

When Fat Fuels Plasma Cell Malignancy: Three Decades of Multiple Myeloma Mortality Attributable to High BMI Across 204 Countries, 1990–2023

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INTRODUCTION

Obesity is an underappreciated oncogenic driver of multiple myeloma (MM), yet population-level evidence quantifying how much of the global MM mortality burden is attributable to elevated body-mass index (BMI) across nations, development strata, and demographic subgroups over three decades remains absent.

METHOD

Drawing on the GBD 2023 comparative risk-assessment framework, we quantified MM deaths and disability-adjusted life years (DALYs) causally attributable to high BMI across 204 countries (1990–2023), disaggregated by socio-demographic index (SDI) quintile, GBD super-region, sub-region, sex, and age band. We characterized temporal trends using average annual percent change (AAPC) via log-linear regression; 95% confidence intervals excluding zero indicated significance.

CONCLUSION

Three decades of evidence reveal an unambiguous obesity-driven MM mortality epidemic, amplifying most severely across South Asia and lower-SDI nations. These findings support integrating BMI-reduction strategies into MM screening programs and accelerated deployment of novel anti-myeloma therapies in resource-constrained settings.

RESULTS

- DALYs: 71,948 → 215,291 (+199.2%); age-standardized death rates (ASR) increased 72.0%.
- SDI: Fastest mortality growth in Low-middle SDI nations (+7.51%/year) and Low SDI nations (+7.50%/year); High SDI nations had the largest absolute burden (7,047 deaths).
- South Asia: Fastest regional increase in deaths (+9.72%/year) and ASR (+6.41%/year).
- Age: Peak mortality shifted from 65–69 to 70–74 years; ages 90–94 had the largest increase (+661%).
- Sex: South Asian females had a greater ASR increase (+594%), exceeding males (+533%).
- Highest burden: USA, China, Germany. Only Norway and Sweden showed net declines.

