

Burden of non-communicable diseases and their attributable risk factors in Africa from 1990 to 2023: a systematic analysis for the Global Burden of Disease Study 2023

GBD 2023 Africa NCD Collaborators*



Summary

Background The rapid rise in the burden of non-communicable disease (NCDs) in African communities has resulted in a considerable mortality, disability, and economic burden. A comprehensive evaluation of incidence, deaths, disability-adjusted life-years (DALYs), and attributable risk factors related to NCDs by sex, and geographical location is essential for informing policy decisions aimed at controlling these diseases.

Methods This study used a comprehensive analysis based on the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2023 methodology to estimate the incidence, mortality, DALYs (estimated as the sum of years of life lost and years lived with disability [YLDs]), and attributable risk factors of NCDs in Africa. Data were systematically searched for and extracted from various sources, including vital registration, verbal autopsy, surveillance systems, police reports, censuses, surveys, minimally invasive tissue sampling, and sibling history. The analysis employed the Cause of Death Ensemble model, DisMod-MR 2.1, and spatiotemporal Gaussian process regression to estimate both fatal and non-fatal health metrics associated with NCDs in Africa overall, and by region and country.

Findings In 2023, NCDs in Africa accounted for an estimated 2.33 billion (95% uncertainty interval 2.22–2.50) incident cases, 4.70 million (4.47–4.93) deaths, and 263 million (234–293) DALYs. Although absolute numbers increased between 1990 and 2023, age-standardised rates (per 100 000 population) decreased modestly: incidence rate by 2.7% (0.2–5.0), mortality rate by 9.0% (2.5–15.5), and DALY rate by 6.4% (1.2–12.0). The five leading Level 3 causes of death in Africa in 2023 were ischaemic heart disease (801 000 [653 000–965 000]), stroke (700 000 [544 000–863 000]), chronic kidney disease (293 000 [224 000–359 000]), hypertensive heart disease (246 000 [170 000–337 000]), and diabetes (245 000 [190 000–314 000]) for all sexes and ages. Leading Level 2 causes of YLDs were mental disorders (30.9 million [22.0–42.2]) and musculoskeletal disorders (17.1 million [12.5–22.7]). Overall, 35.1% (32.4–38.2) of DALYs and 57.4% (54.2–60.4) of deaths due to NCDs were attributable to the 88 GBD 2023 risk factors. High systolic blood pressure contributed the largest proportion at 26.2% (21.6–30.9) of all NCD deaths in Africa, followed by dietary risks (14.7% [5.1–21.6]) and air pollution (14.2% [11.6–16.9]).

Interpretation Our findings underscore the complex and evolving nature of the NCD burden in Africa, where modest declines in age-standardised mortality and DALY rates since 1990 have been substantially offset by rising absolute counts of deaths and DALYs—a paradox driven predominantly by rapid population growth and demographic changes. That more than half of all NCD deaths and over a third of DALYs remain attributable to modifiable risk factors—principally high systolic blood pressure, dietary risks, and air pollution—suggests that a substantial and actionable proportion of this burden is preventable through available and effective interventions, carrying urgent implications for African governments, ministries of health, and global health partners, who must take decisive action to meet health commitments.

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Introduction

Non-communicable diseases (NCDs) pose a major global public health problem in the 21st century, substantially affecting illness, death, disability, and quality of life.¹ Between 2011 and 2030, it is projected that NCDs will lead to an economic loss of \$47 trillion worldwide, more than \$30 trillion of which can be attributed to cardiovascular illnesses, cancer, chronic lung diseases, and diabetes.² The majority of NCD-related mortality, around 77% to 80%,

occurs in low-income and middle-income countries, such as those in Africa,^{2–5} which has been described as “the social justice issue of our time”.^{6–8} In addition to the ongoing burden of communicable, maternal, and child health issues, African countries are undergoing rapid transitions in epidemiological, socioeconomic, and demographic contexts. These transitions are projected to shift the profile of disease burden, with NCDs progressively emerging as the primary health concern, overtaking communicable

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For the Amharic translation of the abstract see Online for appendix 1

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Research in context

Evidence before this study

We searched PubMed for articles published between Jan 1, 1990 and Jan 1, 2026 using the terms “(noncommunicable disease OR NCDs)” “Global Burden of Disease” AND “Africa” AND (“death” OR “incidence” OR “prevalence” OR “DALYs” OR “burden of disease”). Previous Global Burden of Diseases, Injuries, and Risk Factors Study (GBD)-based regional analyses have focused on sub-Saharan Africa or specific subsets, including a 2019 study quantifying the non-communicable disease (NCD) burden in sub-Saharan Africa using GBD 2017 data; however, no study has synthesised GBD data for all 54 African countries for NCD burden and attributable risk factors simultaneously.

Added value of this study

This study provides the first comprehensive, sex-disaggregated analysis of NCD burden and its attributable risk factors across all 54 African countries, using GBD 2023 data. Our findings reveal a paradoxical epidemiological trajectory: despite modest declines in age-standardised disability-adjusted life-year (DALY) and death rates of approximately 6% and 9%, respectively, over three decades, the absolute burden has more than doubled, with total NCD deaths and DALYs increasing by 122% and 118%, respectively, between 1990 and 2023. These increases were driven predominantly by rapid population growth. In 2023, NCDs accounted for around 45% of all deaths across Africa, with cardiovascular diseases, neoplasms, diabetes, chronic kidney disease, and digestive diseases representing the leading causes of NCD mortality, while mental health disorders and musculoskeletal conditions were the principal drivers of years lived with disability. More than half of all NCD deaths and over a third of NCD-related

DALYs were attributable to modifiable risk factors—mainly high systolic blood pressure, dietary risks, and ambient air pollution—and rising age-standardised death and DALY rates were largely attributable to high BMI, high fasting plasma glucose, and drug use as emergent and escalating public health threats across Africa.

Implications of all the available evidence

Evidence shows a marked epidemiological transition in Africa for the past three decades, with NCDs rising sharply and diverging from progress made globally and in regions with high Socio-demographic Index (SDI). This study, the first major assessment since the COVID-19 pandemic, highlights patterns in Africa: dietary risks rank as the second leading attributable risk factor for DALYs and deaths, compared with fourth globally, underscoring inequities in exposure and control. Digestive diseases, mental health disorders, and musculoskeletal conditions remain under-prioritised in policy, despite their substantial contribution to mortality and disability. Meanwhile, high BMI and elevated fasting plasma glucose have risen steadily since 1990, threatening to accelerate cardiovascular, metabolic, and renal disease burdens, and indicating insufficient prevention and control strategies. These findings call for region-specific strategies that integrate WHO's Global Action Plan, the UN Sustainable Development Goals, and *Lancet* NCDI poverty Commission recommendations into African health agendas. Strengthening surveillance, expanding preventive interventions, improving access to treatment, and addressing social determinants of health are crucial. Without urgent action, Africa risks widening inequities in NCD outcomes compared with high-SDI regions.

diseases. To address the increasing burden of NCDs, there has been a coordinated global and regional endeavour to create and execute methods with the goal of decreasing the incidence and consequences of these illnesses. The political declaration on NCDs by the UN General Assembly in 2011 was a crucial event that resulted in the creation of the WHO Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020.^{9–11} The WHO Global Action Plan outlines a comprehensive monitoring framework for NCDs and sets a target to be achieved by 2025. One key goal is a 25% reduction in premature deaths from the four main NCDs and their associated metabolic and behavioural risk factors.¹¹ Furthermore, in 2015, the UN established the Sustainable Development Goals (SDGs), which include a target to decrease premature mortality caused by NCDs by a third by the year 2030 (SDG target 3.4). The African Union, aligned with global commitments towards NCDs as outlined in the SDGs, also recognises the profound impact of NCDs on Africa's development. NCDs have been prioritised as a key area of focus within the Agenda 2063 framework, which aims to ensure that citizens are “healthy, well-nourished and have long life spans”.¹²

Recognising the need for a more robust approach to combating NCDs, the 2022 midpoint evaluation of the WHO Global Action Plan¹¹ highlighted the need for increased multisectoral engagement and innovative approaches involving the private sector, civil society, and political channels. In response, the African Union established the Taskforce on Non-communicable Diseases, Injuries, and Mental Health in Cape Town in 2023, aiming to improve collaboration and optimise initiatives to tackle the impact of NCDs throughout the continent.¹³ To further support these efforts, the second strategic plan (2023–27) of the Africa Centres for Disease Control and Prevention emphasises strategic priorities for NCDs, injuries, and mental health, outlining six key goals: strengthening integrated health systems, building up proactive surveillance, ensuring robust emergency preparedness, strengthening national public health institutes, expanding laboratory systems and networks, and expanding health product and technology innovation.¹⁴ Despite the growing recognition of NCDs as a significant public health concern in Africa, there is insufficient comprehensive data on the burden, trends, and risk factors of NCDs in Africa, which hinders effective public health responses.

This study aims to bridge this knowledge gap by investigating the burden and trends of NCDs across 54 African nations, exploring key indicators including incidence, mortality, and disability-adjusted life-years (DALYs) by location, sex, and year. This manuscript was produced as part of the GBD Collaborator Network and in accordance with the GBD Protocol.

Methods

Overview

The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2023 estimated incidence, prevalence, years lived with disability (YLDs), years of life lost (YLLs), mortality, and DALYs for 375 diseases and injuries, including 371 with non-fatal outcomes and 292 with fatal outcomes, as well as 88 risk factors. Estimates were generated for 23 age groups by sex across 204 countries and territories, organised into 21 GBD regions and seven super-regions.

The GBD study applies two distinct regional frameworks to Africa. Under the first, sub-Saharan Africa is designated a GBD super-region, subdivided into four constituent regions: Central, Eastern, Southern, and Western sub-Saharan Africa. North African countries, by contrast, are epidemiologically grouped within the North Africa and Middle East super-region. The second framework derives from the African Union, which recognises five official geographical regions: Central, Eastern, Northern, Southern, and Western Africa. In this study, we adopted the GBD regional estimates for sub-Saharan Africa, while estimates for North Africa were drawn from the African Union regional framework. Conducted as part of GBD 2023, this study analyses the incidence, deaths, DALYs, and YLDs attributable to NCDs across Africa and within each of its 54 constituent countries.

GBD uses a hierarchical framework for disease classification, comprising four levels and a Level 0 aggregate representing all causes of health loss. At Level 1, categories are communicable, maternal, neonatal, and nutritional diseases; NCDs; and injuries. NCDs are further organised into 12 Level 2 clusters, subdivided into 111 Level 3 causes, and ultimately into 221 distinct causes.^{15,16}

The detailed methodology of fatal, non-fatal, and risk factor estimation can be found in the GBD 2023 capstone publications.^{15,16} The original GBD 2023 analyses were completed using Python versions 3.8.17 and 3.10.4, Stata version 15.1, and R versions 3.5 and 4.2.

This study adheres to the GATHER statement, ensuring transparency and methodological rigour (appendix 2 pp 1, 4–7).¹⁷

Mortality estimation

GBD 2023 estimated mortality using data from multiple sources, including vital registration, verbal autopsy, surveillance systems, police reports, censuses and surveys, minimally invasive tissue sampling, and sibling history. Causes of death were initially coded using ICD-11, but many were subsequently reclassified into GBD-specific

categories. So-called garbage codes, which do not represent plausible underlying causes of death, were redistributed to more likely causes using algorithms informed by published research, expert consultation, and regression analyses. A major challenge in mortality estimation is misclassification and undercounting of causes of death. In some country–age–sex–year strata, zero deaths were reported. These zeros might reflect either true absence of risk or small populations with low risk. To address this, the Cause of Death Ensemble model (CODEm) applies log death rate and logit cause fraction models, while excluding zero observations. Because this exclusion can introduce upward bias, a Bayesian noise-reduction algorithm was implemented to improve accuracy.

CODEm is the primary framework for estimating cause-specific mortality. It incorporates mixed-effects models with nested random effects to account for variation across age groups and locations. Component models are further smoothed across space, age, and time using spatiotemporal Gaussian process regression (ST-GPR). CODEm proceeds through four stages: (1) assembling all available data; (2) developing diverse plausible models; (3) validating predictive accuracy through out-of-sample testing; and (4) constructing an ensemble weighted by predictive performance. This ensemble approach improves robustness and reliability compared with single-model estimation. To minimise uncertainty, CODEm is executed separately by sex and by country, stratified by vital registration completeness. Cause of Death correction was applied to ensure internal consistency between cause-specific mortality and all-cause mortality estimates, using a standardised algorithm. All-cause mortality envelopes were first established, after which cause-specific deaths were corrected and redistributed across causes, locations, years, sexes, and age group. For complete methods, see appendix 1 (sections 4, 6.2) in the GBD 2023 Causes of Death Collaborators publication.¹⁵

Non-fatal outcome estimation

GBD 2023 estimation of non-fatal outcomes for NCDs followed a structured, multistep approach encompassing data collection, bias correction, disease modelling, severity assessment, and comorbidity adjustment. Data were obtained from diverse sources, including scientific literature, surveys, disease registries, notification systems, and hospital inpatient records. Clinical data were coded using ICD-10 codes and mapped to GBD-defined diagnosis groups to ensure consistency across locations and time. Recognising that epidemiological data are subject to biases from differing case definitions and measurement methods, correction factors were applied using meta-regression—Bayesian, regularised, trimmed. This approach adjusted estimates based on paired comparisons across data sources, improving reliability.

Prevalence and incidence were modelled primarily using DisMod-MR 2.1, a Bayesian meta-regression tool that generates internally consistent estimates by sex, age,

See Online for appendix 2

location, and year. For regions with sparse data, a cascade framework incorporated priors from higher levels of the GBD hierarchy, supplemented by location-specific covariates, as summarised in a previous publication.¹⁶ A new tool, DisMod-AT, was applied to model prevalence and incidence for type 1 diabetes, major depressive disorder, anxiety disorders, and autism spectrum disorders.¹⁶ For selected causes, ST-GPR was used to smooth heterogeneous data across age, time, and geography. Disease burden estimation accounted for sequela-specific outcomes, recognising variation in disability across manifestations of the same disease. YLDs were derived using disability weights, which quantify the severity of health states. To address multimorbidity, comorbidity corrections were applied by simulating large populations with realistic disease prevalence and adjusting cumulative disability weights to avoid overestimation. YLLs were calculated by multiplying deaths by standard life expectancy at age of death. DALYs were then computed as the sum of YLLs and YLDs across causes, locations, age groups, sexes, and years, providing a comprehensive measure of NCD burden. Detailed descriptions of data sources, processing methods, and modelling approaches are available in appendix 1 of the GBD 2023 Disease and Injury and Risk Factor Collaborators publication.¹⁶

Risk factor estimation

GBD 2023 organises risk factors within a hierarchical framework comprising four levels, culminating in an aggregate of all risk factors combined. At Level 1, risks are grouped into three broad categories: environmental and occupational, behavioural, and metabolic. Level 2 disaggregates these factors into 20 specific clusters, while Level 3 further refines nine of these clusters into 42 distinct risks, with 11 remaining undivided. Level 4 provides additional granularity, subdividing five Level 3 risks into 22 specific factors, alongside 11 Level 2 risks and 37 Level 3 risks that were not further disaggregated.¹⁶

Data for GBD 2023 were derived from systematic reviews, incorporating updates from previous cycles and new analyses. Evidence was synthesised from randomised controlled trials, cohort studies, and case-control studies to estimate relative risks (RRs) for risk-outcome pairs. Relationships between 88 risk factors and health outcomes were quantified, generating summary exposure values, RRs, population attributable fractions (PAFs), DALYs, and deaths.

The comparative risk assessment framework guided analysis through six steps: standardising data extraction, estimating exposure-RR relationships while mitigating outliers, adjusting for systematic biases, quantifying heterogeneity, assessing small-study effects, and applying the burden of proof risk function (BPRF). The BPRF provided conservative estimates by addressing unexplained heterogeneity in RR data. Exposure distributions were modelled using ST-GPR and DisMod-MR 2.1. Theoretical minimum risk exposure levels (TMRELs) were identified to

benchmark safer exposures. PAFs were calculated by integrating exposure, RR, and TMREL, while summary exposure values quantified age-specific risk-weighted prevalence. Mediation analyses corrected for overlapping pathways between risk factors. Detailed methods are provided in appendix 2 GBD 2023 Disease and Injury and Risk Factor Collaborators publication.¹⁶

Uncertainty estimation

Mean estimates for all metrics reported represent the mean value across 250 draws from the estimate's distribution, with 95% uncertainty intervals (UIs) calculated as the 2.5th and 97.5th percentile values across the draws.

Role of the funding source

The funder of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report.

Results

In 2023, NCDs accounted for an estimated 2.33 billion (95% UI 2.22–2.50) new incident cases, resulting in 4.70 million (4.47–4.93) deaths and 263 million (234–293) DALYs across Africa for all sexes combined (table 1). YLDs contributed 40.3% (34.4–46.4) of DALYs. Incident NCD cases showed a slight female predominance, with a female-to-male ratio of 1.2 (1.2–1.3), and DALYs in female-to-male ratio of 1.09 (1.05–1.1), while death had a slight male predominance (2.37 million [2.23–2.51]) in 2023 (appendix 2 pp 8–20). Between 1990 and 2023, the absolute number of incident cases of NCDs increased by 119.3% (112.0–127.7), deaths by 122.2% (104.6–139.9), and DALYs by 118.0% (100.0–135.6). Over the same period, age-standardised rates declined modestly: incidence by 2.7% (0.2–5.0), mortality by 9.0% (2.5–15.5), and DALYs by 6.4% (1.2–12.0; table 1; appendix 2 pp 8–20).

These observations indicate that progress in reducing death and DALY rates has lagged in Africa compared with at the global level, with deaths declining by –30.9% (95% UI –32.8 to –28.3) and DALYs by –19.2% (–22.5 to –15.8) between 1990 and 2023 (see GBD Results Tool). Over the past three decades, there has been a substantial increase in the contribution of NCDs to the overall burden of disease and mortality in Africa. In 1990, NCDs accounted for 19.5% (17.8–21.1) of total DALYs, rising to 20.7% (19.0–22.3) in 2000, 27.3% (25.2–29.3) in 2010, and 38.3% (36.0–40.0) of the total all-cause DALYs (263 million [234–293] of 688 million [651–731]) in 2023. A parallel increase was observed in NCD-related mortality, with NCDs responsible for 25.2% (23.3–26.7) of total deaths in 1990, 25.8% (24.4–27.3) in 2000, 33.3% (31.8–34.7) in 2010, and 44.9% (43.0–46.7) of the total all-cause deaths (4.70 million [4.47–4.93] of 10.48 million [10.39–10.58]) in 2023 (GBD Results Tool and GBD Compare Tool).

The burden of NCDs, as measured by incidence, deaths, and DALYs, for Africa overall and by region and country, is

For the GBD Results Tool see
<https://vizhub.healthdata.org/gbd-results/>

For the GBD Compare Tool see
<https://vizhub.healthdata.org/gbd-compare/>

	Incident cases		Age-standardised incidence rate		Death count		Age-standardised death rate		DALY count		Age-standardised DALY rate	
	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
Africa	233 000 (222 000 to 250 000)	119·3% (112·0 to 127·7)	158 585·6 (151 857·2 to 167 311·0)	-2·7% (-5·0 to -0·2)	4700 (4470 to 4930)	122·2% (104·6 to 139·9)	656·0 (627·3 to 682·7)	-9·0% (-15·5 to -2·5)	263 000 (234 000 to 293 000)	118·0% (100·0 to 135·6)	25 359·6 (22 974·4 to 27 842·3)	-6·4% (-12·0 to -1·2)
North Africa	36 300 (34 300 to 38 500)	67·5% (56·5 to 78·4)	147 061·0 (140 099·0 to 154 565·6)	-5% (-9·9 to -0·2)	1300 (1200 to 1400)	108·4% (95·4 to 121·9)	818·5 (777·2 to 853·6)	-19·7% (-24·3 to -15·5)	57 800 (51 500 to 64 800)	86·2% (75·4 to 99·5)	27 794 (25 340·5 to 30 664·3)	-13·9% (-18 to -9)
Algeria	6520 (6190 to 6900)	67·7% (54·3 to 79·5)	145 878·3 (138 244·4 to 154 147·8)	-3·7% (-9·1 to 1·6)	195 (186 to 204)	119·7% (107·6 to 133·6)	567·2 (542·7 to 591·1)	-29·5% (-33 to -25·9)	9190 (8130 to 10 390)	88·4% (74·7 to 102·1)	22 343·3 (19 898·4 to 25 080)	-19·2% (-23·5 to -14·4)
Egypt	15 900 (15 000 to 16 900)	83·3% (69·8 to 96·6)	146 604·3 (138 655·3 to 154 483·2)	-6·2% (-11·7 to -0·9)	600 (545 to 650)	115·1% (94·9 to 136·3)	1132·9 (1031·3 to 1233·2)	-5·3% (-14·4 to 3·1)	26 700 (24 000 to 29 800)	93·3% (78 to 112·3)	33 722·7 (30 755·7 to 36 990)	-7·4% (-13·4 to -1·1)
Libya	1090 (1040 to 1160)	70·0% (57·0 to 81·6)	147 970·2 (140 314 to 156 597·6)	-2·2% (-7·5 to 2·9)	31 (30 to 33)	116·5% (103·9 to 130·7)	633·3 (608·7 to 665)	-12·9% (-16·9 to -8·2)	1630 (1440 to 1840)	98·1% (84·9 to 110·9)	24 808·4 (22 111·4 to 27 810·8)	-10·8% (-15·4 to -6·4)
Morocco	5470 (5170 to 5710)	36·4% (26·9 to 44·7)	147 922·8 (139 539·1 to 155 338·5)	-5·2% (-10·2 to -0·3)	244 (226 to 262)	84·6% (66·9 to 104·5)	817·3 (758·4 to 878·0)	-24·0% (-30·5 to -16·3)	9500 (8470 to 10 500)	63·9% (53·4 to 77·5)	26 478·5 (24 001·8 to 29 105·7)	-18% (-23 to -12)
Tunisia	1820 (1740 to 1930)	43·7% (38·7 to 49·1)	150 728·6 (143 138·9 to 161 521·1)	0·0% (-2·2 to 2·1)	63 (61 to 65)	111·1% (97·4 to 126·2)	531·4 (511·2 to 552·2)	-30·1% (-34·5 to -25·6)	2830 (2510 to 3220)	84·6% (74·8 to 95·4)	22 283·6 (19 883·1 to 25 310·2)	-12·3% (-17·4 to -7·2)
Sudan	5490 (5160 to 5860)	84·3% (71·3 to 97·6)	148 155·2 (140 041·7 to 157 224·9)	-1·7% (-7·3 to 3·4)	170 (155 to 185)	46·6% (32·1 to 65)	871·6 (799·3 to 954·8)	-33·3% (-39·4 to -25·1)	7970 (7010 to 9030)	40·9% (26·1 to 55·9)	28 619·9 (25 740·2 to 31 875·1)	-29·2% (-34·6 to -23·8)
Sub-Saharan Africa	197 000 (186 000 to 212 000)	132·3% (125·2 to 140·6)	160 393·0 (153 388·2 to 169 575·5)	-2·9% (-5·2 to -0·7)	3390 (3170 to 3610)	133·5% (111·2 to 157·2)	599·8 (563·4 to 632·6)	-3·6% (-12·4 to 5·9)	205 000 (181 000 to 229 000)	133·0% (112·0 to 153·3)	24 462·4 (21 973·4 to 27 002·2)	-3·0% (-9·7 to 3·9)
Central Sub-Saharan Africa	22 200 (20 700 to 23 800)	142·9% (127·6 to 160·1)	152 564·4 (144 826·8 to 161 381·3)	-5·9% (-10 to -1·5)	433 (371 to 484)	172·0% (140·8 to 204)	708·7 (610·4 to 790·3)	0·0% (-10·3 to 11·8)	25 900 (21 800 to 29 600)	160% (134 to 182·7)	27 172·2 (23 315·7 to 30 532·7)	0·7% (-7·2 to 9·2)
Angola	5490 (5130 to 5930)	215·2% (193·3 to 239)	153 802·8 (146 366·2 to 162 848·9)	-5·5% (-10·3 to -1)	88 (80 to 96)	194·7% (157·2 to 244·3)	616·6 (564·6 to 671·7)	-13·2% (-23·2 to 1·1)	5950 (5130 to 6780)	210·0% (176·4 to 247)	25 439·1 (22 375·5 to 28 515·3)	-8·0% (-16 to 2·4)
Central African Republic	1010 (930 to 1080)	120·5% (105·6 to 136·7)	154 551·9 (146 442·8 to 163 740·1)	-4·8% (-9·4 to 0)	19 (15 to 22)	120·4% (90·8 to 153·8)	708·5 (548·3 to 855·7)	-2·5% (-14·6 to 11)	1150 (940 to 1340)	129·0% (104·0 to 156·9)	27 017·1 (22 134·5 to 31 507·1)	0·7% (-8·6 to 10·5)
Congo (Brazzaville)	970 (910 to 1040)	146·7% (140·3 to 153·1)	156 805·3 (149 301·1 to 165 674·1)	-2·9% (-5 to -0·9)	18 (16 to 20)	163% (125 to 205·8)	697·6 (618·9 to 772·4)	5·9% (-7·6 to 21·2)	1050 (890 to 1240)	154·0% (122·9 to 183·3)	26 239·7 (22 814·2 to 30 162)	1·6% (-8·5 to 12)
Democratic Republic of the Congo	14 200 (13 200 to 15 200)	124·9% (110·3 to 142·3)	151 800·0 (143 476·1 to 160 737·2)	-6·3% (-10·7 to -1·8)	297 (244 to 340)	171·5% (135·7 to 209·1)	744 (610·5 to 846·7)	4·1% (-8·1 to 16·6)	17 100 (14 300 to 19 600)	149·0% (120·6 to 173·2)	27 890·5 (23 359·9 to 31 640·9)	3·4% (-5·7 to 12·7)
Equatorial Guinea	240 (230 to 260)	242·7% (217·8 to 269·1)	150 259·4 (143 070·4 to 159 198·7)	-7·6% (-12·8 to -2·5)	4 (3 to 5)	180·9% (130·4 to 240·3)	748·8 (654·7 to 827)	-9·1% (-22·9 to 10·3)	270 (230 to 320)	223·0% (175·2 to 275·3)	28 480·4 (24 612 to 32 340·9)	-4·5% (-17·3 to 8·9)
Gabon	280 (270 to 300)	77·4% (65·8 to 89·4)	149 690·7 (142 186·8 to 157 930·1)	-6·4% (-10·9 to -1·5)	8 (7 to 8)	129·7% (101·9 to 158·2)	621·2 (568·3 to 680·1)	0·4% (-10·8 to 14·3)	380 (340 to 430)	117·0% (96·9 to 136·4)	25 261·6 (22 313·3 to 28 152·1)	2·8% (-6·2 to 11·7)

(Table 1 continues on next page)

	Incident cases		Age-standardised incidence rate		Death count		Age-standardised death rate		DALY count		Age-standardised DALY rate	
	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
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Eastern Sub-Saharan Africa	73 100 (69 000 to 78 500)	122.6% (115.5 to 129.9)	158 733.7 (151 526 to 167 417.2)	-3.3% (-5.4 to -1.2)	1230 (1160 to 1290)	131.6% (106.3 to 157.6)	580.1 (548.1 to 610.5)	-1.0% (-12 to 10.2)	74 300 (65 800 to 82 200)	119.0% (96 to 140.8)	23 826.1 (21 425.1 to 26 122.1)	-3.9% (-12.2 to 3.2)
Burundi	2170 (2030 to 2360)	133.1% (115.6 to 150.8)	151 173.7 (143 826.6 to 160 839.8)	-6.1% (-11.1 to -1.3)	36 (31 to 41)	120.3% (86.1 to 178.2)	602.9 (523 to 676.6)	7.8% (-8.5 to 36.8)	2340 (2030 to 2660)	129.0% (99.8 to 168.7)	24 417.2 (21 037.3 to 27 436.7)	-0.2% (-11.7 to 19.4)
Comoros	140 (130 to 150)	79.0% (73.5 to 84.5)	153 961.6 (145 871.3 to 162 655.7)	-2.1% (-4.3 to 0.1)	2 (2 to 2)	123.5% (93.8 to 156.1)	303.0 (273.0 to 331.5)	-13.7% (-25.2 to 0)	120 (100 to 140)	100.0% (79.5 to 119)	16 398.7 (14 161.4 to 19 006)	-6.7% (-14.9 to 1.3)
Djibouti	210 (190 to 220)	223.0% (198.7 to 247.7)	148 109.9 (139 618.1 to 157 817.5)	-6.2% (-11.6 to -1.1)	4 (3 to 4)	347.4% (292 to 414.8)	487.8 (437.8 to 537.3)	-7.6% (-18.3 to 6.5)	230 (200 to 270)	302.0% (262.9 to 343.1)	21 432.4 (18 960.7 to 24 333.5)	-4.6% (-12.5 to 4.7)
Eritrea	1060 (990 to 1140)	87.7% (73.3 to 102.6)	150 700.2 (143 366.4 to 161 067.4)	-6.1% (-11.9 to -0.7)	25 (22 to 27)	164.1% (129.6 to 204.2)	617.1 (545 to 679.1)	1.0% (-14.2 to 18.6)	1410 (1250 to 1570)	136% (113.9 to 161.8)	25 925.5 (23 219.1 to 28 759.2)	2.7% (-7.5 to 14.4)
Ethiopia	20 700 (19 300 to 22 300)	116.6% (107.1 to 123.9)	174 791.5 (165 726.5 to 186 053.1)	-2.0% (-5.1 to 0.7)	370 (346 to 398)	144.4% (105.1 to 186.1)	675.8 (626.3 to 729.3)	12.0% (-6.2 to 32.9)	21 600 (19 300 to 24 000)	109.0% (82.8 to 139.1)	27 062.6 (24 512.8 to 29 758.9)	0.3% (-12.2 to 12.2)
Kenya	8840 (8290 to 9500)	101.5% (93 to 110)	166 657.8 (158 431.5 to 176 473.4)	-4.7% (-7.3 to -2.7)	122 (110 to 133)	182.3% (146.3 to 222.2)	444.8 (404 to 487.7)	-5.7% (-18.6 to 10.3)	7540 (6560 to 8500)	156.0% (134.2 to 179)	19 831.0 (17 443 to 22 133.6)	-2.6% (-10.8 to 5.9)
Madagascar	4610 (4350 to 4980)	117.4% (103.6 to 131.5)	150 941.9 (144 079.4 to 160 361.7)	-10.6% (-14.6 to -6.4)	94 (86 to 102)	113.2% (89.0 to 142.0)	784.7 (714.3 to 858.5)	-8.5% (-18.6 to 3.8)	5340 (4780 to 5960)	124.0% (102 to 146.7)	27 291.3 (24 595.9 to 29 970.8)	-10.8% (-18.7 to -1.7)
Malawi	3310 (3060 to 3590)	105.5% (99.5 to 111.2)	157 791.6 (148 790.4 to 168 763.9)	-1.1% (-3.4 to 1.3)	59 (52 to 65)	84.5% (59.5 to 113.1)	635.9 (576.1 to 710.6)	-7.4% (-18.6 to 6.7)	3490 (3040 to 4000)	80.2% (53.7 to 105.7)	25 602.0 (22 260.2 to 28 921.2)	-7.1% (-17.1 to 4.2)
Mozambique	5160 (4810 to 5590)	129.9% (112.2 to 149.2)	153 435.6 (145 437.1 to 163 290.7)	-3.1% (-8.6 to 2.2)	66 (59 to 75)	94.3% (64.4 to 127.2)	457.0 (406.0 to 508.0)	5.2% (-10.2 to 24.1)	4460 (3820 to 5130)	91.3% (67.7 to 118.2)	19 737.3 (16 946.8 to 22 612.7)	-5.3% (-15.5 to 5.8)
Rwanda	2010 (1890 to 2150)	74.6% (60.5 to 89.3)	146 869.80 (139 441.2 to 155 199.5)	-6.1% (-11.7 to -0.5)	48 (44 to 52)	75.1% (47.2 to 106.7)	656.7 (603.0 to 715.0)	-12.3% (-24.9 to 2.7)	2610 (2320 to 2920)	60.6% (37.8 to 83.9)	25 506.5 (22 914.3 to 28 204.8)	-17.9% (-28.3 to -6.7)
Somalia	3370 (3110 to 3690)	154.7% (135.5 to 177.2)	151 797.5 (144 174.1 to 162 442.4)	-4.3% (-9.3 to 1)	40 (35 to 46)	226.9% (178.7 to 302.8)	386.1 (330.5 to 440.3)	5.7% (-12.4 to 33.8)	2880 (2420 to 3270)	193% (162.2 to 230.5)	18 486.4 (15 719.3 to 21 055)	4.4% (-5.6 to 17.5)
South Sudan	1590 (1470 to 1720)	63.6% (59 to 67.9)	159 154.2 (150 729.2 to 169 777.1)	-0.2% (-2.2 to 2)	35 (31 to 39)	72.5% (51.4 to 93.4)	766.3 (673.8 to 861)	3.3% (-9.5 to 16.6)	2030 (1800 to 2300)	75.3% (56.5 to 93.9)	29 403.6 (26 251.8 to 32 875.8)	3.0% (-7 to 12.4)
Tanzania	9310 (8690 to 10 120)	153.3% (136.9 to 170.5)	142 100.8 (135 053.5 to 151 462.8)	0.7% (-3.8 to 5.2)	159 (145 to 174)	127% (97.4 to 160.5)	497.1 (454.4 to 546.7)	-7.5% (-19.1 to 5.6)	9420 (8130 to 10 700)	119.0% (94 to 142.1)	20 852.7 (18 345 to 23 469.6)	-9.1% (-17.5 to -0.8)
Uganda	7250 (6710 to 7800)	155.3% (147.5 to 162.5)	156 775.0 (148 068.9 to 166 407.4)	-1.4% (-3.7 to 1)	111 (101 to 121)	149.1% (117.5 to 190.6)	571.8 (528 to 618.9)	-3.0% (-16.1 to 14.4)	7130 (6200 to 8030)	162.0% (130.9 to 193.9)	23 624.0 (20 829.7 to 26 241.6)	2.4% (-7.7 to 13.7)
Zambia	3370 (3130 to 3630)	154.4% (146.3 to 160.6)	155 733.0 (148 023.1 to 164 580.1)	-1.9% (-4.1 to 0)	57 (52 to 63)	143.6% (106.1 to 185.9)	768.4 (701.5 to 843.5)	1.5% (-12.5 to 18.3)	3600 (3170 to 4040)	146.0% (115.8 to 179.4)	28 648.9 (25 658.6 to 31 198.3)	1.1% (-10.3 to 14.1)

(Table 1 continues on next page)

	Incident cases		Age-standardised incidence rate		Death count		Age-standardised death rate		DALY count		Age-standardised DALY rate	
	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
(Continued from previous page)												
Southern Sub-Saharan Africa	14 200 (13 500 to 14 900)	65·2% (60·4 to 69·7)	160 302·6 (153 102·1 to 167 703)	−0·5% (−2·2 to 1·1)	355 (329 to 381)	141·9% (121·2 to 165·3)	551·2 (515·6 to 585·9)	1·7% (−6·7 to 10·4)	1730 (1500 to 1940)	120·0% (105·3 to 135·9)	22 536·1 (19 833·8 to 25 085·5)	4·1% (−2·1 to 11·2)
Botswana	380 (360 to 400)	76·1% (71·2 to 82·7)	154 351·8 (146 183·1 to 162 331·9)	−2·7% (−4·5 to −0·7)	8 (7 to 9)	138% (109 to 175·5)	441·1 (394·9 to 489·7)	−17·0% (−27 to −4·2)	390 (340 to 450)	112·0% (91·6 to 134·7)	19 011·5 (16 532·7 to 21 781·3)	−9·4% (−17·8 to 0)
Eswatini	190 (170 to 200)	40·6% (35·7 to 44·7)	156 680·2 (147 758·7 to 166 061·5)	−1·7% (−3·3 to 0·1)	4 (4 to 5)	47·4% (24·2 to 76·8)	532·5 (468·7 to 609·4)	−31·8% (−42·3 to −17·6)	220 (190 to 260)	43·8% (24·2 to 66·3)	23 302·6 (19 861·6 to 26 745·2)	−25·4% (−34·7 to −14·2)
Lesotho	290 (280 to 320)	18·0% (8·9 to 26·8)	153 654·9 (145 396·9 to 163 722·6)	−3·6% (−9 to 1·8)	8 (7 to 9)	47·3% (24 to 86·2)	671·1 (593·8 to 743)	−4·3% (−19·4 to 20·9)	370 (310 to 410)	39·5% (22·7 to 63·5)	24 603·9 (21 050·1 to 27 183)	−1·9% (−13·8 to 15·4)
Namibia	450 (420 to 490)	103·5% (90·6 to 119·9)	149 150·0 (141 670·9 to 158 896·8)	−3·6% (−8·4 to 2·1)	9 (8 to 9)	104·9% (82·3 to 133·6)	500·9 (460·6 to 540·9)	−20·3% (−28·4 to −9·7)	500 (440 to 570)	111·0% (90·3 to 131·3)	21 651·8 (19 388·7 to 24 593·9)	−12·8% (−20·1 to −4)
South Africa	10 400 (9970 to 10 900)	68·8% (63·9 to 73·6)	162 959·1 (156 393·8 to 170 963·7)	−0·6% (−2·4 to 1·2)	284 (263 to 304)	158·6% (135·4 to 184·2)	569·7 (532·3 to 602·1)	3·8% (−4·9 to 13)	1340 (1160 to 1490)	132·0% (117·1 to 150·6)	22 866·8 (20 156·6 to 25 427·5)	4·8% (−1·9 to 12·1)
Zimbabwe	2480 (2310 to 2660)	54·1% (48·3 to 60·1)	153 885·1 (145 290·2 to 163 045)	1·4% (−1·5 to 4·3)	42 (37 to 47)	100·7% (76·3 to 125·3)	451·2 (404·8 to 504·3)	0·6% (−11·8 to 13·4)	2450 (2070 to 2780)	91·0% (75·6 to 106·8)	20 327·9 (17 311·4 to 22 809·3)	8·2% (0 to 16·3)
Western Sub-Saharan Africa	87 800 (82 600 to 94 700)	155·4% (147·9 to 163·5)	163 677·3 (156 407·1 to 173 871·9)	−2·6% (−4·6 to −0·2)	1370 (1250 to 1500)	123·2% (99·9 to 146·8)	603·7 (557·6 to 647·2)	−8·6% (−17·9 to 1·8)	87 300 (76 600 to 99 100)	142·0% (119·5 to 164·4)	24 643·8 (22 072·4 to 27 413·1)	−5·5% (−12·5 to 1·6)
Benin	2300 (2130 to 2490)	174·0% (164·8 to 183)	158 244·8 (149 379·6 to 168 315·3)	−2·8% (−5 to −0·4)	34 (30 to 41)	111·1% (84·7 to 136·5)	508·8 (456·7 to 577)	−21·1% (−30·3 to −9·9)	2330 (1960 to 2870)	139·0% (107·3 to 169·8)	22 961·9 (19 883·3 to 26 772·1)	−13·4% (−20·6 to −6·2)
Burkina Faso	3800 (3530 to 4140)	129·8% (113·9 to 146·4)	154 656·3 (146 257 to 164 545·2)	−5·1% (−9·9 to −0·5)	55 (49 to 61)	93·6% (65·4 to 118·7)	468·1 (416·4 to 518·4)	−17·1% (−28·9 to −5·6)	3710 (3170 to 4190)	107·0% (82·1 to 133·9)	21 103·5 (18 592·5 to 23 540·8)	−11·1% (−19·9 to −2·9)
Cameroon	5650 (5240 to 6150)	214·9% (202 to 228·4)	161 899·4 (152 724·6 to 171 790·8)	−1·4% (−4·3 to 1·4)	94 (85 to 104)	175·5% (140·6 to 213·5)	693·4 (627·6 to 760·6)	−7·3% (−18 to 5·2)	5810 (5030 to 6520)	198·0% (165·8 to 230·1)	26 307·9 (23 223·3 to 29 090·7)	−6·2% (−14·4 to 2·9)
Cabo Verde	80 (70 to 80)	29·7% (23·8 to 35·3)	153 744·1 (144 637·4 to 162 356)	−4·1% (−6·2 to −2·1)	2 (2 to 2)	68·4% (52·1 to 90)	455·3 (419·6 to 488·3)	−10·3% (−19·2 to 0·8)	90 (80 to 100)	67·7% (55·1 to 80·8)	19 620·8 (17 444·6 to 22 324·9)	−2·2% (−8·9 to 4·8)
Chad	3230 (2980 to 3520)	210·4% (201·3 to 219)	160 955·4 (152 059·5 to 170 876·2)	−2·2% (−4·5 to 0·4)	51 (46 to 56)	113·9% (86·1 to 143·9)	769·1 (687·8 to 865·2)	−4·5% (−17 to 9·8)	3190 (2770 to 3650)	157% (127·9 to 183·6)	28 053·9 (24 686 to 31 409·6)	−4·8% (−13·3 to 4·3)
Côte d'Ivoire	5230 (4880 to 5610)	155·6% (145 to 163·2)	153 543·1 (145 091·8 to 162 674·6)	−4% (−7 to −1·7)	84 (76 to 91)	211·7% (167·7 to 251·5)	588 (536·1 to 641·9)	−4·9% (−16·5 to 6·4)	5700 (4920 to 6420)	198·0% (164·4 to 231·4)	24 422·3 (21 430 to 27 061·6)	1·5% (−8·4 to 9·9)
The Gambia	390 (360 to 420)	134·8% (118·4 to 152·9)	153 156·5 (145 439·6 to 162 482·5)	−4·5% (−9·2 to 0·5)	6 (5 to 7)	205·9% (162·1 to 251·8)	495·4 (431·5 to 552·3)	6·7% (−8·8 to 24·6)	380 (330 to 440)	166·0% (137·9 to 194)	21 680·7 (18 705·8 to 24 646·3)	2·3% (−7·3 to 12)
Ghana	5040 (4740 to 5350)	115·7% (109·8 to 122)	152 304·4 (144 632·6 to 160 521·7)	−1·2% (−3·4 to 0·8)	126 (113 to 139)	129·3% (105 to 158·9)	695·8 (627 to 760·3)	−15·8% (−24·4 to −6)	6720 (5980 to 7550)	115·0% (94·1 to 136·4)	27 391·8 (24 652·8 to 30 449·9)	−11·7% (−19 to −4·1)

(Table 1 continues on next page)

	Incident cases		Age-standardised incidence rate		Death count		Age-standardised death rate		DALY count		Age-standardised DALY rate	
	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
(Continued from previous page)												
Guinea	2220 (2050 to 2400)	117% (102·8 to 134·8)	154 077·7 (145 972·9 to 163 224·3)	-5·1% (-9·6 to -0·1)	45 (41 to 50)	70·3% (49 to 93·9)	662·9 (601·5 to 737)	-11·3% (-23·7 to 3·4)	2580 (2230 to 2920)	86·6% (65·1 to 109)	26 388·6 (23 319·3 to 29 209)	-8% (-16·9 to 1·3)
Guinea-Bissau	350 (330 to 380)	105·3% (98·9 to 112)	159 766·1 (151 613·8 to 170 268)	-2% (-4·2 to 0·2)	7 (6 to 7)	93·6% (67·2 to 122)	763·0 (683·6 to 838·8)	6·9% (-7·1 to 20·6)	400 (340 to 450)	99·4% (73·3 to 123·5)	28 380·0 (25 179·1 to 31 429·7)	2·4% (-8·7 to 13·6)
Liberia	910 (840 to 970)	103·2% (97·5 to 109·5)	157 699·9 (148 257·5 to 167 215·5)	-2·3% (-4·4 to 0·1)	19 (17 to 21)	88·3% (67 to 113·5)	723·3 (651·9 to 797·2)	-7·4% (-17·4 to 3·3)	1150 (1010 to 1300)	99·5% (78·7 to 122·4)	28 186·1 (24 937·1 to 31 233·8)	-6% (-13·8 to 2·3)
Mali	3900 (3600 to 4310)	163·6% (144·1 to 184·7)	155 906·2 (146 783·7 to 168 155·3)	-3·7% (-8·6 to 1·6)	64 (59 to 69)	125·7% (100·5 to 151·2)	602·7 (554·4 to 649·2)	-7% (-16·8 to 3·7)	4150 (3670 to 4650)	139·0% (111·4 to 165·7)	25 420·0 (23 014·2 to 28 393·3)	-4·7% (-12·7 to 2·8)
Mauritania	740 (690 to 800)	112·1% (105·6 to 118·4)	156 930·2 (148 532·7 to 166 626·3)	-3·3% (-5·6 to -1·2)	15 (13 to 16)	123·5% (97·5 to 150·6)	661·5 (593·4 to 720·6)	-0·7% (-11·4 to 10·4)	780 (670 to 880)	122·0% (100·4 to 141·4)	24 789·70 (21 611·4 to 27 848·3)	-1·2% (-9·9 to 7·4)
Niger	4200 (3900 to 4630)	173·5% (155 to 196·1)	153 675·4 (145 906·1 to 165 075·3)	-12% (-15·7 to -7·2)	62 (55 to 69)	196·8% (151·5 to 242·9)	657·5 (581·7 to 744·1)	-3% (-16·7 to 12·4)	4260 (3720 to 4850)	209·0% (167·7 to 250·7)	25 086·9 (21 970·5 to 28 610·4)	-1·7% (-11·7 to 8·7)
Nigeria	44 200 (41 300 to 48 400)	162·5% (153 to 172·3)	172 223·0 (164 186·4 to 183 598·7)	-1·7% (-4·3 to 1·2)	602 (540 to 683)	112·4% (87·9 to 141·4)	580·8 (523·3 to 644·5)	-8% (-19·4 to 7)	39 800 (34 300 to 46 100)	143·0% (119·1 to 166·3)	23 934·3 (21 019·8 to 27 225·7)	-4·6% (-12·2 to 4·5)
São Tomé and Príncipe	30 (30 to 40)	61·9% (49·3 to 74·3)	149 530·9 (141 578·6 to 158 800·9)	-6·7% (-11·7 to -1·6)	1 (1 to 1)	71·5% (51·9 to 89·3)	622·2 (566·9 to 671·3)	-1·5% (-12·1 to 8·7)	40 (40 to 50)	83·2% (65·3 to 99·8)	24 846·7 (22 074·8 to 27 691·8)	-0·9% (-9·6 to 6·6)
Senegal	3010 (2790 to 3240)	129·6% (122·7 to 135·8)	155 503·1 (147 145·1 to 164 588·1)	-3·4% (-5·4 to -1·6)	50 (45 to 55)	146·1% (117·2 to 177·9)	525 (477·8 to 571·2)	-2·8% (-14·8 to 11·3)	2990 (2590 to 3390)	130% (105·8 to 152·5)	22 488·9 (19 804·8 to 25 179·9)	-5·1% (-13·7 to 2·7)
Sierra Leone	1240 (1160 to 1330)	87·5% (72·8 to 102·6)	152 622·2 (144 408·2 to 162 797·1)	-4% (-10·6 to 2·2)	28 (25 to 30)	73·1% (47·9 to 105·6)	713·2 (638·2 to 780·8)	-0·5% (-14·7 to 20)	1630 (1420 to 1840)	87·3% (65·6 to 110)	28 074·0 (25 022·3 to 31 543·9)	-0·2% (-11·4 to 13·3)
Togo	1330 (1240 to 1440)	110·8% (93·9 to 128·2)	153 387·0 (145 123·6 to 163 983·8)	-5·8% (-11·5 to -0·6)	27 (24 to 30)	155·4% (124·9 to 185·2)	615·7 (554·1 to 689·1)	-15·1% (-24 to -5·7)	1620 (1380 to 1880)	136% (111·2 to 164·1)	25 538·1 (22 131·9 to 28 971·2)	-9·9% (-18 to -2·7)
Mauritius*	170 (170 to 180)	13·9% (5·7 to 20·8)	135 319·7 (128 561·7 to 143 133·9)	-2·6% (-8·4 to 3·6)	11 (11 to 12)	102·2% (95 to 109·6)	649·4 (630 to 668·1)	-22·3% (-25·1 to -19·5)	410 (370 to 450)	69·5% (64·5 to 74·5)	24 435·1 (22 209·3 to 27 155·6)	-13·8% (-16·8 to -10·9)
Seychelles*	10 (10 to 20)	42·0% (37 to 46·9)	136 744·5 (128 875·6 to 146 831·9)	-0·5% (-2·7 to 1·7)	1 (1 to 1)	56·4% (48 to 64·5)	539·4 (513·4 to 563·3)	-24·9% (-29 to -20·9)	30 (20 to 30)	65·6% (59·1 to 72·1)	20 976·3 (19 030·6 to 23 230·6)	-16% (-19·4 to -12·5)

Values in parentheses are 95% uncertainty intervals. DALY=disability-adjusted life-year. *Mauritius and Seychelles are categorised within Southeast Asia in the GBD location hierarchy, and are therefore not included in the North Africa or sub-Saharan Africa regional estimates.

Table 1: Non-communicable disease incidence, death, and DALY counts and age-standardised rates in 2023, and percentage changes in counts and age-standardised rates from 1990 to 2023 in Africa, all ages and sexes combined

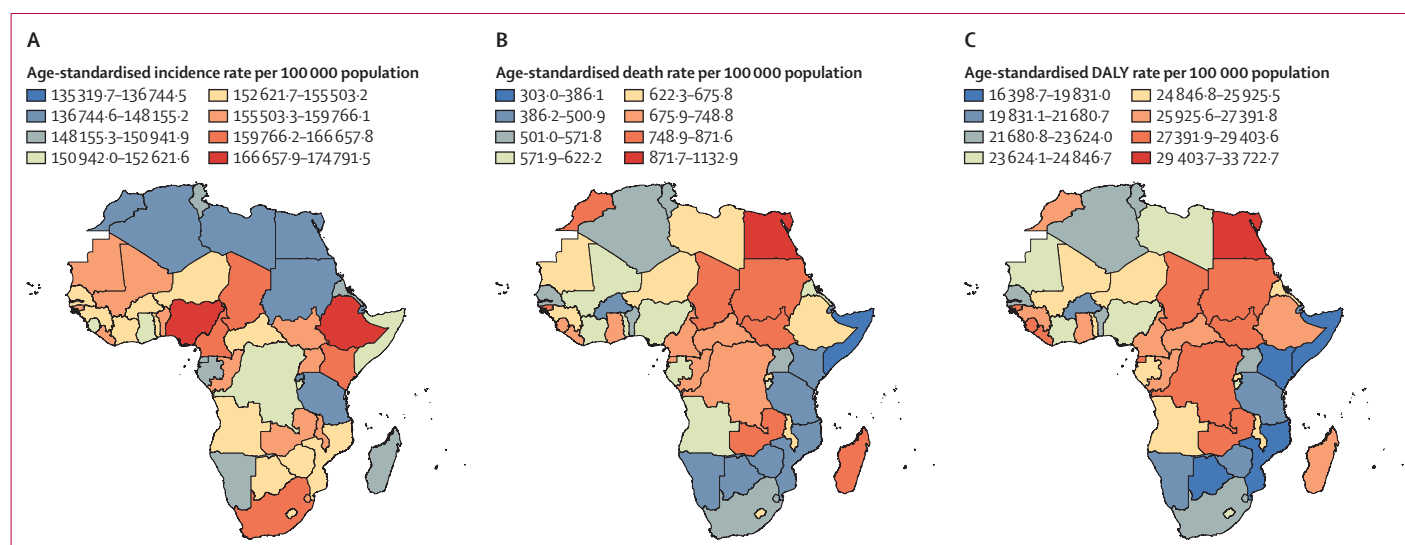


Figure: Age-standardised rates of non-communicable disease incidence, deaths, and DALYs in Africa, 2023

(A) Age-standardised incidence rate. (B) Age-standardised death rate. (C) Age-standardised DALY rate. DALY=disability-adjusted life-year.

shown in table 1 and figure, and estimates stratified by sex are shown in appendix 2 (pp 8–20).

In 2023, the highest age-standardised incidence rates of NCDs in Africa were observed in Ethiopia (174 791.5 [95% UI 165 726.5–186 053.1] per 100 000), Nigeria (172 223.0 [164 186.4–183 598.7] per 100 000), and Kenya (166 657.8 [158 431.5–176 473.4] per 100 000; table 1, figure A). Between 1990 and 2023, the percentage change in age-standardised incidence rate ranged from –12.0% (–15.7 to –7.2) in Niger to 1.4% (–1.5 to 4.3) in Zimbabwe (table 1).

In 2023, the highest age-standardised NCD-related death rates were observed in Egypt (1132.9 deaths [95% UI 1031.3–1233.2] per 100 000 population), Sudan (871.6 [799.3–954.8] per 100 000), and Morocco (817.3 [758.4–878.0] per 100 000). By contrast, the lowest rates were recorded in Comoros (303.0 [273.0–331.5] per 100 000 population), Somalia (386.1 [330.5–440.3] per 100 000 population), and Botswana (441.1 [394.9–489.7] per 100 000 population; table 1, figure B).

Between 1990 and 2023, the absolute number of NCD-related deaths more than doubled in most African countries. However, 16 countries reported smaller increases, ranging from 46.6% (95% UI 32.1–65.0) in Sudan to 94.3% (64.4–127.2) in Mozambique. The largest increase was observed in Djibouti, with a 347.4% rise (292.0–414.8) in NCD-related deaths over the same period. Changes in age-standardised NCD death rates between 1990 and 2023 varied across countries. The highest percentage increases were observed in Ethiopia (12.0% [–6.2 to 32.9]), Burundi (7.8% [–8.5 to 36.8]), and Guinea-Bissau (6.9% [–7.1 to 20.6]). Conversely, the greatest reductions were seen in Sudan (–33.3% [–39.4 to –25.1]), Eswatini (–31.8% [–42.3 to –17.6]), and Tunisia (–30.1% [–34.5 to –25.6]; table 1).

In 2023, the highest age-standardised DALYs attributable to NCDs per 100 000 population were recorded in Egypt

(33 722.7 [95% UI 30 755.7–36 990.0]), South Sudan (29 403.6 [26 251.8–32 875.8]), and Zambia (28 648.9 [25 658.7–31 198.3]), whereas the lowest rates were observed in Botswana (19 011.5 [16 532.7–21 781.3]), Somalia (18 486.4 [15 719.3–21 055.0]), and Comoros (16 398.7 [14 161.4–19 006.5]; table 1, figure C). Between 1990 and 2023, the greatest declines in age-standardised DALYs due to NCDs in Africa were recorded in Sudan (–29.2% [–34.6 to –23.8]), Eswatini (–25.4% [–34.7 to –14.2]), Algeria (–19.2% [–23.5 to –14.4]), and Morocco (–18.0% [–23.0 to –12.0]; table 1).

The leading Level 2, Level 3, and Level 4 causes of incident cases, deaths, and DALYs due to NCDs across Africa from 1990 to 2023 are presented in table 2 and appendix 2 (pp 21–108).

In 2023, the leading Level 2 incidence categories in Africa across all ages and sexes were other NCDs, skin and subcutaneous diseases, and neurological disorders. At Level 3, the five conditions with the highest incidence were oral disorders (742 million [95% UI 647–837] cases), fungal skin diseases (387 million [310–512]), other skin and subcutaneous diseases (218 million [212–222]), gynaecological diseases (169 million [144–194]), and headache disorders (129 million [112–146]; appendix 2 pp 21–35).

In 2023, the leading Level 2 causes of NCD mortality in Africa were cardiovascular diseases, neoplasms, diabetes mellitus and chronic kidney disease, digestive diseases, and other non-communicable diseases (table 2). A heatmap showing the rank of Level 3 cause of death for all ages and both sexes combined by country in 2023 is shown in appendix 2 (p 137). Globally, the leading Level 2 causes of NCD mortality were cardiovascular diseases, neoplasms, chronic respiratory diseases, diabetes and chronic kidney disease, and neurological disorders (see GBD Results Tool and GBD Compare Tool).

	Death count			Age-standardised death rate		
	Count, 1990	Count, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 1990	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
Non-communicable diseases	2 100 000 (1 900 000 to 2 300 000)	4 700 000 (4 500 000 to 4 900 000)	122.2% (104.6 to 139.9)	720.7 (665.3 to 769)	656.0 (627.3 to 682.7)	-9% (-15.5 to -2.5)
Neoplasms	327 900 (292 000 to 363 000)	933 000 (835 000 to 102 800)	184.7% (151.5 to 219)	100 (89.6 to 111.3)	115.5 (101.8 to 127.4)	15.4% (2 to 31.8)
Oesophageal cancer	16 100 (11 900 to 20 700)	42 300 (33 000 to 54 900)	162.5% (86.7 to 266.3)	5.6 (4.2 to 7.2)	5.7 (4.5 to 7.4)	1.6% (-27.1 to 41.7)
Stomach cancer	24 900 (18 400 to 32 400)	54 300 (39 200 to 66 500)	118.4% (50.9 to 216.2)	8.6 (6.3 to 11.1)	7.3 (5.2 to 8.9)	-15.5% (-42.2 to 20.5)
Liver cancer	42 700 (29 100 to 59 300)	87 000 (59 400 to 122 100)	103.7% (27.4 to 216.6)	13.5 (9.2 to 18.6)	10.9 (7.5 to 15.1)	-19.2% (-49.3 to 25.1)
Liver cancer due to hepatitis B	16 900 (10 900 to 25 100)	31 000 (19 800 to 44 600)	82.9% (7.9 to 201.8)	5 (3.2 to 7.6)	3.5 (2.2 to 5.1)	-29.6% (-58.5 to 16.9)
Liver cancer due to hepatitis C	11 800 (7700 to 16 100)	25 600 (17 000 to 37 400)	116.2% (47.7 to 228)	4.4 (2.9 to 5.9)	3.6 (2.4 to 5.3)	-17% (-44.4 to 27.5)
Liver cancer due to alcohol use	6700 (3800 to 10 400)	14 600 (8900 to 22 400)	117.7% (27.6 to 253.1)	2.2 (1.3 to 3.6)	1.9 (1.2 to 2.9)	-14.7% (-50 to 38.1)
Liver cancer due to NASH	3100 (1900 to 4600)	8700 (5600 to 12 400)	179.4% (81.4 to 325.5)	1.1 (0.7 to 1.6)	1.2 (0.7 to 1.7)	9.8% (-27.9 to 67.5)
Hepatoblastoma	2000 (1200 to 3000)	2400 (1400 to 3900)	21% (-33.2 to 129.4)	0.2 (0.1 to 0.3)	0.1 (0.1 to 0.2)	-35.7% (-64.4 to 21.3)
Liver cancer due to other causes	2100 (1400 to 3000)	4700 (2900 to 7100)	124.2% (49 to 255.8)	0.6 (0.4 to 0.9)	0.5 (0.3 to 0.8)	-11.4% (-40.8 to 39.5)
Larynx cancer	3400 (2400 to 4600)	9300 (7000 to 12 900)	175.1% (79 to 281.7)	1.2 (0.8 to 1.6)	1.3 (0.9 to 1.7)	7.4% (-29.4 to 50)
Tracheal, bronchus, and lung cancer	21 700 (16 600 to 28 000)	71 900 (56 100 to 92 200)	230.7% (151.8 to 374.3)	7.7 (5.9 to 9.9)	10 (7.8 to 12.9)	30.6% (-0.9 to 88.3)
Breast cancer	25 600 (19 300 to 33 300)	129 000 (93 700 to 166 000)	402.7% (213.1 to 617.4)	7.9 (6 to 10.3)	14.8 (10.9 to 19.1)	87.3% (17.6 to 166.2)
Cervical cancer	35 200 (22 700 to 53 000)	107 000 (75 400 to 151 000)	205.4% (93.2 to 408.2)	9.6 (6.3 to 14.6)	11.3 (7.8 to 15.7)	17.2% (-25.1 to 95)
Uterine cancer	2400 (1500 to 3400)	8500 (6000 to 12 600)	259.3% (102.3 to 490.8)	0.8 (0.5 to 1.2)	1.1 (0.8 to 1.7)	37.7% (-22.1 to 128.8)
Prostate cancer	20 700 (14 100 to 28 300)	66 800 (44 700 to 94 900)	222.7% (118.9 to 405)	9.2 (6.2 to 12.6)	11.4 (7.6 to 16.2)	24.5% (-15.9 to 96.6)
Colon and rectum cancer	18 100 (14 200 to 23 100)	67 600 (52 400 to 85 700)	273.7% (183.9 to 418.1)	6.5 (5.1 to 8.3)	9.4 (7.3 to 12)	44.8% (10 to 100.2)
Lip and oral cavity cancer	4700 (3600 to 6100)	13 400 (10 500 to 17 000)	185.9% (98.9 to 308.6)	1.5 (1.2 to 2)	1.7 (1.4 to 2.2)	11.6% (-22.6 to 58.6)
Nasopharynx cancer	3600 (2600 to 4800)	8900 (6500 to 11 700)	144.8% (46.1 to 267.4)	1 (0.7 to 1.3)	0.9 (0.7 to 1.2)	-2.3% (-41.2 to 46.8)
Other pharynx cancer	900 (700 to 1400)	3100 (2200 to 4200)	226.8% (121.7 to 392.9)	0.3 (0.2 to 0.4)	0.4 (0.3 to 0.5)	26.8% (-14 to 90.2)
Gallbladder and biliary tract cancer	2000 (1500 to 2600)	6800 (5100 to 8900)	235.8% (140.6 to 342.7)	0.8 (0.6 to 1)	1 (0.7 to 1.3)	31.1% (-6.4 to 74.4)
Pancreatic cancer	4800 (3700 to 6000)	21 900 (17 500 to 26 800)	351.2% (245.8 to 521.1)	1.8 (1.4 to 2.2)	3.1 (2.5 to 3.8)	75.6% (33.6 to 140.9)
Malignant skin melanoma	1600 (1100 to 2300)	6000 (4000 to 8600)	271.8% (151.1 to 414.6)	0.5 (0.3 to 0.7)	0.7 (0.4 to 0.9)	43% (-2.1 to 98.6)
Non-melanoma skin cancer	600 (400 to 900)	2900 (1600 to 4400)	376.5% (212.4 to 639.9)	0.3 (0.2 to 0.4)	0.5 (0.3 to 0.7)	79.5% (17.4 to 178.2)
Non-melanoma skin cancer (squamous-cell carcinoma)	600 (400 to 900)	2900 (1600 to 4400)	376.5% (212.4 to 639.9)	0.3 (0.2 to 0.4)	0.5 (0.3 to 0.7)	79.5% (17.4 to 178.2)
Ovarian cancer	4700 (3100 to 6700)	24 100 (17 100 to 32 700)	415.1% (206 to 713.9)	1.4 (0.9 to 2)	2.8 (2 to 3.8)	98.7% (19.4 to 216.5)
Testicular cancer	600 (300 to 1000)	1300 (800 to 2000)	136.5% (5.3 to 342.3)	0.1 (0.1 to 0.2)	0.1 (0.1 to 0.2)	-2.3% (-55 to 79.4)
Kidney cancer	2600 (1700 to 3600)	7300 (5000 to 9700)	185.9% (97.9 to 307.4)	0.7 (0.5 to 1)	0.9 (0.6 to 1.2)	22% (-14.3 to 75.3)
Bladder cancer	6700 (5000 to 9100)	16 500 (12 100 to 23 300)	144.4% (72.3 to 254.4)	2.6 (2 to 3.6)	2.6 (1.9 to 3.6)	-2.5% (-30.9 to 39.5)
Brain and CNS cancer	7400 (5600 to 9700)	17 800 (13 200 to 22 800)	139.7% (80.9 to 223)	1.5 (1.1 to 2.1)	1.7 (1.3 to 2.2)	10.9% (-13.4 to 52.2)
Thyroid cancer	2000 (1400 to 2800)	6500 (4800 to 8800)	229.3% (126.5 to 405)	0.5 (0.4 to 0.8)	0.7 (0.5 to 1)	35.9% (-5.6 to 110.8)
Mesothelioma	300 (200 to 400)	1000 (700 to 1400)	269.9% (149.9 to 455.9)	0.1 (0.1 to 0.1)	0.1 (0.1 to 0.2)	45% (-4 to 119)
Eye cancer	3700 (1900 to 7900)	4700 (2700 to 7600)	26.8% (-50.7 to 204.5)	0.7 (0.4 to 1.1)	0.4 (0.2 to 0.6)	-40.5% (-68.6 to 9)
Retinoblastoma	2200 (600 to 6100)	2300 (800 to 5100)	3.5% (-76.2 to 425.8)	0.2 (0.1 to 0.6)	0.1 (0 to 0.3)	-46.4% (-87.7 to 172.4)
Other eye cancers	1500 (900 to 2200)	2400 (1500 to 3800)	61.8% (0.1 to 141.8)	0.4 (0.3 to 0.7)	0.3 (0.2 to 0.4)	-37.8% (-61.1 to -6.2)
Hodgkin lymphoma	4800 (3200 to 6900)	7400 (4700 to 10 300)	52.3% (-2.3 to 140.5)	0.9 (0.6 to 1.4)	0.6 (0.4 to 0.8)	-36.5% (-58.9 to -0.4)
Non-Hodgkin lymphoma	15 100 (11 300 to 19 500)	36 900 (27 300 to 48 800)	144.1% (59.1 to 265.3)	3.7 (2.7 to 4.7)	3.9 (2.8 to 5.1)	5% (-31.9 to 57.7)
Burkitt lymphoma	2000 (1100 to 3100)	2900 (1800 to 5100)	46.5% (-24 to 197.3)	0.3 (0.1 to 0.4)	0.2 (0.1 to 0.3)	-26.9% (-61.8 to 50.1)
Other non-Hodgkin lymphoma	13 100 (9800 to 16 600)	34 000 (25 100 to 44 500)	159% (70 to 290.4)	3.4 (2.5 to 4.3)	3.7 (2.7 to 4.8)	7.3% (-29.8 to 60.8)
Multiple myeloma	1900 (1400 to 2600)	8700 (6400 to 11 800)	348.5% (210.3 to 552.9)	0.7 (0.5 to 0.9)	1.2 (0.9 to 1.6)	73.3% (20.9 to 155.8)
Leukaemia	20 500 (14 900 to 27 600)	37 600 (29 300 to 48 900)	83.7% (28 to 162.3)	4 (2.9 to 5.4)	3.4 (2.7 to 4.4)	-14.6% (-40 to 22.3)
Acute lymphoid leukaemia	10 600 (7000 to 15 200)	16 900 (11 500 to 24 100)	59.7% (6 to 133.2)	1.4 (0.9 to 2.1)	1.1 (0.7 to 1.5)	-24.7% (-50.1 to 10.1)
Chronic lymphoid leukaemia	900 (500 to 1500)	2100 (1400 to 2800)	122.6% (33.1 to 277.3)	0.3 (0.2 to 0.6)	0.3 (0.2 to 0.4)	-8.9% (-44.7 to 53.7)

(Table 2 continues on next page)

	Death count			Age-standardised death rate		
	Count, 1990	Count, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 1990	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
(Continued from previous page)						
Acute myeloid leukaemia	4400 (2800 to 6600)	9000 (5900 to 13 100)	107·2% (35·9 to 240·7)	0·9 (0·6 to 1·4)	0·9 (0·6 to 1·2)	-6·4% (-38·7 to 52)
Chronic myeloid leukaemia	1400 (800 to 2400)	2000 (1200 to 3000)	37·7% (-27·5 to 183·7)	0·4 (0·2 to 0·7)	0·2 (0·1 to 0·3)	-43·2% (-69·9 to 14·2)
Other leukaemia	3200 (1900 to 4800)	7600 (4900 to 10 900)	141·2% (50·4 to 327·3)	0·9 (0·6 to 1·3)	0·9 (0·6 to 1·3)	3·8% (-34·8 to 81·9)
Soft tissue and other extraosseous sarcomas	5800 (3800 to 9700)	11 200 (7300 to 16 300)	93·3% (8·3 to 193·1)	1·2 (0·8 to 1·9)	1 (0·7 to 1·5)	-15·2% (-51·8 to 28)
Malignant neoplasm of bone and articular cartilage	6400 (3700 to 10 400)	12 500 (7100 to 19 100)	96·1% (0·9 to 229·5)	1·2 (0·7 to 1·9)	1 (0·6 to 1·5)	-13·9% (-55·6 to 46·5)
Neuroblastoma and other peripheral nervous cell tumours	500 (300 to 700)	1100 (700 to 1700)	138·4% (47 to 265·5)	0·1 (0 to 0·1)	0·1 (0 to 0·1)	21·4% (-22·9 to 86)
Other malignant neoplasms	11 700 (8800 to 15 500)	21 100 (15 500 to 26 700)	80·2% (16·2 to 165·7)	2·7 (2 to 3·5)	2·2 (1·6 to 2·8)	-19·1% (-47·9 to 17·2)
Other neoplasms	4100 (2600 to 6100)	10 600 (6600 to 15 400)	158·8% (61·8 to 336·5)	1·2 (0·7 to 1·8)	1·3 (0·8 to 1·8)	6·2% (-35·6 to 79·2)
Myelodysplastic, myeloproliferative, and other haemopoietic neoplasms	200 (100 to 300)	600 (400 to 1000)	275·7% (140·3 to 557·6)	0·1 (0 to 0·1)	0·1 (0·1 to 0·2)	46·9% (-6·6 to 156·6)
Other benign and in-situ neoplasms	3900 (2400 to 5800)	10 000 (5900 to 14 900)	153·8% (53·4 to 334·4)	1·1 (0·7 to 1·7)	1·1 (0·7 to 1·7)	3·6% (-38·2 to 80·1)
Cardiovascular diseases	892 000 (786 000 to 1 010 000)	2 000 000 (1 700 000 to 2 200 000)	119·2% (85·9 to 159·6)	354·4 (314·7 to 397·2)	306·2 (266·5 to 340)	-13·6% (-25 to 1·9)
Rheumatic heart disease	27 800 (16 900 to 38 300)	24 300 (14 700 to 34 800)	-12·5% (-53 to 44·9)	7·1 (4·4 to 10)	2·8 (1·8 to 4·0)	-60·3% (-78·3 to -35·6)
Ischaemic heart disease	320 000 (258 000 to 393 000)	801 000 (653 000 to 965 000)	150·7% (81·1 to 231·5)	131·8 (105·6 to 161·7)	126·9 (103·3 to 153·1)	-3·7% (-30·1 to 27·1)
Stroke	379 000 (311 000 to 463 000)	700 000 (544 000 to 863 000)	84·7% (39 to 161·2)	152 (125·1 to 187·3)	109·8 (85·7 to 136·7)	-27·8% (-44·7 to 1)
Ischaemic stroke	168 000 (123 000 to 227 000)	348 000 (251 000 to 461 000)	106·8% (42·5 to 226·5)	78·7 (57·9 to 104)	61·5 (44·7 to 80·2)	-21·9% (-44·3 to 21·6)
Intracerebral haemorrhage	202 000 (151 000 to 266 000)	332 000 (248 000 to 447 000)	64·2% (14·5 to 156·1)	70·7 (52·7 to 92·7)	45·8 (34·1 to 64)	-35·1% (-55·9 to 2·6)
Subarachnoid haemorrhage	8900 (3400 to 22 400)	20 600 (8300 to 47 100)	131·8% (13·4 to 389·6)	2·6 (1 to 6·6)	2·5 (1 to 5·6)	-4·8% (-51·1 to 100·6)
Hypertensive heart disease	86 400 (57 300 to 126 000)	246 000 (170 000 to 337 000)	184·6% (87·4 to 324·4)	38·4 (25·4 to 54·8)	41·2 (28·6 to 56·4)	7·1% (-29·7 to 59·7)
Cardiomyopathy and myocarditis	26 500 (16 800 to 42 000)	53 400 (31 900 to 74 200)	101·4% (9·4 to 240)	7·8 (4·9 to 12·1)	6·6 (3·9 to 9)	-15·9% (-53·7 to 46·2)
Alcoholic cardiomyopathy	300 (100 to 800)	400 (100 to 1300)	33·7% (-64 to 337)	0·1 (0 to 0·2)	0 (0 to 0·2)	-49·6% (-85·7 to 66·6)
Myocarditis	2400 (1100 to 4700)	2200 (900 to 4400)	-5·9% (-68·8 to 98·6)	0·5 (0·2 to 0·9)	0·2 (0·1 to 0·4)	-57·3% (-85·1 to -13·6)
Other cardiomyopathy	23 800 (14 900 to 37 400)	50 700 (30 500 to 70 400)	112·9% (12·3 to 260·8)	7·2 (4·6 to 11·4)	6·3 (3·8 to 8·6)	-12·8% (-52·4 to 51·4)
Atrial fibrillation and flutter	4700 (3600 to 5800)	18 400 (13 900 to 24 100)	295·9% (187·8 to 442)	2·8 (2·1 to 3·6)	3·8 (2·8 to 5)	33·1% (-2·7 to 86·5)
Aortic aneurysm	4700 (2700 to 7400)	14 500 (9300 to 21 600)	206·4% (78·8 to 450·1)	1·9 (1·1 to 3)	2·2 (1·4 to 3·2)	14·2% (-34·5 to 100·9)
Pulmonary arterial hypertension	2700 (1300 to 4700)	3100 (1700 to 5300)	17·4% (-52·6 to 141·3)	0·5 (0·3 to 0·9)	0·3 (0·2 to 0·5)	-39·3% (-71·4 to 14·5)
Lower extremity peripheral arterial disease	2000 (1200 to 3100)	8700 (5400 to 12 500)	338·9% (150·6 to 676)	1 (0·6 to 1·6)	1·6 (1 to 2·3)	57·6% (-9·7 to 178·6)
Endocarditis	7000 (4100 to 11 500)	12 000 (7600 to 18 800)	70·6% (0 to 181·2)	1·8 (1·1 to 2·8)	1·3 (0·8 to 2)	-27·8% (-57 to 16·9)
Non-rheumatic valvular heart disease	4100 (2600 to 6000)	12 600 (8000 to 18 800)	209·8% (79·3 to 380·3)	1·6 (1 to 2·3)	1·9 (1·2 to 2·8)	19% (-31·4 to 90·4)
Non-rheumatic calcific aortic valve disease	1900 (1100 to 3000)	6900 (3800 to 10 800)	263·5% (107·5 to 600·1)	0·8 (0·5 to 1·3)	1·1 (0·6 to 1·7)	36·1% (-21·5 to 152·4)
Non-rheumatic degenerative mitral valve disease	2100 (1200 to 3300)	5400 (2900 to 8800)	158·4% (29 to 371·2)	0·7 (0·4 to 1·1)	0·7 (0·4 to 1·2)	-1·1% (-50·9 to 82·6)
Other non-rheumatic valve diseases	100 (0 to 100)	300 (100 to 500)	282·7% (42·3 to 902·7)	0 (0 to 0)	0 (0 to 0·1)	56·8% (-38·9 to 303·7)
Other cardiovascular and circulatory diseases	27 400 (17 800 to 42 300)	60 600 (38 500 to 84 400)	120·8% (33·1 to 249·2)	7·7 (5 to 11·7)	7·9 (5 to 10·8)	2·2% (-35·3 to 60·1)
Chronic respiratory diseases	122 000 (89 500 to 159 000)	226 000 (178 000 to 295 000)	85·1% (25·9 to 162·3)	46·1 (34·5 to 59·9)	34·8 (27·4 to 45·5)	-24·5% (-47·6 to 5·7)
Chronic obstructive pulmonary disease	62 100 (42 200 to 87 900)	126 000 (93 500 to 168 000)	102·8% (32·4 to 190·3)	27·1 (18·5 to 37·8)	21·4 (15·8 to 28·5)	-20·9% (-48·3 to 12·5)
Pneumoconiosis	700 (300 to 1300)	1600 (800 to 2900)	123·2% (3·7 to 436·7)	0·3 (0·1 to 0·5)	0·3 (0·1 to 0·5)	-11·4% (-58·4 to 114·4)

(Table 2 continues on next page)

	Death count			Age-standardised death rate		
	Count, 1990	Count, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 1990	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
(Continued from previous page)						
Silicosis	300 (100 to 700)	700 (300 to 1500)	148·8% (−8·8 to 718·7)	0·1 (0 to 0·3)	0·1 (0 to 0·2)	−0·3% (−63·8 to 236·3)
Asbestosis	100 (0 to 400)	400 (100 to 800)	151·7% (−5·2 to 654·7)	0·1 (0 to 0·2)	0·1 (0 to 0·1)	−0·5% (−61·4 to 184·2)
Coal workers pneumoconiosis	100 (0 to 200)	200 (100 to 300)	70·5% (−56·8 to 491·9)	0 (0 to 0·1)	0 (0 to 0·1)	−32·3% (−83·3 to 140·8)
Other pneumoconiosis	200 (100 to 500)	400 (200 to 900)	94·6% (−19·5 to 474·2)	0·1 (0 to 0·2)	0·1 (0 to 0·1)	−23·8% (−67·4 to 126·5)
Asthma	47 500 (29 500 to 68 000)	76 500 (53 500 to 110 300)	61·1% (2·6 to 164·9)	16·3 (9·7 to 23·9)	10·7 (7·3 to 15·5)	−34·1% (−59·6 to 7·2)
Interstitial lung disease and pulmonary sarcoidosis	3100 (1000 to 6500)	8800 (4900 to 13 700)	183·4% (33·5 to 469·3)	1·2 (0·4 to 2·6)	1·4 (0·8 to 2·2)	12·3% (−46·8 to 124·4)
Other chronic respiratory diseases	8500 (4800 to 13 200)	12 800 (7000 to 22 600)	51·3% (−15·6 to 151·9)	1·3 (0·7 to 2·1)	1·1 (0·6 to 1·9)	−17·2% (−51·6 to 38·4)
Digestive diseases	246 000 (192 000 to 322 000)	390 000 (308 000 to 474 000)	58·7% (12·8 to 123·6)	78·8 (62·2 to 102·5)	49·2 (38·9 to 59·8)	−37·6% (−55·2 to −13·8)
Cirrhosis and other chronic liver diseases	159 800 (122 100 to 216 000)	244 000 (186 000 to 307 000)	52·7% (2·5 to 115·7)	52·5 (40 to 70·4)	30·2 (23·3 to 37·7)	−42·4% (−60·2 to −18·2)
Chronic hepatitis B including cirrhosis	59 600 (42 700 to 80 700)	91 800 (66 800 to 117 000)	54·1% (3·9 to 121·9)	20·4 (14·6 to 27·4)	11·6 (8·4 to 14·8)	−43·2% (−61·3 to −19·1)
Chronic hepatitis C including cirrhosis	53 000 (38 100 to 71 600)	78 200 (58 000 to 105 000)	47·6% (1 to 107·9)	18·8 (13·8 to 25·6)	10·1 (7·4 to 13·6)	−46·1% (−62·3 to −24·2)
Cirrhosis due to alcohol	16 100 (10 900 to 22 900)	28 000 (19 000 to 39 100)	73·6% (16 to 164·4)	5·5 (3·8 to 7·8)	3·6 (2·5 to 5·2)	−33·7% (−55·8 to 1·4)
Non-alcoholic fatty liver disease including cirrhosis	3400 (2200 to 4900)	9000 (5900 to 12 700)	162·6% (83·2 to 256·4)	1·3 (0·8 to 1·9)	1·3 (0·8 to 1·9)	−2·6% (−32·1 to 34·3)
Cirrhosis due to other causes	27 600 (19 900 to 37 400)	37 000 (26 500 to 49 900)	33·7% (−14·1 to 97·5)	6·5 (4·4 to 9·2)	3·6 (2·5 to 5)	−44·6% (−63·2 to −24·2)
Upper digestive system diseases	36 500 (23 300 to 56 300)	45 100 (31 000 to 64 200)	23·4% (−27 to 113·6)	11·4 (7·3 to 17·2)	5·8 (4 to 8·3)	−48·9% (−69·7 to −9·3)
Peptic ulcer disease	29 700 (17 200 to 48 100)	35 100 (22 200 to 53 700)	18% (−34·7 to 114·3)	9·6 (5·6 to 15·1)	4·7 (3 to 7)	−51·2% (−73·4 to −9·8)
Gastritis and duodenitis	6800 (2600 to 14 700)	10 000 (3900 to 18 600)	46·7% (−23·6 to 182·3)	1·8 (0·7 to 3·9)	1·1 (0·4 to 2)	−36·2% (−66·8 to 24·2)
Appendicitis	2700 (1200 to 5000)	4000 (2100 to 7000)	47·6% (−23·1 to 177·9)	0·7 (0·3 to 1·2)	0·4 (0·2 to 0·8)	−34·3% (−68·2 to 19·4)
Paralytic ileus and intestinal obstruction	23 100 (15 700 to 33 600)	43 300 (29 100 to 58 500)	87·6% (1·7 to 215·5)	6·2 (4·2 to 8·8)	5·1 (3·5 to 6·9)	−17·4% (−53·3 to 40·7)
Inguinal, femoral, and abdominal hernia	4600 (2400 to 7300)	8200 (4900 to 13 800)	79·1% (−16·7 to 327·6)	1·5 (0·8 to 2·3)	1·1 (0·7 to 1·9)	−23% (−64·1 to 81·6)
Inflammatory bowel disease	1700 (1000 to 2700)	4200 (2600 to 6200)	145·5% (25·5 to 335·3)	0·5 (0·3 to 0·8)	0·5 (0·3 to 0·7)	−1·4% (−48·7 to 77·9)
Ulcerative colitis	1400 (900 to 2400)	3500 (2100 to 5300)	142·4% (23·8 to 335)	0·4 (0·3 to 0·7)	0·4 (0·3 to 0·6)	−3·2% (−49·4 to 73·5)
Crohn's disease	300 (100 to 500)	700 (400 to 1100)	162·7% (32 to 439·8)	0·1 (0 to 0·2)	0·1 (0 to 0·1)	8·9% (−45·6 to 122·9)
Vascular intestinal disorders	1400 (800 to 2300)	4200 (2600 to 6100)	194·3% (47·5 to 421·1)	0·6 (0·3 to 0·8)	0·6 (0·4 to 0·9)	16·9% (−38·4 to 104·5)
Gallbladder and biliary diseases	4300 (2800 to 6500)	13 700 (9200 to 20 000)	215·6% (81·5 to 427·7)	1·8 (1·2 to 2·8)	2·3 (1·5 to 3·3)	24% (−27·3 to 107·5)
Pancreatitis	5100 (2900 to 8000)	11 900 (8200 to 17 400)	135·1% (34·3 to 326·1)	1·6 (0·9 to 2·5)	1·5 (1 to 2·1)	−8·2% (−47·1 to 70)
Other digestive diseases	6500 (3400 to 11 900)	11 400 (6500 to 17 900)	75·2% (−5·3 to 217·7)	2·1 (1·1 to 3·7)	1·5 (0·9 to 2·3)	−27·7% (−60·6 to 29·9)
Neurological disorders	73 200 (42 500 to 126 000)	214 000 (121 000 to 396 000)	191·9% (133·4 to 259·8)	30·7 (13·9 to 65)	35·3 (16·6 to 73·6)	15·2% (0 to 37·6)
Alzheimer's disease and other dementias	33 900 (7800 to 88 000)	115 000 (27 100 to 297 000)	238·1% (202·8 to 287·7)	21 (4·8 to 55·8)	24·2 (5·9 to 62·6)	15% (2·2 to 33·2)
Parkinson's disease	7600 (6300 to 9100)	27 400 (22 600 to 32 500)	259·2% (200·7 to 343)	4 (3·3 to 4·7)	5·3 (4·3 to 6·3)	32·7% (11·3 to 64·8)
Idiopathic epilepsy	30 900 (20 800 to 42 400)	62 800 (44 200 to 88 400)	103·4% (36·6 to 240·5)	5·4 (3·6 to 7·6)	5 (3·5 to 7)	−8·1% (−37·8 to 52·1)
Multiple sclerosis	200 (100 to 300)	900 (400 to 1600)	447·1% (84·4 to 1841·5)	0 (0 to 0·1)	0·1 (0 to 0·2)	112·2% (−27·6 to 632·6)
Motor neuron disease	100 (100 to 200)	700 (400 to 1000)	528·6% (238·7 to 1012·8)	0 (0 to 0)	0·1 (0 to 0·1)	151·8% (41·6 to 331·8)
Other neurological disorders	500 (300 to 800)	7200 (4900 to 10 400)	1314·5% (743 to 2310·1)	0·1 (0·1 to 0·2)	0·7 (0·4 to 1)	440·4% (222·7 to 807·6)
Substance use disorders	8200 (6000 to 11 400)	22 800 (16 600 to 31 200)	177% (71·5 to 348·6)	2·1 (1·6 to 3)	2·3 (1·7 to 3·2)	7·5% (−32·9 to 73·7)
Alcohol use disorders	5800 (3700 to 8700)	14 300 (9600 to 21 600)	144·9% (28·7 to 354·3)	1·6 (1 to 2·4)	1·5 (1 to 2·3)	−3·6% (−48·9 to 77·5)
Drug use disorders	2400 (1500 to 3700)	8500 (5200 to 13 400)	254·4% (80·7 to 556·1)	0·6 (0·3 to 0·8)	0·8 (0·5 to 1·2)	39·6% (−28·6 to 154·3)

(Table 2 continues on next page)

	Death count			Age-standardised death rate		
	Count, 1990	Count, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 1990	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
(Continued from previous page)						
Opioid use disorders	1900 (1100 to 3100)	6900 (3800 to 11 500)	269·1% (70·6 to 616·8)	0·4 (0·3 to 0·7)	0·6 (0·3 to 1)	44·2% (–32·7 to 173·6)
Cocaine use disorders	300 (100 to 500)	700 (300 to 1500)	178% (15 to 626·1)	0·1 (0 to 0·1)	0·1 (0 to 0·1)	11·4% (–53·6 to 182)
Other drug use disorders	300 (100 to 400)	700 (400 to 1300)	191·7% (27·5 to 550·4)	0·1 (0 to 0·1)	0·1 (0 to 0·1)	19·3% (–47·3 to 161·8)
Diabetes and kidney diseases	196 000 (160 000 to 240 000)	540 000 (451 000 to 634 000)	175·5% (113·4 to 264·9)	71·1 (57·2 to 88·2)	79·4 (66·1 to 93·1)	11·5% (–13·2 to 48·7)
Diabetes mellitus	84 500 (64 800 to 109 000)	245 000 (190 000 to 314 000)	190·2% (109·7 to 309·3)	31·7 (23·8 to 41·3)	37·2 (28·5 to 47·9)	17·2% (–17·2 to 68·1)
Type 1 diabetes mellitus	6200 (4200 to 8600)	7700 (4900 to 11 000)	24·2% (–11·9 to 82·3)	0·8 (0·6 to 1·2)	0·5 (0·3 to 0·7)	–40·7% (–57·5 to –8·7)
Type 2 diabetes mellitus	78 300 (59 300 to 102 000)	238 000 (184 000 to 303 000)	203·4% (114·7 to 330·4)	30·9 (23·1 to 40·4)	36·7 (28·2 to 47·2)	18·8% (–16·6 to 70·5)
Chronic kidney disease	110 000 (82 400 to 139 000)	293 000 (224 000 to 359 000)	166·2% (81·4 to 289·8)	39 (29·2 to 48·4)	42 (32·1 to 51·5)	7·5% (–26·1 to 55·9)
Chronic kidney disease due to hypertension	33 000 (23 600 to 42 300)	96 800 (71 700 to 124 000)	193% (102·3 to 320·4)	15·2 (11·1 to 19·3)	16·5 (12·2 to 21·1)	8·6% (–24·8 to 56·1)
Chronic kidney disease due to glomerulonephritis	24 900 (18 600 to 33 400)	57 000 (41 800 to 74 500)	129% (56·9 to 235·6)	6·4 (4·8 to 8·5)	6·2 (4·6 to 8·2)	–2·8% (–32·2 to 42·8)
Chronic kidney disease due to other and unspecified causes	31 700 (22 100 to 41 000)	78 900 (58 100 to 102 000)	149·1% (62·5 to 274)	9·7 (6·6 to 12·8)	10·3 (7·6 to 13·3)	7% (–28·6 to 57·3)
Chronic kidney disease due to type 1 diabetes mellitus	4800 (3300 to 6500)	13 400 (8900 to 18 200)	178·8% (100 to 307·2)	1·3 (0·9 to 1·8)	1·4 (0·9 to 1·9)	9·6% (–21·4 to 59·3)
Chronic kidney disease due to type 2 diabetes mellitus	15 500 (10 400 to 20 800)	46 600 (32 800 to 60 900)	199·9% (112·7 to 325·1)	6·5 (4·3 to 8·8)	7·5 (5·2 to 10)	5·6% (–27·7 to 77·6)
Acute glomerulonephritis	1400 (400 to 3300)	1700 (500 to 4000)	23·4% (–43·9 to 305·9)	0·4 (0·1 to 0·9)	0·2 (0·1 to 0·5)	–46·3% (–76·4 to 68·7)
Musculoskeletal disorders	4100 (2700 to 5700)	10 400 (7000 to 14 200)	154·2% (71·1 to 290·3)	1·3 (0·9 to 1·8)	1·4 (0·9 to 1·9)	1·9% (–31 to 55·1)
Rheumatoid arthritis	2100 (1300 to 3000)	4600 (3000 to 6500)	117·6% (28·1 to 255·6)	0·8 (0·5 to 1·1)	0·7 (0·5 to 1)	–13% (–47·7 to 41·7)
Other musculoskeletal disorders	1900 (1100 to 2900)	5700 (3200 to 8700)	194·6% (89·5 to 408·6)	0·5 (0·3 to 0·8)	0·7 (0·3 to 1)	24·9% (–19 to 122·2)
Skin and subcutaneous diseases	7600 (4900 to 11 100)	27 400 (17 700 to 40 200)	260·8% (98·8 to 553·1)	2·4 (1·6 to 3·6)	3·7 (2·4 to 5·4)	53% (–15·3 to 173·8)
Bacterial skin diseases	4200 (1400 to 7400)	15 400 (8000 to 25 800)	266·7% (64·7 to 1021·4)	1·2 (0·3 to 2·3)	1·9 (1 to 3·1)	59·1% (–35·2 to 450·9)
Cellulitis	1900 (500 to 3600)	7800 (3400 to 14 100)	313·7% (56·1 to 1499·9)	0·6 (0·2 to 1·4)	1 (0·4 to 1·9)	58·7% (–45·5 to 617·4)
Pyoderma	2300 (900 to 4200)	7600 (3700 to 13 500)	228·7% (51·2 to 865·2)	0·5 (0·2 to 1)	0·8 (0·4 to 1·5)	59·6% (–35·8 to 486·3)
Decubitus ulcer	2600 (1400 to 4300)	10 000 (5400 to 16 200)	279·2% (85·8 to 728·8)	1 (0·5 to 1·6)	1·5 (0·9 to 2·5)	53·3% (–19·5 to 221·1)
Other skin and subcutaneous diseases	700 (100 to 2800)	2000 (400 to 6200)	162·6% (–69·6 to 3356·4)	0·2 (0 to 0·8)	0·3 (0 to 0·8)	19·6% (–86·5 to 1470·6)
Other non-communicable diseases	241 000 (185 000 to 309 000)	386 000 (303 000 to 527 000)	60·2% (17·5 to 114·4)	33·6 (26·5 to 44·5)	28·4 (23 to 38·7)	–15·5% (–32 to 9·2)
Congenital birth defects	150 000 (104 000 to 206 000)	217 000 (154 000 to 296 000)	45·6% (–12·2 to 134·3)	13·4 (9·2 to 18·3)	10·8 (7·7 to 14·7)	–18·9% (–51·2 to 30·3)
Neural tube defects	18 400 (9100 to 32 000)	18 900 (10 200 to 32 900)	2·4% (–52·4 to 123·3)	1·5 (0·8 to 2·7)	0·9 (0·5 to 1·6)	–41·3% (–72·5 to 28·2)
Congenital heart anomalies	76 000 (50 900 to 110 900)	96 600 (65 300 to 136 000)	27·2% (–23·5 to 112·5)	6·9 (4·6 to 10)	4·8 (3·3 to 6·8)	–30·2% (–58 to 15·5)
Orofacial clefts	3600 (300 to 12 800)	1900 (300 to 7100)	–47% (–82·1 to 153·3)	0·3 (0 to 1)	0·1 (0 to 0·3)	–69·1% (–89·6 to 47·6)
Down syndrome	6200 (3000 to 11 500)	13 200 (6600 to 22 600)	111·9% (–2·5 to 360·8)	0·6 (0·3 to 1·1)	0·7 (0·3 to 1·2)	12·4% (–48·3 to 143)
Other chromosomal abnormalities	3900 (2000 to 6900)	8800 (4500 to 16 800)	124·4% (–0·7 to 449·5)	0·3 (0·2 to 0·6)	0·4 (0·2 to 0·8)	27·2% (–43·3 to 207·7)
Congenital musculoskeletal and limb anomalies	2200 (1100 to 4200)	3200 (1700 to 5900)	42·3% (–35·2 to 284)	0·2 (0·1 to 0·4)	0·2 (0·1 to 0·3)	–20·5% (–64·1 to 114·5)
Urogenital congenital anomalies	2900 (1100 to 6600)	5700 (2000 to 12 800)	93·5% (–41·2 to 591)	0·3 (0·1 to 0·6)	0·3 (0·1 to 0·7)	5·7% (–65·4 to 241·6)
Digestive congenital anomalies	15 900 (6700 to 29 700)	29 900 (14 100 to 50 500)	88·3% (1 to 288·1)	1·3 (0·6 to 2·5)	1·4 (0·7 to 2·4)	8·4% (–41·8 to 123·9)
Other congenital birth defects	20 900 (7400 to 41 800)	40 400 (15 900 to 85 200)	93·5% (4·3 to 263·1)	1·9 (0·7 to 3·7)	2 (0·8 to 4·2)	6·9% (–42·2 to 97·5)
Urinary diseases and male infertility	20 100 (16 700 to 24 300)	44 500 (37 300 to 52 700)	121% (76·2 to 193·9)	7 (5·7 to 8·6)	6·3 (5·3 to 7·4)	–10·6% (–28·7 to 19·3)
Urinary tract infections and interstitial nephritis	12 700 (8900 to 16 500)	26 700 (18 900 to 34 500)	110·7% (43·4 to 194)	4·3 (2·9 to 5·6)	3·6 (2·5 to 4·8)	–14·8% (–43·8 to 20·7)
Urolithiasis	600 (400 to 900)	1900 (1300 to 2700)	213·8% (91 to 426·8)	0·2 (0·1 to 0·3)	0·2 (0·2 to 0·4)	20·6% (–30·1 to 101·6)
Other urinary diseases	6800 (4100 to 10 300)	15 800 (9300 to 24 500)	131·8% (45·1 to 297)	2·5 (1·5 to 3·8)	2·4 (1·4 to 3·6)	–6% (–42·2 to 64·7)

(Table 2 continues on next page)

	Death count		Age-standardised death rate			
	Count, 1990	Count, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 1990	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
(Continued from previous page)						
Gynaecological diseases	1400 (600 to 2500)	3700 (1800 to 6700)	172.6% (2.5 to 576.8)	0.3 (0.2 to 0.6)	0.4 (0.2 to 0.7)	9.9% (-57.5 to 173.2)
Uterine fibroids	300 (100 to 600)	1000 (400 to 2100)	266.8% (11.9 to 967.1)	0.1 (0 to 0.2)	0.1 (0 to 0.2)	39.5% (-55.7 to 305.2)
Endometriosis	0 (0 to 0)	0 (0 to 100)	605.8% (-22 to 9996.8)	0 (0 to 0)	0 (0 to 0)	184.4% (-69.2 to 3834.9)
Genital prolapse	200 (100 to 500)	700 (300 to 1400)	208.6% (17.8 to 806.1)	0.1 (0 to 0.2)	0.1 (0 to 0.2)	17.4% (-52.5 to 228.2)
Other gynaecological diseases	900 (400 to 1600)	2000 (900 to 3600)	131.3% (-14.1 to 488)	0.2 (0.1 to 0.4)	0.2 (0.1 to 0.3)	-4.7% (-63.4 to 147)
Haemoglobinopathies and haemolytic anaemias	41 700 (22 600 to 79 500)	74 200 (34 600 to 154 300)	77.8% (9.7 to 199.4)	8.9 (4.7 to 17.9)	6.8 (3.1 to 14.2)	-24.2% (-54.1 to 23.7)
Thalassaemias	3400 (2000 to 5800)	5000 (2600 to 9700)	46.4% (-10.8 to 176)	0.4 (0.2 to 0.6)	0.3 (0.1 to 0.6)	-23.2% (-53.6 to 39.9)
Sickle cell disorders	25 900 (13 600 to 51 600)	47 700 (21 400 to 103 600)	83.8% (13.5 to 221)	3.5 (1.8 to 7)	3 (1.3 to 6.5)	-14.5% (-47.1 to 48)
G6PD deficiency	3300 (1700 to 6000)	6300 (2800 to 13 100)	90.6% (15.1 to 238.9)	0.9 (0.4 to 1.7)	0.8 (0.3 to 1.6)	-15.7% (-48.9 to 45.1)
Other haemoglobinopathies and haemolytic anaemias	9100 (4700 to 18 000)	15 300 (6900 to 33 000)	67.6% (1.9 to 166.2)	4.2 (2.1 to 9)	2.8 (1.2 to 6.1)	-34.1% (-60.1 to 6.8)
Endocrine, metabolic, blood, and immune disorders	11 000 (7100 to 16 500)	33 500 (21 500 to 50 700)	205.5% (89.9 to 414.4)	2.6 (1.7 to 3.8)	3.6 (2.4 to 5.3)	38.2% (-12.8 to 126.5)
Thyroid diseases	3700 (2300 to 6000)	10 200 (6500 to 15 200)	173.4% (48.7 to 373.3)	1 (0.6 to 1.5)	1.2 (0.7 to 1.7)	18.8% (-37.2 to 104.5)
Other endocrine, metabolic, blood, and immune disorders	7200 (4600 to 11 300)	23 200 (14 000 to 34 300)	222.2% (95.7 to 463.9)	1.6 (1.1 to 2.4)	2.4 (1.5 to 3.5)	50% (-6 to 160.3)
Sudden infant death syndrome	16 600 (9200 to 26 100)	11 400 (6000 to 18 600)	-31.4% (-59 to 27.5)	1.3 (0.7 to 2.1)	0.5 (0.3 to 0.9)	-60% (-76.1 to -25.7)

Values in parentheses are 95% uncertainty intervals. G6PD=glucose-6-phosphate dehydrogenase. NASH=non-alcoholic steatohepatitis.

Table 2: Non-communicable disease death counts and age-standardised death rates in 2023, and percentage changes from 1990 to 2023 in Africa, all ages and sexes combined

The five leading Level 3 causes of death in Africa in 2023 were ischaemic heart disease (95% UI 801 000 [653 000–965 000]), stroke (700 000 [544 000–863 000]), chronic kidney disease (293 000 [224 000–359 000]), hypertensive heart disease (246 000 [170 000–337 000]), and diabetes (245 000 [190 000–314 000]) for all sexes and ages (table 2; appendix 2 p 139).

In 1990, stroke was the leading Level 3 cause in terms of age-standardised death rate, followed by ischaemic heart disease. By 2023, this ranking had reversed, with ischaemic heart disease and stroke occupying the first and second positions, respectively. The death rate for ischaemic heart disease decreased from 131.8 deaths (95% UI 105.6–161.7) per 100 000 population in 1990 to 126.9 (103.3–153.1) in 2023. Similarly, stroke-related mortality declined from 152.0 deaths (125.1–187.3) per 100 000 in 1990 to 109.8 (85.7–136.7) in 2023 (table 2). Despite these downward trends, the age-standardised death rates for both ischaemic heart disease and stroke in Africa remain higher than the corresponding global averages in 2023 (table 2; GBD Results Tool and GBD Compare Tool).

Across Africa, notable shifts in the rankings of leading causes of age-standardised mortality were observed between 1990 and 2023. The most pronounced declines in age-standardised death rates were recorded for rheumatic heart disease, which decreased from 7.1 deaths (95% UI 4.4–10.0) per 100 000 population in 1990 to 2.8 (1.8–4.0) per 100 000 in 2023; sudden infant death syndrome (from 1.3 [0.7–2.1] per 100 000 to 0.5 [0.3–0.9] per 100 000); upper digestive system diseases (from 11.4 [7.3–17.2] per 100 000 to 5.8 [4.0–8.3] per 100 000); acute glomerulonephritis (from 0.4 [0.1–0.9] per 100 000 to 0.2 [0.1–0.5] per 100 000); and cirrhosis and other chronic liver diseases (from 52.5 [40.0–70.4] per 100 000 to 30.2 [23.3–37.7] per 100 000). Conversely, several conditions showed substantial increases in age-standardised death rates over the same period, including other neurological disorders, motor neuron disease, multiple sclerosis, ovarian cancer, and breast cancer, all of which rose in rank among the leading causes of death between 1990 and 2023 (table 2). In 2023, deaths and DALYs due to NCDs in Africa varied by sex. Among females, the leading Level 3 causes of death were stroke, ischaemic heart disease, hypertensive heart disease, chronic kidney disease, breast cancer, and diabetes. Among males, the leading causes were ischemic heart disease, stroke, cirrhosis and other chronic liver diseases, chronic kidney disease, diabetes, and congenital birth defects (appendix 2 pp 36–60).

In 2023, the five leading Level 3 causes of DALYs of NCDs in Africa, across all ages and both sexes combined, were congenital defects (20.5 million [95% UI 14.8–27.3]), ischaemic heart disease (20.4 million [16.7–24.7]), stroke (19.2 million [15.1–23.9]), diabetes (11.3 million [9.09–13.6]), and anxiety disorders (11.0 million [6.75–16.7]; appendix 2 pp 60–107, 140).

In 2023, the five leading Level 2 causes of YLDs in Africa across all ages and sexes were mental disorders

(30.9 million [95% UI 22.0–42.2]), musculoskeletal disorders (17.1 million [12.5–22.7]), other NCDs (14.0 million [9.87–19.1]), neurological disorders (9.79 million [6.90–13.4]), and sense organ diseases (9.17 million [6.47–12.3]; appendix 2 pp 108–123). In 2023, the six leading Level 3 causes of YLDs due to NCDs in Africa across all ages and sexes were anxiety disorder (11.0 million [6.75–16.7]), depressive disorder (10.1 million [6.75–14.6]), low back pain (8.57 million [6.03–11.5]), headache disorder (6.79 million [4.60–9.38]), age-related and other hearing loss (6.22 million [4.36–8.27]), and gynaecological disorder (5.74 million [3.91–7.98]; appendix 2 pp 108–123, 141).

Between 1990 and 2023, the highest percentage increases in age-standardised YLD rates for Level 3 causes were observed in other neurological disorders (152.0% [95% UI 106.8–210.8]), breast cancer (130.2% [48.6–230.8]), thyroid cancer (107.2% [29.2–272.0]), ovarian cancer (105.8% [22.4–235.0]), malignant skin melanoma (90.8% [17.6–205.7]), and uterine cancer (88.6% [5.0–206.4]) across all ages and sexes in Africa (appendix 2 pp 108–123). For the same period, the greatest declines in age-standardised YLD rates at Level 3 of the cause hierarchy were observed for cirrhosis and other chronic liver diseases (–31.7% [–35.1 to –28.5]), pneumoconiosis (–27.0% [–30.7 to –23.1]), and fungal skin diseases (–21.7% [–24.5 to –19.4]), with point declines also recorded for liver cancer (–22.3% [–53.3 to 21.6]) and Hodgkin lymphoma (–20.3% [–49.8 to 27.1]). (appendix 2 pp 108–123).

Deaths and DALYs due to NCD risk factors in Africa are presented in table 3 and appendix 2 (pp 124–131, 142–143). In aggregate, 92.7 million (95% UI 84.0–101) DALYs, corresponding to 35.1% (32.4–38.2) of all NCD DALYs, and 2.70 million (2.50–2.90) deaths, corresponding to 57.4% (54.2–60.4) of all NCD deaths, were attributable to the 88 risk factors included in GBD 2023. Between 1990 and 2023, DALYs attributable to metabolic risks increased by 155.2% (123.9 to 191.2; table 3). To compare with the global estimates, 63.0% (54.2–65.4) of all NCD deaths and 44.8% (41.9–47.7) of global NCD DALYs were attributable to the 88 risk factors included in GBD 2023 (see GBD Results Tool).

In 2023, the five leading Level 2 risk factors in Africa according to number of attributable deaths were high systolic blood pressure, accounting for 1.23 million (95% UI 1.00–1.46) deaths, or 26.2% (21.6–30.9) of total from NCDs in Africa, followed by dietary risks (693 000 deaths [238 000–1 011 000]; 14.7% [5.1–21.6]), air pollution (667 000 deaths [541 000–796 000]; 14.2% [11.6–16.9]), high fasting plasma glucose (535 000 deaths [449 000–626 000]; 11.4% [9.5–13.3]), and high BMI (526 000 deaths [316 000–717 000]; 11.2% [6.7–15.3]; table 3; appendix 2 pp 136–137).

The leading Level 2 attributable risk factors for NCD deaths in Africa showed slight differences by sex. While the top three risk factors were high systolic blood pressure, dietary risks, and air pollution in both males and females, these were followed by high fasting plasma glucose, kidney dysfunction, and tobacco use in males, and by high BMI, high fasting plasma glucose, and kidney dysfunction in

females (appendix 2 pp 124–131). The contribution of attributable risk factors to NCD deaths and DALYs also varied across countries. The rankings of Level 2 attributable risk factors for deaths and DALYs across African nations in 2023 are presented in appendix 2 (pp 146–147).

Discussion

This study provides a longitudinal assessment of the burden and temporal trends of NCDs in Africa over the period 1990–2023. The findings highlight a sustained epidemiological transition, marked by a substantial rise in the overall NCD burden and increasing prevalence of metabolic risk factors, with pronounced heterogeneity across regions and countries.

We found that age-standardised incidence rates of NCDs showed only a slight decline, substantially smaller than the reductions observed in NCD mortality and DALY rates, and all such declines across Africa remained well below the magnitude of global improvements over the past three decades.¹⁶

This divergence—a slight decline of incidence with modest reductions in mortality—suggests modest improvements in case-fatality rates, likely attributable to advances in clinical management and strengthening of health system capacity. Nevertheless, progress in reducing premature NCD mortality remains inadequate; the decline in death due to NCDs in Africa by 9.0% (2.5–15.5) between 1990 and 2023 suggests that Africa is not on course to achieve UN SDG target 3.4, which calls for a one-third reduction in premature NCD deaths by 2030 compared with 2015 rates. These findings underscore the urgent need for accelerated policy action, investment in prevention, and decentralised models of primary health care,¹⁸ to confront the escalating NCD crisis across the continent.⁴

We found that NCD-attributable deaths accounted for approximately 45% of all deaths (4.70 million [4.47–4.93] of 10.48 million [10.39–10.58]) and NCD-attributable DALYs represented 38% of all DALYs (263 million [234–293] of 688 million [651–731]) in Africa in 2023, despite NCDs accounting for nearly two-thirds of total DALYs globally (1.80 billion [1.63–2.03] of 2.80 billion [2.57–3.08]; see GBD Results Tool). This pattern reflects the continent's triple burden of disease, with NCDs rising alongside persistent communicable, maternal, neonatal, and nutritional conditions, as well as injuries.^{16,19} However, declines in NCD-related deaths (–9.0 [–15.5 to –2.5]) and DALYs (–6.4% [–12.0 to –1.2]) in Africa have lagged considerably behind reductions observed at the global level for deaths (–30.9% [–32.8 to –28.3]) and DALYs (–19.2 [–22.5 to –15.8]) between 1990 and 2023. These findings highlight the growing challenge of NCDs in resource-constrained settings, where health systems remain under pressure from competing priorities. The global health community should prioritise equitable NCD-control efforts, ensuring that prevention, early detection, and treatment strategies are adapted to the realities of African populations. Without

	DALY count		Age-standardised DALY rate		Death count		Age-standardised death rate	
	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
All risk factors	92 700 (84 000 to 101 000)	147.1% (127.1 to 171.7)	11 144.6 (10 210.8 to 12 034)	-3.6% (-11.8 to 5.1)	2700 (2500 to 2900)	144.8% (121.7 to 169.5)	413.6 (387.5 to 437.7)	-6.1% (-14.5 to 2.8)
Environmental and occupational risks	29 800 (24 000 to 35 400)	124.4% (97.2 to 153.4)	3932.5 (3269.7 to 4584)	-12.4% (-22.6 to -1.2)	1020 (857 to 1180)	128.9% (97.2 to 162.5)	164.9 (137.7 to 190.1)	-12% (-23.7 to 1.5)
Air pollution	18 200 (14 800 to 21 400)	110.4% (81 to 144.6)	2480 (2015.6 to 2927.3)	-18.7% (-29.4 to -6.3)	667 (541 to 796)	111.6% (81.8 to 149.1)	108.1 (87.3 to 129.5)	-19.3% (-30.1 to -5.1)
Particulate matter pollution	18 040 (14 700 to 21 300)	110% (80.6 to 144.2)	2457.4 (1991.8 to 2913.1)	-19% (-29.6 to -6.5)	660 (535 to 792)	110.8% (81.1 to 148.2)	106.9 (85.7 to 128.7)	-19.6% (-30.4 to -5.5)
Nitrogen dioxide pollution	40 (-50 to 170)	85.1% (72.7 to 95.5)	2.3 (-2.4 to 8.9)	-13.8% (-19.5 to -8.9)	0 (0 to 0)	0% (0 to 0)	0 (0 to 0)	0% (0 to 0)
Ambient ozone pollution	300 (60 to 550)	186.7% (85.7 to 328)	44 (8.8 to 81.7)	14% (-26.1 to 69)	14.2 (2.8 to 26.6)	206.8% (98.1 to 356.4)	2.4 (0.5 to 4.6)	20.6% (-22.6 to 79.3)
Non-optimal temperature	3010 (2450 to 3880)	98% (71 to 134.7)	397.5 (325.4 to 509)	-17.9% (-27.5 to -4.4)	123 (100 to 156)	116.4% (91.2 to 150.8)	19.6 (16.1 to 24.8)	-14.9% (-24.3 to -1.5)
High temperature	1110 (620 to 1800)	184.3% (116.8 to 319.6)	143.4 (78.4 to 233.3)	19.3% (-6.3 to 75.6)	43.9 (24.1 to 71.3)	209.8% (142.9 to 349.5)	6.9 (3.8 to 11.2)	24.6% (-1.8 to 80.8)
Low temperature	1940 (1750 to 2160)	69.4% (46.9 to 96.1)	258.6 (233.2 to 284.6)	-29.7% (-37.9 to -20.3)	802 (72.1 to 88.1)	86.6% (65.5 to 111.5)	12.9 (11.5 to 14.2)	-26.9% (-34.7 to -17.6)
Other environmental risks	8370 (5770 to 10 900)	172.2% (118.4 to 240.1)	1174.5 (804.5 to 1538.1)	8.1% (-12.8 to 34.4)	352 (242 to 464)	189.9% (132.5 to 264.8)	58.3 (39.4 to 76.6)	11.6% (-10.9 to 40.6)
Residential radon	80 (-30 to 210)	201.8% (125.9 to 336)	9.7 (-4 to 26.3)	18.4% (-10.4 to 71)	2.7 (-1.1 to 7.4)	207.5% (134.1 to 345.2)	0.4 (-0.2 to 1)	20.9% (-7.3 to 76.2)
Lead exposure	8300 (5750 to 10 900)	171.9% (118.1 to 240.1)	1164.8 (810.9 to 1531.3)	8% (-12.9 to 34.6)	350 (242 to 462)	189.7% (130.7 to 264.7)	57.9 (39.3 to 76.4)	11.6% (-11.2 to 40.7)
Occupational risks	3790 (370 to 7260)	141.5% (112.9 to 180.3)	380.4 (63.6 to 701.9)	-8.2% (-18.8 to 11.4)	25.1 (17.9 to 34.6)	98.3% (45.4 to 166)	3.6 (2.5 to 5.1)	-21.8% (-42.1 to 5.3)
Occupational carcinogens	260 (180 to 340)	196.9% (133.4 to 288.8)	31.2 (22.1 to 42.2)	16.4% (-9.3 to 53.7)	8.8 (6.3 to 11.9)	202.7% (133.3 to 301)	1.2 (0.9 to 1.7)	18.1% (-10.6 to 57.5)
Occupational asthmagens	430 (320 to 590)	83.2% (33 to 159.6)	40.2 (29.1 to 55.1)	-32% (-52.1 to 0)	7.1 (4.7 to 10.8)	47.5% (-8.3 to 157.3)	0.8 (0.5 to 1.3)	-43.4% (-65.6 to 0.4)
Occupational particulate matter, gases, and fumes	260 (80 to 490)	90.8% (33.4 to 161.1)	37.3 (11.2 to 69.8)	-24.6% (-47.5 to 3.5)	9.2 (2.7 to 18.0)	86.6% (19.7 to 176.9)	1.6 (0.5 to 3)	-26.2% (-52.9 to 9.1)
Occupational noise	1290 (890 to 1740)	153.6% (149.3 to 158.1)	127.7 (89.2 to 170.1)	-3.3% (-4.8 to -1.9)	0 (0 to 0)	0% (0 to 0)	0 (0 to 0)	0% (0 to 0)
Occupational ergonomic factors	1560 (-1860 to 4550)	157.4% (37.2 to 238.8)	144.1 (-170 to 421.1)	-2% (-48.6 to 28.3)	0 (0 to 0)	0% (0 to 0)	0 (0 to 0)	0% (0 to 0)
Behavioural risks	45 100 (34 200 to 54 000)	142.2% (113.8 to 179.3)	5089.8 (3713.4 to 6079.8)	-8.1% (-18.5 to 4.2)	1200 (822 to 1470)	131.4% (103 to 164.3)	172.1 (117.1 to 216.8)	-12.3% (-23.5 to 0)
Child and maternal malnutrition	70 (40 to 110)	-24.1% (-55.4 to 46.8)	3.2 (1.7 to 5.3)	-55% (-73.6 to -13)	0.8 (0.4 to 1.3)	-24.1% (-55.4 to 46.8)	0 (0 to 0.1)	-55% (-73.6 to -13)
Low birthweight and short gestation	70 (40 to 110)	-24.1% (-55.4 to 46.8)	3.2 (1.7 to 5.3)	-55% (-73.6 to -13)	0.8 (0.4 to 1.3)	-24.1% (-55.4 to 46.8)	0 (0 to 0.1)	-55% (-73.6 to -13)
Tobacco	10 900 (8740 to 13 300)	107% (60.8 to 157.3)	1329.5 (1078.8 to 1620.8)	-20.1% (-38.9 to 0.7)	328 (267 to 395)	103.7% (56.7 to 159.2)	46.7 (38.1 to 56)	-22.1% (-40.3 to -1.1)

(Table 3 continues on next page)

	DALY count		Age-standardised DALY rate		Death count		Age-standardised death rate	
	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
(Continued from previous page)								
Smoking	8020 (6030 to 10 600)	103·5% (46·1 to 172·9)	970·9 (736 to 1287·3)	-21·8% (-44·6 to 7·3)	234 (179 to 309)	99·1% (39·9 to 175·5)	32·2 (24·4 to 42·6)	-23·8% (-47·8 to 7·1)
Secondhand smoke	3100 (2430 to 3900)	114·2% (80·1 to 158·8)	388·8 (304·5 to 488·3)	-16·6% (-29·6 to 0·5)	101 (78·4 to 128)	112·3% (77·4 to 158·5)	15·4 (12 to 19·4)	-19·1% (-32·7 to -1·7)
Chewing tobacco	170 (70 to 350)	93·7% (-25·6 to 412·7)	21·2 (8·5 to 44·6)	-25% (-71·2 to 103·1)	6·0 (2·3 to 12·6)	96·1% (-24·9 to 441·4)	0·9 (0·3 to 1·9)	-26·1% (-71·6 to 109·5)
High alcohol use	3870 (2950 to 5070)	125·4% (80·7 to 176)	392·1 (301·1 to 509·6)	-13·5% (-30·6 to 9)	82·6 (59·4 to 113)	121·2% (69·6 to 197·1)	10·2 (7·5 to 13·9)	-15% (-34·3 to 12·1)
Drug use	1580 (1240 to 1980)	205·3% (144·6 to 284·4)	131 (103·6 to 165·1)	27·1% (1·6 to 60·6)	19·9 (13·9 to 27·9)	332·3% (192·5 to 545·3)	2·1 (1·4 to 2·9)	75% (22·2 to 155·6)
Dietary risks	19 900 (6240 to 28 500)	129·6% (82 to 185·3)	2510 (837 to 3621·4)	-12·0% (-30·4 to 7·7)	693 (238 to 1010)	130% (79·4 to 182·8)	105 (37·7 to 154·1)	-12·5% (-31 to 9)
Diet low in fruits	5900 (2730 to 9410)	118·9% (49·9 to 211·5)	718·6 (341·5 to 1152·1)	-16·2% (-42·7 to 19·1)	196 (96·5 to 315)	120·4% (48·6 to 212·6)	28·8 (14·9 to 46·7)	-16·2% (-43·4 to 18·3)
Diet low in vegetables	5180 (2650 to 7960)	105·2% (54·2 to 183·6)	647·3 (338·6 to 979·3)	-21·3% (-40 to 7·8)	180 (96·6 to 263)	109% (59·8 to 179·4)	27·1 (14·8 to 39·5)	-20·2% (-38·4 to 6·8)
Diet low in whole grains	1520 (470 to 2750)	117·4% (12·1 to 325·9)	181·8 (54·9 to 328·9)	-15·9% (-57·1 to 66·3)	48 (15·2 to 86·9)	117·9% (10·6 to 332·9)	6·9 (2·1 to 12·6)	-15·5% (-57·8 to 68·2)
Diet low in nuts and seeds	2310 (660 to 3930)	78·3% (13·3 to 153·6)	283·8 (79·2 to 491·4)	-30·8% (-56 to -1·6)	80 (22·2 to 139)	84·6% (17·2 to 162·7)	11·8 (3·2 to 21)	-28·6% (-54·2 to 2·1)
Diet low in milk	270 (150 to 420)	280·5% (132·9 to 581·7)	29·7 (16·7 to 43·6)	46·9% (-15·3 to 220)	7·9 (4·2 to 11·4)	291·1% (86·4 to 854·9)	1 (0·4 to 1·5)	49·4% (-66·8 to 439·6)
Diet high in red meat	910 (0 to 1580)	722·8% (-2546·2 to 5541·8)	103·8 (0 to 178·2)	184·8% (-1449·1 to 1363·8)	24·2 (0 to 41·3)	685·6% (-2227·8 to 5490·1)	3·2 (0 to 5·7)	162·7% (-562·2 to 2022·1)
Diet high in processed meat	590 (270 to 990)	244·5% (114·6 to 415·4)	71·4 (33·2 to 117·9)	32·1% (-16·6 to 97·8)	14·8 (6·9 to 25·3)	224% (101·5 to 406·1)	2·1 (1 to 3·6)	25·1% (-20·7 to 91·4)
Diet high in sugar-sweetened beverages	470 (220 to 770)	493% (213·3 to 1296·1)	54·2 (25·2 to 90)	131·1% (24·2 to 444·1)	10·8 (5·4 to 17·7)	465·8% (199·4 to 1273·4)	1·5 (0·8 to 2·5)	120·6% (19 to 432·9)
Diet low in fibre	340 (50 to 940)	20·2% (-71·8 to 399)	38·4 (5·9 to 110·5)	-54·4% (-90·2 to 83·5)	10·2 (1·6 to 29·5)	17·9% (-74·7 to 379·2)	1·5 (0·2 to 4·2)	-55·3% (-90·5 to 82·5)
Diet low in seafood omega-3 fatty acids	1890 (530 to 3360)	77·8% (3 to 173·4)	231·1 (64·5 to 420·6)	-31·5% (-60 to 5·4)	65·1 (17·5 to 120)	81·7% (6 to 179·6)	9·6 (2·4 to 18)	-30% (-59 to 7·1)
Diet low in omega-6 polyunsaturated fatty acids	1840 (-5870 to 6830)	128·4% (57 to 210·5)	225·8 (-681 to 854·2)	-11·9% (-39·4 to 17·6)	63·6 (0 to 242)	133·6% (59 to 215·1)	9·2 (-26·2 to 36)	-10·7% (-38·8 to 18·6)
Diet high in trans fatty acids	1470 (90 to 2750)	151·1% (72 to 298·8)	179·3 (10·7 to 338·9)	-1·7% (-32·5 to 54·6)	50·2 (3·0 to 94·9)	162·9% (81·5 to 318·3)	7·2 (0·4 to 13·9)	1·6% (-29·4 to 60·1)
Diet high in sodium	1920 (10 to 6980)	111·8% (-82·4 to 675·2)	281·6 (1·8 to 1005·9)	-17% (-92·7 to 218)	86·6 (0·6 to 308)	124·7% (-79·1 to 794·7)	14·9 (0·1 to 51·9)	-14·3% (-91·5 to 260·5)
Diet low in calcium	310 (220 to 420)	174·4% (88·1 to 309·3)	36·2 (23·7 to 48·8)	4·8% (-29·8 to 60·4)	10·1 (6·6 to 13·7)	176·1% (84·3 to 324·8)	1·4 (0·9 to 1·9)	5·2% (-29·6 to 63·5)
Diet low in legumes	1330 (-1170 to 3450)	92·4% (22·8 to 169·6)	163·7 (-139·6 to 432·8)	-25·8% (-52·6 to 3·1)	46·1 (0 -385 to 123)	97% (26·2 to 176·1)	6·8 (-5·5 to 18·4)	-24·6% (-51·8 to 4·9)
Low physical activity	1880 (790 to 2830)	156·9% (129·7 to 193)	257·9 (109·3 to 391·8)	-0·5% (-11·3 to 13·7)	64·1 (257 to 98·3)	145% (114·8 to 190·1)	10·4 (4 to 16·1)	-5·1% (-17·7 to 14)
Intimate partner violence	1680 (600 to 3180)	278·8% (138·7 to 555·7)	133·9 (46·6 to 249·4)	50·6% (-5·3 to 161·5)	0·5 (0 to 1·3)	255·8% (24·4 to 879·3)	0 (0 to 0·1)	40·4% (-49·9 to 287·9)
Unsafe sex	4570 (3190 to 6470)	200·5% (89·1 to 402·3)	430·7 (302·9 to 602·7)	16·9% (-25·7 to 94·7)	107 (75·4 to 151)	205·4% (93·2 to 408·2)	11·3 (7·8 to 15·7)	17·2% (-25·1 to 95)

(Table 3 continues on next page)

	DALY count		Age-standardised DALY rate		Death count		Age-standardised death rate	
	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023	Count in thousands, 2023	Percentage change, 1990 to 2023	Rate per 100 000 population, 2023	Percentage change, 1990 to 2023
(Continued from previous page)								
Sexual violence against children and bullying	4870 (2400 to 8060)	195.9% (87.5 to 373.3)	367.9 (178.6 to 637.5)	15.8% (-31.7 to 91.6)	11.3 (-38 to 23.9)	147.1% (-2.3 to 474.8)	1.4 (0.4 to 3.1)	-3.5% (-62.8 to 136)
Bullying victimisation	1610 (790 to 2850)	266.3% (172.7 to 399.5)	95.1 (46.1 to 169)	54.1% (16 to 109.6)	0 (0 to 0)	0% (0 to 0)	0 (0 to 0)	0% (0 to 0)
Sexual violence against children	3370 (1400 to 6310)	170.7% (44.1 to 394.9)	279.6 (115.6 to 531.5)	6.8% (-45.6 to 101)	11.3 (115.6 to 23.9)	147.1% (-2.3 to 474.8)	1.4 (0.4 to 3.1)	-3.5% (-62.8 to 136)
Metabolic risks	60 590 (54 200 to 67 200)	155.2% (123.9 to 191.2)	7772.1 (7001.6 to 8567.4)	0.7% (-11.6 to 14.8)	2040 (1850 to 2240)	155.3% (124.9 to 194.1)	320.5 (289.5 to 351.5)	-1.9% (-13.8 to 12.8)
High fasting plasma glucose	18 200 (15 300 to 21 400)	220.1% (163.5 to 284.5)	2367.6 (1979.7 to 2781.9)	27.6% (4.3 to 53.2)	535 (449 to 625)	220.5% (152.5 to 306.2)	85.8 (71.6 to 100.2)	24% (-2.5 to 56.9)
High systolic blood pressure	29 800 (23 400 to 35 500)	145.1% (92.1 to 224.3)	4154.8 (3334.3 to 4908.9)	-5.5% (-24.3 to 23.6)	1230 (1000 to 1460)	148.5% (100.6 to 224.6)	201.5 (165.4 to 237.6)	-5.8% (-22.7 to 21)
High body-mass index	19 300 (10 700 to 27 500)	305.1% (228.3 to 394)	2372 (1292.2 to 3393.2)	58.4% (27 to 94.5)	526 (316 to 717)	300.7% (213.3 to 398.5)	77.6 (45.5 to 106.9)	57.7% (21.2 to 97.1)
High LDL cholesterol	9560 (6120 to 13 300)	140% (86.8 to 214.1)	1201.7 (749.4 to 1757.7)	-8.3% (-29 to 18.6)	334 (206 to 491)	140.8% (84.9 to 213.7)	49.7 (29.7 to 74.8)	-9.3% (-30.8 to 18)
Kidney dysfunction	14 700 (11 900 to 17 400)	132.2% (82.1 to 195.4)	1778.7 (1451.6 to 2105)	-3.7% (-20.9 to 17.1)	501 (404 to 597)	152.2% (103.8 to 209.5)	76.7 (61.8 to 92.7)	-1.6% (-19.8 to 18.3)

Values in parentheses are 95% uncertainty intervals. DALY=disability-adjusted life-year.

Table 3: Attributable risk factors for deaths and DALYs of non-communicable diseases in Africa in 2023, and percentage changes from 1990 to 2023, all ages and sexes combined

accelerated action, Africa risks seeing widening disparities in NCD outcomes compared with global progress.

We found that the leading Level 2 causes of NCD deaths in Africa were cardiovascular diseases, neoplasms, diabetes and kidney diseases, digestive diseases, and other non-communicable diseases; by comparison, globally and in regions with a high Socio-demographic Index (SDI), cardiovascular diseases, neoplasms, chronic respiratory diseases, diabetes and kidney diseases, and neurological disorders predominated.¹⁵

We found that cardiovascular diseases remained the leading Level 2 cause of NCD mortality and DALYs in Africa in 2023, consistent with global estimates,^{20–22} surpassing the combined burden of HIV/AIDS, tuberculosis, malaria, other neglected tropical diseases, and nutritional deficiencies (1.77 million deaths [1.23–2.60]; GBD Results Tool). Africa accounts for a disproportionate cardiovascular disease burden, with age-standardised mortality (354 per 100 000) and DALYs (6889 per 100 000) far exceeding global estimates of 215 per 100 000 and 4867 per 100 000, respectively.²³ This excess is driven predominantly by stroke, ischaemic heart disease, and rheumatic heart disease—conditions reflecting both an accelerating atherosclerotic transition and a persistent infectious burden.^{20–23} Over three decades, atherosclerotic cardiovascular diseases have risen sharply, with ischaemic heart disease increasing by 150% and stroke by 85%, which was associated with rapid population growth, ageing, and rising prevalence of elevated BMI and fasting plasma glucose. Africa's age-standardised stroke death rate (152 per 100 000) remains approximately twice the global average (76 per 100 000), consistent with previous GBD analyses,²³ and reflects critical gaps in diagnostic imaging, emergency transport, acute treatment, and rehabilitation infrastructure. Addressing these structural deficits requires coordinated global and regional collaboration, prioritising expansion of acute stroke capacity and post-stroke rehabilitation services alongside robust risk factor control. Concurrently, rheumatic heart disease, although declining globally, persists disproportionately in Africa, where high rates of acute rheumatic fever and carditis underscore entrenched deficits in primary health-care access and secondary antibiotic prophylaxis; infectious aetiology thus remains a distinct and largely preventable driver of cardiovascular disease morbidity across the continent.^{20–24}

These findings collectively indicate that Africa is not on course to achieve SDG target 3.4 (a one-third reduction in premature cardiovascular disease mortality by 2030) and urgent, equity-oriented investment spanning prevention, acute care, and rehabilitation is needed to close this widening gap.^{20,22}

The coordinated and integrated global, regional, and national collaboration—encompassing targeted reduction of attributable risk factors, early detection and treatment, and systematic risk stratification for screening—will be essential to achieving equitable cardiovascular care and

reducing the disparity in persistent cardiovascular disease burden across Africa.⁴

Neoplasms ranked as the second-leading Level 2 cause of death and third-leading cause of DALYs in Africa in 2023, with absolute deaths and DALYs more than doubling since 1990. Unlike global and high-SDI regions, where age-standardised cancer mortality and DALY rates are declining, Africa shows stable or rising trends, reflecting inequities in prevention, detection, and treatment.²⁵ Breast, cervical, liver, lung, colorectal, and prostate cancers contribute large numbers of deaths in Africa in 2023 for all sexes and all ages, while some infection-related cancers such as liver cancer and stomach cancer have declined.

However, survival rates remain very low due to poor access to surgery, chemotherapy, and radiotherapy.^{26–28} Strengthening cancer control requires developing national cancer control plans,^{29,30} implementing WHO “Best Buys”^{31,32} and DCP-3 packages, and improving prevention, diagnosis, treatment, and palliative care. These measures might include a set of tobacco control interventions, hepatitis B vaccination to prevent liver cancer, screening and treatment for precancerous cervical lesions, HPV vaccination to prevent cervical cancer, treatment of early-stage cervical cancer, diagnosis and treatment for early breast cancer, diagnosis and treatment for selected highly curable childhood cancers, and palliative care, including, at a minimum, opioid drugs for severe pain control.³³ Additionally, recommendations such as those from the *Lancet Oncology* Commission should be integrated.³⁴ Robust resource mobilisation, expanded cancer registries, workforce training, and expanded research capacity are essential to reduce Africa’s inequitable cancer burden.³⁴

We found that digestive diseases represented a major contributor to mortality and disability in Africa, ranking fourth among Level 2 causes of death after cardiovascular disorders, neoplasms, and diabetes and chronic kidney diseases in 2023.

The age-standardised death rate for digestive diseases in Africa was 49.2 per 100 000 population, compared with 27.3 per 100 000 globally in 2023—nearly double the global rate. This gap persisted despite comparable relative declines in age-standardised death rates in both settings between 1990 and 2023 (38.0% in Africa vs 40.0% globally). This pattern suggests that Africa’s excess burden stems from a long-standing, structurally higher baseline—likely reflecting historically weaker hepatitis B virus vaccination coverage, limited access to hepatitis C treatment, insufficient alcohol-control policies, and constrained surgical capacity—rather than from a recent slowing in the pace of improvement.^{35,36} This gap in age-standardised mortality is further compounded by substantial increases in absolute incidence and death counts: between 1990 and 2023, digestive disease incidence cases rose by approximately 131% and death counts by 59% in Africa, compared with increases of 69% and 32%, respectively, at the global level (GBD Results Tool) driven largely by population growth and ageing, and underscoring the scale of the burden even

as age-adjusted risk remains disproportionately high. Addressing this high burden of digestive disease in Africa will require coordinated global, regional, and national collaboration through a multisectoral approach—including expanding hepatitis B virus vaccination, broadening access to hepatitis C treatment, implementing restrictive alcohol-control policies, and strengthening essential surgical services—to advance digestive disease control and achieve equitable health outcomes across the continent.^{35,36}

This study showed that diabetes and chronic kidney diseases are increasingly important contributors to the burden of NCDs in Africa. Between 1990 and 2023, both conditions showed increases in age-standardised death and DALY rates in Africa, which is consistent with the increasing global trends. However, the age-standardised death rate from chronic kidney disease in Africa was approximately 42 per 100 000—2.5 times higher than the global rate of 17 per 100 000—while the corresponding DALY rate reached 1088 per 100 000, nearly double the global estimate of 524 per 100 000 (see GBD Results Tool).¹⁶ Similarly, both age-standardised death and DALY rates for diabetes were higher in Africa than globally, despite almost identical incidence rates (282 vs 284 per 100 000, respectively), and chronic kidney disease incidence in Africa was slightly above the global average.^{16,37,38} These findings reflect rapid sociodemographic transitions, increased exposure to metabolic risk factors such as high BMI and high fasting plasma glucose, persistent deficiencies in health-care systems, very limited capacity in kidney transplant services, and limited access to screening, treatment, and long-term management of diabetes and chronic kidney disease.²⁹ The *Lancet* Commission on diabetes emphasised that more than 80% of cases occur in low-income and middle-income countries, although more than 90% of global expenditure on diabetes care was in high-income countries, resulting in inequitable outpatient and inpatient services, emergency care, medication availability, and long-term care,³⁹ leading to devastating acute and chronic complications.

The UN has adopted premature mortality due to diabetes as a universal health coverage indicator within the SDGs,⁴⁰ while the WHO Global Action Plan and Global Diabetes Compact set five ambitious targets such as 80% of people with diabetes being diagnosed; 80% of people with diagnosed diabetes having good control of glycaemia; 80% of people with diagnosed diabetes having good control of blood pressure; 60% of people with diabetes aged 40 years or older receiving statins; and 100% of people with type 1 diabetes having access to affordable insulin and blood glucose self-monitoring by 2030.⁴¹ Adapting these frameworks within the Africa Health Strategy and Agenda 2063 is essential. Strengthening access to insulin, expanding community-based screening, and addressing social determinants of health will be crucial to mitigating the growing inequity in the burden of diabetes and kidney disease and underinvestment in care in Africa versus globally.

The current study showed that mental disorders were the leading cause of YLDs in Africa in 2023, with anxiety and

depressive disorders contributing most. The burden has tripled since 1990, reflecting demographic expansion, rapid urbanisation, and socioeconomic stressors.¹⁶ The COVID-19 pandemic further intensified vulnerabilities, exacerbating pre-existing gaps in service delivery.^{42,43} Structural challenges—including limited workforce, inadequate financing, and weak policy prioritisation—have hindered progress, while poverty, conflict, and trauma continue to fuel the rising prevalence. Mental health has been emphasised as a fundamental human right in *The Lancet Commission on Global Mental Health and Sustainable Development*,⁴⁴ but has historically been neglected and received attention only in the past decade, including in recent African CDC Strategic plans for NCDs and mental health.^{13,14}

The *Lancet Psychiatry* Commission on mental health implementation research called for the integration of mental health into universal health coverage, expansion of services, and innovative delivery models, alongside increased investment and mobilisation of community voices.⁴⁵ Global, regional, and national collaboration is needed to implement the evidence-based recommendations of the *Lancet Psychiatry* Commission and integrate them into the Africa Centres for Disease Control and Prevention Strategic Framework for NCDs and mental health, in order to mitigate the rising burden of disability attributable to mental health disorders and achieve equitable health outcomes across Africa.

Musculoskeletal disorders ranked as the second-leading cause of YLDs in Africa, with low back pain, neck pain, and other musculoskeletal conditions showing substantial increases. This rising prevalence is largely driven by population growth, ageing, sedentary lifestyles, and occupational risk exposures, compounded by weak preventive systems and limited rehabilitation services.^{46,47} These findings mirror global evidence, where musculoskeletal disorders consistently rank as the second-leading cause of disability.^{46,47} Yet, musculoskeletal disorders remain absent from WHO's NCD agenda³² and NCD Countdown 2030 priorities.⁴ It is estimated that nearly two-thirds of adults in need of rehabilitation services globally are affected by musculoskeletal disorders, underscoring the contribution of these conditions to disability and the demand for long-term care in Africa.⁴⁸ The WHO Rehabilitation 2030 initiative⁴⁹ provides an important framework to address this gap, emphasising integration of rehabilitation into universal health systems. Policy responses must prioritise musculoskeletal disorders as a component of NCD strategies in Africa. Strengthening workforce capacity, expanding rehabilitation services, and addressing social determinants of health are essential. Adoption of the WHO Rehabilitation 2030 plan⁴⁹ would ensure that these neglected conditions receive appropriate attention, reduce disability, and improve quality of life across the continent.

In this study, 35.1% of DALYs and 57.4% of deaths from NCDs in Africa were attributable to risk factors captured in the GBD 2023 analysis, proportions lower than global

estimates of 44.8% and 63.0%, respectively (see GBD Results Tool). The leading contributors were high systolic blood pressure, dietary risks, air pollution, and high fasting plasma glucose. Notably, increased age-standardised DALY rates attributable to high BMI (58.4% [27.0–94.5]), high fasting plasma glucose (27.6% [4.3–53.2]), and drug use (27.1% [1.6–60.6]) in Africa were higher than global rates for high BMI (24.7% [7.4–46.4]), high fasting plasma glucose (7.6% [–10.5–24.3]), and drug use (16.2% [6.3–27.8]) over the study period, signalling emerging health challenges that are particularly pronounced in low-income and middle-income countries.¹⁶ Targeted interventions are needed to mitigate modifiable risk factors; however, given the considerable proportion of NCD deaths not explained by currently measured risk factors, comprehensive approaches must also integrate timely screening, early diagnosis, and equitable access to high-quality treatment in order to support individuals already living with NCDs, reduce future burden, and prioritise healthy ageing.

High systolic blood pressure is the leading risk factor for NCD mortality and DALYs in Africa, with distinctive features compared with high-SDI regions, including early onset, high prevalence, poor awareness, and persistently low control rates.^{50–53} Multicentre studies such as SevenCEWA^{52,53} and H3Africa^{53,54} show that fewer than half of adults are aware of their condition, and control rates remain highly variable, often below 50%. Alarming, hypertension is increasingly reported among adolescents.⁵¹ The ACHIEVE initiative and WHO HEARTS technical package, endorsed by the African Union,^{55,56} provide a framework to strengthen community-based screening, treatment, and long-term control, aiming to meet 80–80–80 targets by 2030 (ie, 80% of people with hypertension being diagnosed, 80% of diagnosed patients being on treatment, and 80% of patients having their blood pressure effectively controlled).^{55,57}

Dietary risks have become a major driver of NCDs in Africa, ranking second among attributable risk factors for deaths and DALYs. Over the past three decades, the burden of NCD death counts attributable to dietary risks increased by 130%, with a parallel 130% rise in DALY counts—substantially higher than the global increases of 46% for deaths and 44% for DALYs. By contrast, at the global level, there have been substantial reductions in age-standardised dietary risk-attributable NCD death rates (by 41.2% [31.9–48.8]) and NCD DALY rates (by 36.5% [26.2–45.6]), reflecting successful prevention strategies and improved nutritional transitions.^{16,58,59} In Africa, however, only a minimal and statistically non-significant decline (age-standardised death rate change of –12.5% [–31.0 to 9.0]) and age-standardised DALY rate change of –12.0% [–30.4 to 7.7]) has been observed, underscoring persistent structural and behavioural barriers and inequity in dietary improvement, and the urgent need for targeted policy interventions.

Increases in dietary risk-attributable burden are linked to a rapid nutritional transition, characterised by greater consumption of processed foods, poor diet quality, and

limited access to healthy alternatives.⁶⁰ Dietary risks contribute substantially to cardiovascular, metabolic, and neoplastic mortality, thereby affecting Africa's NCD profile.

Air pollution ranked third among risk factors contributing to age-standardised NCD DALY rates in Africa, whereas it ranks fourth globally (after high blood pressure, tobacco use, and dietary risks) and sixth in high-SDI regions (after tobacco use, high blood pressure, dietary risks, high BMI, and high fasting blood plasma glucose).^{58,61}

Although Africa contributes relatively little to global emissions, it bears a disproportionate health burden.^{58,61–63} Household air pollution is declining,⁶⁴ but ambient particulate matter and ozone pollution are rising due to rapid urbanisation, industrialisation, and weak regulatory enforcement. Multicentre studies confirm persistently high PM_{2.5} concentrations in Africa, far exceeding WHO guidelines,^{64,65} with severe impacts on respiratory and cardiovascular health. Addressing this inequity requires region-specific action—transitioning to clean energy, enforcing UNEA Resolution 1/7 regarding indoor air pollution, vehicle emissions, public and non-motorised transport, industrial emissions, open burning of waste, and national air quality standards and regulations,⁶⁶ integrating the African Union's Agenda 2063 goals,⁶⁷ and strengthening monitoring and research capacity.

Our findings show that high fasting plasma glucose and high BMI ranked as the fourth-leading and fifth-leading attributable risk factors for NCD death rate in 2023, consistent with epidemiological evidence implicating metabolic dysregulation as a dominant driver of premature death globally. Age-standardised DALY and death rates attributable to both risk factors have risen across Africa, mirroring the global trend;^{16,68} however, the death rate attributable to high BMI in Africa (77.6 per 100 000) is approximately twice the global average (40.0 per 100 000), and the rate for high fasting plasma glucose (85.8 per 100 000) substantially exceeds the global estimate (58.7 per 100 000),¹⁶ reflecting compounding deficits in preventive care, health system capacity, and social determinants of health. In contrast to high-SDI regions,⁶⁸ the premature onset of these risk factors among younger African populations, coupled with a scarcity of context-adapted prevention evidence, further accelerates progression to cardiovascular disease, chronic kidney disease, and type 2 diabetes and entrenches reactive rather than preventive approaches to NCD management. These findings demand urgent, multisectoral policy responses—including community-based nutrition programmes, promotion of physical activity, integration of dietary risk reduction into universal health coverage, fiscal measures targeting obesogenic food environments, metabolic screening within primary health care, and investment in locally generated evidence to mitigate the growing inequitable burden of NCDs in Africa.

Tobacco use ranks as the third-leading risk factor for age-standardised DALYs due to NCDs globally (after hypertension and dietary risks), and is the leading risk factor in

high-SDI regions, whereas its impact in Africa is comparatively lower, ranking seventh in 2023. Tobacco contributes to deaths from chronic respiratory disease, cardiovascular disease, and neoplasms, yet prevalence of tobacco use is increasing, often beginning at younger ages.⁶⁹ The WHO Framework Convention on Tobacco Control provides effective strategies that have led to global progress in reducing tobacco consumption,⁷⁰ but Africa requires stronger adoption, enforcement, and regional collaboration to prevent the escalation of tobacco-related morbidity and mortality.⁷¹

There are important limitations in estimating the burden of NCDs in Africa. Accuracy depends heavily on the availability, timeliness, and quality of population-based data, yet many countries face persistent challenges in establishing reliable registries. Limited diagnostic infrastructure, misclassification, under-reporting, and systemic data gaps constrain precision. Investment in surveillance systems, diagnostic capacity, and health information infrastructure is needed to refine future GBD estimates and strengthen evidence-based policy in Africa.

Our findings confirm a marked rise in NCDs, which are poised to become the dominant source of mortality in Africa, overtaking communicable diseases. Although the epidemiological transition is well recognised, the speed and scale of NCD growth in Africa is particularly concerning. Health systems face increasing demands for chronic disease management, yet low-resource settings remain poorly equipped, underfunded, and unable to provide adequate preventive or treatment services.

NCDs continue to receive disproportionately low funding compared with communicable diseases, despite multiple global and regional commitments—including the 2018 UN Political Declaration on NCDs, World Health Assembly Resolution 70.12, the Addis Ababa Action Agenda, the Africa Leadership Meeting Declaration, and the Abuja Declaration—which set ambitious financing targets of US\$249 per capita, 15% of national budgets,⁷² and 5% of GDP for health expenditure.⁷³ Urgent, sustained, and equitable increases in domestic and international financing, alongside contextualisation of WHO and UN frameworks, are essential to strengthen policy implementation and achieve universal health coverage and the SDGs in Africa.

African initiatives, supported by global partnerships, capacity building, and strengthened collaboration, are urgently required to address the growing burden of NCDs and their impact on health and development. Adoption of WHO's Best Buys, the *Lancet* NCD Commission's recommendations,⁴ and a revitalised primary health-care approach¹⁸—anchored in integrated service delivery, multisectoral policy action, and community empowerment—must be prioritised. African governments and global stakeholders should embed primary health care at the centre of NCD prevention, with adequate financing, workforce strengthening, integration of NCDs into existing communicable disease programmes, and robust

accountability mechanisms to ensure equitable, resilient, and sustainable health outcomes.¹⁸

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See appendix 2 (pp 148–146) for the affiliations for individual collaborators.

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See appendix 2 (pp 164–171) for more detailed information about individual author contributions to the research, divided into the following categories: providing data or critical feedback on data sources; developing methods or computational machinery; providing critical feedback on methods or results; drafting the manuscript or revising it critically for important intellectual content; and managing the estimation or publications process.

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Data sharing

GBD 2023 data sources are available online via the Global Health Data Exchange tool at <https://ghdx.healthdata.org/>. The statistical code used for data processing and analysis for GBD 2023 is available upon request (engage@healthdata.org).

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