Global Trends and Disparities in Leukemia Burden (1990–2021): A GBD 2021-Based Analysis Across Sociodemographic Index Quintiles

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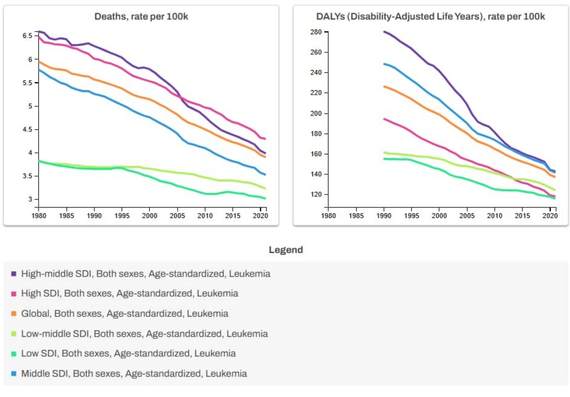
Background

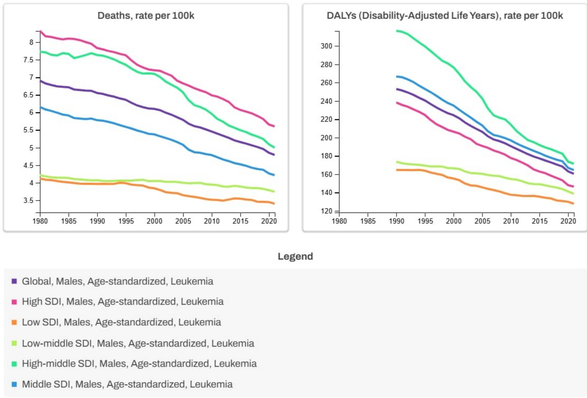
- Leukemia remains a major global health burden.
- Outcomes vary widely across regions and development levels.
- **This study examines temporal trends in leukemia from 1990–2021**.
- Data source: **Global Burden of Disease (GBD) 2021** dataset.
- **Key focus areas:**
  - Incidence, mortality, and disability trends
  - Disparities by Socio Demographic Index (SDI) quintiles
  - Differences by sex
  - Geographic variation

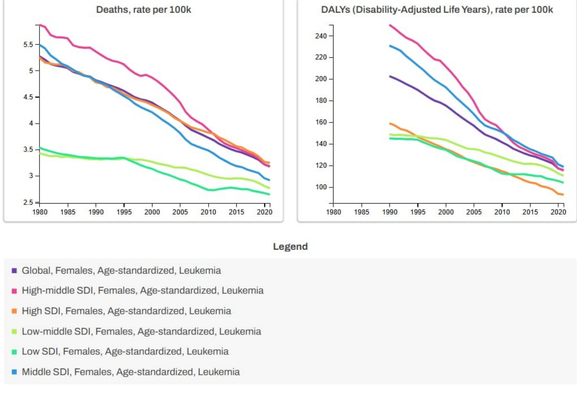
Methods

- Data extracted from GBD 2021 database
- Coverage: **204 countries and territories (1990–2021**)
  - Key indicators:
  - Age-standardized incidence rate (ASIR)
  - Age-standardized mortality rate (ASMR)
  - Disability-adjusted life years (DALYs)
  - Age-standardized DALY rate (ASDR)
  - Age-standardized years lived with disability (ASYLDs)
  - Annual percentage change (APC)

- **Analyses stratified by:** Sociodemographic Index (SDI) quintile, Sex, Age group, Country

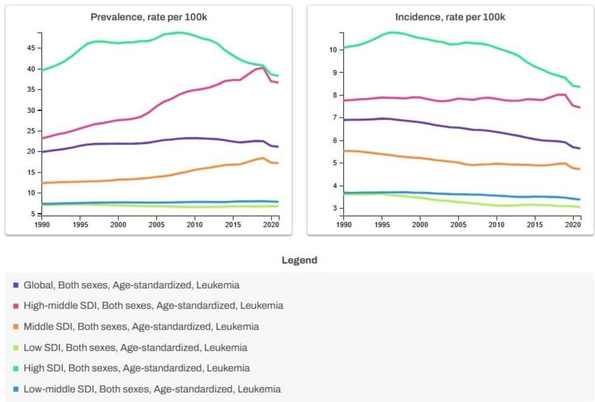






Results

- **Incidence & Prevalence (1990 & 2021):**
  - Highest in high-SDI regions
  - Followed by high-middle SDI
  - Lowest in low and low-middle SDI regions
- **Trends (1990–2021):**
  - Greatest reductions in APC of ASMR & ASDR in **high-middle SDI countries**
  - Next highest reductions in middle and high SDI groups
  - High-middle SDI showed most notable increase in APC of ASYLDs
  - High-SDI regions showed most significant decline in ASYLDs
- Country-level findings:
  - Maldives: largest decrease in APC of ASMR
  - South Korea: largest reduction in ASDR
- Sex-based differences:
  - **Females showed greater declines** in APC of ASMR & ASDR than males
- Age-specific burden (2021):
  - **Highest leukemia-related deaths in 90–94-year age group** (across both high- and low-SDI regions)



Conclusion

- **Global trends: Overall decline in leukemia mortality and DALYs**
  - SDI disparities:
  - High-middle SDI: declining mortality but increasing disability (possible survivorship challenges)
  - Low-SDI: persistently poor outcomes due to limited access to care
  - High-SDI: most significant declines in disability
- **Age burden: Rising impact among older adults**, highlighting need for survivorship and geriatric strategies
- **Sex differences**: Mortality and DALY trends vary by sex, requiring further study
- **Equity focus:** Findings emphasize the need for equity-centered approaches to improve global leukemia outcomes

Keywords

Leukemia, Global Burden of Disease, Health Disparities, Cancer Epidemiology, Age-Standardized Mortality Rate (ASMR).