorized by overall, sex, race/ethnicity, census region, urbanization level, and age group. Joinpoint regression analysis was performed to calculate annual percent changes (APCs) and average annual percent changes (AAPCs) with 95% confidence intervals (CIs).

Results: A total of 28,117 deaths were identified. Overall AAMR declined from 1.13 in 1999 to 0.74 in 2024, with an overall AAPC of -1.39% (95% CI: -1.81 to -0.96). Males consistently exhibited higher rates (0.85 in 2024) compared to females (0.65 in 2024). Joinpoint analysis revealed a steep decline from 1999-2006 (APC: -3.61%, 95% CI: -4.93 to -2.26) followed by a slower decline from 2006-2024 (APC: -0.51%, 95% CI: -0.85 to -0.17). Hispanic or Latino populations showed the highest AAMR (1.06 in 2024) while Black or African American populations reported the lowest rates (0.53 in 2024). Geographically, the West had the highest mortality (1.60 in 2024) while the Midwest showed the lowest rates (0.35 in 2024). Mortality was higher in metropolitan areas (0.90 in 2020) compared to non-metropolitan areas (0.62 in 2020). Crude mortality rate was highest among those aged 85+ (2.04).

Conclusion: This study reveals critical disparities in mortality trends across sex, race, geography, and age. Urgent, equity-focussed place-based prevention strategies are required to dismantle persistent disparities in high-risk populations.

Keywords: Malignant brain neoplasms, Mortality, Epidemiology.

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