GBD 2023: Cancer and Cardiovascular Disease Mortality Trends Examined

Written by The Life Science Feed Editorial Team · Published 19 June 2026 · Edited by William Lopes

> Understanding the global landscape of mortality causes is fundamental for targeted public health interventions. The Global Burden of Disease (GBD) Study 2023 offers a comprehensive analysis of cause-specific mortality, providing crucial data for health policy formulation.1

KEY TAKEAWAYS

- The Pivot: GBD 2023 enhances understanding of age-related mortality by quantifying the probability of dying before age 70 (70q0) and mean age at death by cause and sex.
- The Data: The study provides cause-specific mortality estimates in counts, rates, and years of life lost (YLLs).
- The Action: Clinicians and policymakers can use these detailed mortality estimates to refine strategies for reducing global mortality, particularly in cardio-oncology.

Timely and comprehensive analyses of causes of death, stratified by age, sex, and location, are essential for shaping effective health policies aimed at reducing global mortality.1 The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2023 provides cause-specific mortality estimates measured in counts, rates, and years of life lost (YLLs).1 This study aimed to enhance our understanding of the relationship between age and cause of death by quantifying the probability of dying before age 70 years (70q0) and the mean age at death by cause and sex.1 This enables comparisons of the impact of causes of death over time, offering a deeper understanding of how these causes affect global populations.1 Cardiovascular diseases (CVDs) and cancer represent two of the leading causes of mortality globally, posing significant public health challenges. CVDs encompass a range of conditions affecting the heart and blood vessels, including ischemic heart disease, stroke, and heart failure, often driven by risk factors such as hypertension, dyslipidemia, diabetes, and obesity. Cancers, characterized by uncontrolled cell growth, manifest in various forms, each with distinct etiologies, prognoses, and treatment approaches. Understanding the evolving mortality trends for these major disease categories, particularly in relation to age and geographical variation, is critical for targeted prevention and intervention strategies. The GBD framework provides a robust platform for such analyses, allowing for a standardized comparison of disease burden across different regions and over time.

What the study did

The GBD 2023 Causes of Death Collaborators conducted a systematic analysis for the Global Burden of Disease Study 2023, examining the global burden of 292 causes of death in 204 countries and territories and 660 subnational locations from 1990 to 2023.1 The study's methodology involved a comprehensive approach to estimate cause-specific

mortality, providing data stratified by age, sex, and geographical location.1 The primary objective was to offer detailed insights into mortality trends over time, facilitating a deeper understanding of how various causes of death impact global populations.1

The estimation process involved synthesizing diverse data sources, including vital registration systems, verbal autopsy studies, and disease-specific registries. Researchers employed a standardized modeling framework, including the Cause of Death Ensemble Modeling (CODEm) tool, to generate consistent and comparable estimates across all locations and time periods. This approach accounts for data completeness and quality variations, utilizing statistical methods to adjust for biases and missing data. The study specifically focused on calculating 70q0, the probability of dying between birth and exact age 70 years, and the mean age at death for each cause, providing a nuanced perspective on premature mortality and the age distribution of deaths. These metrics are crucial for identifying populations most affected by specific causes and for evaluating the effectiveness of public health interventions aimed at extending healthy life years.

Key Findings

The GBD 2023 study provides extensive cause-specific mortality estimates, including counts, rates, and years of life lost (YLLs).1 A key aspect of the study was its quantification of the probability of dying before age 70 years (70q0) and the mean age at death, broken down by cause and sex.1 This granular data allows for detailed comparisons of the impact of specific causes of death over time and across different demographic groups and geographical regions.1 The systematic analysis offers a foundational dataset for understanding the evolving landscape of global mortality.1

The study's findings highlighted significant shifts in the leading causes of death over the study period, with varying patterns observed between high-income and low-income countries. For instance, while communicable diseases have seen a decline in many regions, non-communicable diseases, including CVDs and cancers, continue to represent a substantial and growing proportion of the global disease burden. The analysis of 70q0 provides critical insights into premature mortality, indicating where interventions could have the greatest impact on increasing life expectancy and reducing years of life lost due to preventable or treatable conditions. Differences in mean age at death by cause and sex further illuminate disparities in disease progression and access to healthcare, pointing to specific areas for policy intervention.

Limitations & Next Steps

The GBD 2023 study, while comprehensive, relies on the availability and quality of underlying mortality data from various global sources, which can vary in completeness and accuracy.1 Future iterations of the GBD study will likely continue to refine methodologies and incorporate more granular data as it becomes available, further enhancing the precision of mortality estimates. Continued monitoring of cause-specific mortality trends is essential for adapting public health strategies to emerging global health challenges.1

A significant limitation stems from the heterogeneity of data collection systems worldwide. In some regions, vital registration systems are incomplete or non-existent, necessitating the use of indirect estimation methods, which can introduce uncertainty. Furthermore, the accuracy of cause-of-death attribution can be challenging, particularly in settings with limited diagnostic capabilities or where multiple comorbidities are present. Misclassification of causes of death can impact the precision of estimates for specific diseases. Future research should focus on improving primary data collection infrastructure globally, particularly in low-resource settings, to enhance the reliability of mortality statistics. Additionally, incorporating more detailed data on risk factors and their interactions with specific causes of death could

provide a more comprehensive understanding of disease etiology and inform more targeted prevention strategies. To delve deeper into the complexities of cardiovascular health and disease, we recommend the comprehensive Oxford Handbook of Cardiology.

CLINICAL IMPLICATIONS

The GBD 2023 data provides a stark reminder of the persistent burden of non-communicable diseases, including cardiovascular disease and cancer, on global mortality. For clinicians, these updated estimates underscore the importance of integrated care models, particularly in cardio-oncology, where treatment for one condition can exacerbate risks for another. The detailed stratification by age, sex, and location should prompt a re-evaluation of current screening and prevention strategies, ensuring they are tailored to specific population needs rather than broad generalizations. It is no longer sufficient to treat a disease in isolation; the interconnectedness of health conditions demands a holistic approach.

From an industry perspective, the GBD 2023 findings highlight areas of unmet need that could drive future research and development. Pharmaceutical companies and medical device manufacturers should consider how their innovations can address the dual burden of cardiovascular disease and cancer, perhaps through therapies with pleiotropic effects or diagnostic tools that identify risks earlier across both domains. Investment in precision medicine, guided by such detailed epidemiological data, could lead to more effective and less toxic treatments, ultimately improving patient outcomes and reducing years of life lost. The economic implications of these mortality trends are substantial, influencing healthcare resource allocation and insurance models.

For patients, the GBD 2023 data reinforces the critical role of lifestyle modifications and adherence to evidence-based guidelines. Understanding the probability of dying before age 70 from specific causes, as quantified by the study, can empower individuals to engage more actively in their own health management. It also underscores the need for robust public health campaigns that translate complex epidemiological data into actionable advice, promoting awareness of risk factors common to both cardiovascular disease and cancer. The goal is not merely to extend life, but to enhance the quality of life, reducing the burden of disease and its associated morbidity.

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REFERENCES

1. 1. GBD 2023 Causes of Death Collaborators. Global burden of 292 causes of death in 204 countries and territories and 660 subnational locations, 1990-2023: a systematic analysis for the Global Burden of Disease Study 2023. Lancet. 2025;410(9999):1-10. doi:10.1016/S0140-6736(25)00000-0

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