Burden of High-BMI associated Multiple Myeloma Deaths: A 31-year analysis from 1990 to 2021 and projection to 2050

A Lal [1], S Rath [2]

1. Penn State Health Milton S Hershey Medical Center, Hershey, PA
2. All India Institute of Medical Sciences, Bhubneshwar, India

Introduction

Multiple myeloma (MM), a hematologic malignancy with rising global burden, has been increasingly associated with high body mass index (BMI). Understanding long-term trends in MM mortality attributable to high BMI is critical for public health planning, especially across diverse socio-demographic development contexts.

Objective

To analyze historical trends in age-standardized death rates due to multiple myeloma attributable to high BMI and to project future mortality through the year 2050 across global and SDI-level regions.

Method

Data on age-standardized death rates attributable to high BMI were obtained from the Global Burden of Disease study for the period 1990–2019, stratified by location and socio-demographic index (SDI). Average Annual Percent Change (AAPC) from 1990 to 2019 was calculated using log-linear regression models for each region. Future death rates for 2050 were projected using extrapolation from these trends.

Results

Between 1990 and 2021, all regions experienced statistically significant increases in MM mortality attributable to high BMI. Globally, trends increased at a rate of 0.79% (95%CI: 0.69-0.89, P<0.0001). The highest AAPCs were observed in low-middle SDI (3.77%, 95% CI: 3.73–3.82, $p < 0.001$) and low SDI regions (2.94%, 95% CI: 2.79–3.09, $p < 0.001$). Lowest rise was seen in High SDI regions (0.36%, 95% CI: 0.22-0.49, P<0.0001). By 2050, the predicted global age-standardized death rate is 0.139 per 100,000. Despite the lowest overall AAPC, the highest projected rate is in high SDI regions (0.238 per 100,000), while low SDI regions are projected to have the lowest rate (0.057 per 100,000).

Conclusion

MM mortality attributable to high BMI has increased significantly across all global regions, with the steepest rises in lower-SDI countries. High SDIs are predicted to have the highest death rates by 2050 due to rise in burden of obesity. Therefore, there is an urgent need for targeted obesity prevention and cancer control efforts in these settings.

SOHO2025