Long-Term Trends in Mortality in Plasma Cell Neoplasms in the United States From 1999 to 2020:

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Introduction

Plasma cell neoplasms are rare hematologic malignancies characterized by clonal proliferation of plasma cells and associated with significant mortality. Despite therapeutic advances, long-term mortality trends across diverse populations are limited. This study aims to characterise the trends to inform targeted public health strategies.

Methods

- Data from CDC WONDER (1999–2020) were analyzed for plasma cell neoplasms (ICD-10: C90.0, C90.1, C90.2).
- Age-adjusted mortality rates per 100,000 were calculated using the 2000 US standard population. Joinpoint regression (v5.3.0) was used to estimate annual percent changes (APCs) and average APCs (AAPCs) with 95% CIs.
- Analyses were stratified by sex, race/ethnicity, and urbanization. Statistical significance was set at $P<0.05$.

Results

- Between 1999 and 2020, a total of 295,902 plasma cell neoplasm-related deaths were recorded in the US.
- The age-adjusted mortality rate (AAMR) declined from 12.9 per 100,000 in 1999 to 11.02 in 2020.
- Among racial/ethnic groups, non-Hispanic Black individuals had the highest AAMR in both 1999 (25.55) and 2020 (21.95), while the lowest AAMRs were observed among Asians or Pacific Islanders (7.33 in 1999; 5.40 in 2020).
- By sex, males had higher AAMRs than females in both years (16.09 vs 10.73 in 1999; 14.22 vs 8.52 in 2020). In terms of urbanization, urban and rural areas had nearly identical AAMRs in both 1999 (12.87 vs 12.82) and 2020 (both 10.98).
- Over the study period, the greatest decline in mortality was observed among Asians or Pacific Islanders (AAPC: -0.9980%; 95% CI: -1.4312 to -0.4421), while the smallest decline occurred among White individuals (AAPC: -0.7889%; 95% CI: -1.1239 to -0.5266).
- Females experienced a greater reduction than males (AAPC: -1.3329%, 95% CI: -1.5049 to -1.1503 vs -0.7897%, 95% CI: -0.9737 to -0.5891).
- Urban areas had a slightly higher rate of decline than rural areas (AAPC: -0.9954%, 95% CI: -1.1855 to -0.7797 vs -0.9373%, 95% CI: -1.1652 to -0.6785).

CONCLUSION

Despite overall declines, plasma cell neoplasm mortality remains unequally distributed. Higher rates in males and Black populations, and slower declines among White individuals, point to enduring disparities. These findings call for targeted, equity-driven public health strategies.

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