

Global Burden of Anorexia Nervosa and Bulimia Nervosa, 1990 to 2023, With Forecasts to 2050

A Global Burden of Disease Study 2023 Analysis

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 Supplemental content

IMPORTANCE Eating disorders are a major cause of nonfatal mental health burden, yet global evidence on their long-term trends, geographic distribution, and future trajectories remains limited.

OBJECTIVE To estimate the global, regional, and national prevalence and disability burden of anorexia nervosa and bulimia nervosa—and mortality attributable to anorexia nervosa—from 1990 to 2023, and to forecast prevalence to 2050.

DESIGN, SETTING, AND PARTICIPANTS Using Global Burden of Disease (GBD) 2023 methods, data were synthesized from systematic literature reviews, population surveys, and vital registration systems. Estimates were produced for 204 countries and territories from 1990 to 2023, with forecasts through 2050. These data were analyzed from October 2025 to August 2026.

EXPOSURE Anorexia nervosa or bulimia nervosa diagnosis.

MAIN OUTCOMES AND MEASURES Counts and age-standardized rates with 95% uncertainty intervals (UIs) for anorexia nervosa and bulimia nervosa prevalence, years lived with disability (YLDs), and disability-adjusted life-years (DALYs), and anorexia nervosa mortality, reported by age, sex, and location.

RESULTS In 2023, an estimated 18.1 million people (95% UI, 13.9-24.0) globally were living with anorexia nervosa or bulimia nervosa, of whom 12.6 million (69.4%) were female, 5.5 million were male (30.6%), and 41.2% were aged 10 to 24 years. These cases accounted for 3.83 million DALYs (95% UI, 2.23-5.69). Since 1990, the global number of prevalent cases increased by 71.0%, while age-standardized prevalence and DALY rates rose by about 21%. Females experienced substantially higher prevalence and DALY rates than males. The highest age-standardized prevalence rates were observed in high-income regions, particularly Australasia and Western Europe, whereas the largest relative increases in age-standardized prevalence occurred in East Asia, South Asia, and Southeast Asia. Forecasts indicate continued increases in prevalent cases through 2050.

CONCLUSIONS AND RELEVANCE This GBD 2023 analysis found that anorexia nervosa and bulimia nervosa contribute substantially to global nonfatal health loss. These findings support the integration of eating disorders into mental health surveillance, prevention, and service planning worldwide.

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JAMA Psychiatry. doi:[10.1001/jamapsychiatry.2026.3457](https://doi.org/10.1001/jamapsychiatry.2026.3457)
Published online October 28, 2026.

Anorexia nervosa and bulimia nervosa are serious eating disorders characterized by substantial disturbances in eating or eating-related behavior. Anorexia nervosa is commonly characterized by restricted intake, low body weight, and fear of weight gain, whereas bulimia nervosa involves recurrent binge eating followed by compensatory behaviors and overconcern with body weight or shape.¹ These disorders arise from both genetic and environmental risk factors,² disproportionately affect adolescents and young adults,³ and often follow a chronic or relapsing course,² with substantial medical, psychological, and social consequences.

In the Global Burden of Disease Study (GBD) 2010, the health burden of anorexia nervosa and bulimia nervosa was first quantified at the global, regional, and national levels,⁴ with the most recent major update conducted in GBD 2017 following the incorporation of additional data sources.⁵ Since then, no substantial new data have been added to the estimation framework, apart from limited gray literature included in GBD 2019.⁶ Updated estimates are needed to inform evidence-based health care strategies,^{7,8} particularly in light of the COVID-19 pandemic, which may have affected service demand and symptom burden in some settings.^{9,10}

While other eating disorders, such as binge eating disorder and other specified feeding or eating disorder, account for a substantial proportion of eating disorders,¹¹ the absence of survey-derived disability weights for these disorders remains a barrier to quantifying their nonfatal health burden within the GBD framework. Accordingly, this analysis focuses specifically on anorexia nervosa and bulimia nervosa and does not represent the total burden of eating disorders. We extend previous estimates of the disease burden of anorexia nervosa and bulimia nervosa through 2023 using updated data sources and refined methodological approaches, and we forecast future prevalence through 2050. This article was produced and conducted as part of the GBD Collaborator Network and in accordance with GBD Protocol.¹²⁻¹⁴

Methods

Study Overview

We estimated incidence, prevalence, and disability-adjusted life-years (DALYs) for anorexia nervosa and bulimia nervosa, as well as mortality attributable to anorexia nervosa, by age and sex for 204 countries and territories from 1990 to 2023. The GBD 2023 iteration incorporated newly identified data and methodological refinements, including changes to improve model fit in selected locations, the application of refined crosswalks for bulimia nervosa to harmonize diagnostic criteria, and adjustment for recall bias. This study follows the Guidelines for Accurate and Transparent Health Estimates Reporting (GATHER) statement (eMethods 1 in [Supplement 1](#)). Deidentified data were used and the study was approved by the University of Washington Institutional Review Board (9060), which waived the requirement for informed consent.

Case Definitions and Input Data

Anorexia nervosa and bulimia nervosa were modeled separately using *DSM* or *International Classification of Diseases (ICD)*

Key Points

Question What is the global burden of anorexia nervosa and bulimia nervosa?

Findings In this Global Burden of Disease 2023 analysis, an estimated 18.1 million people worldwide were living with anorexia nervosa or bulimia nervosa in 2023, accounting for 3.83 million disability-adjusted life-years. Burden was highest in high-income regions, the largest increases in age-standardized prevalence occurred in East Asia, South Asia, and Southeast Asia, and prevalent cases increased by 71% since 1990 and are forecast to rise through 2050.

Meaning The burden of anorexia nervosa and bulimia nervosa is increasing globally, highlighting the need for strengthened surveillance, earlier detection, and better integration of care into mental health systems.

case definitions. Other eating disorders were not included in the estimation because there were no available disability weights for those conditions that had been derived by disability-weight surveys. Detailed case definitions are provided in eMethods 2 in [Supplement 1](#). Updated systematic literature reviews were conducted to identify studies reporting the prevalence, incidence, and remission of anorexia nervosa and bulimia nervosa, as well as excess mortality associated with anorexia nervosa. Peer-reviewed literature was identified through electronic database searches of PsycINFO, Embase, and PubMed. In addition, gray literature searches and expert consultation were undertaken. Detailed search strategies for the electronic databases are provided in eMethods 2 in [Supplement 1](#). In total, 59 new citations were incorporated compared with GBD 2017.^{5,13} Vital registration data used to estimate mortality attributable to anorexia nervosa were from the GBD Cause of Death database (eMethods 3 in [Supplement 1](#)).¹⁴

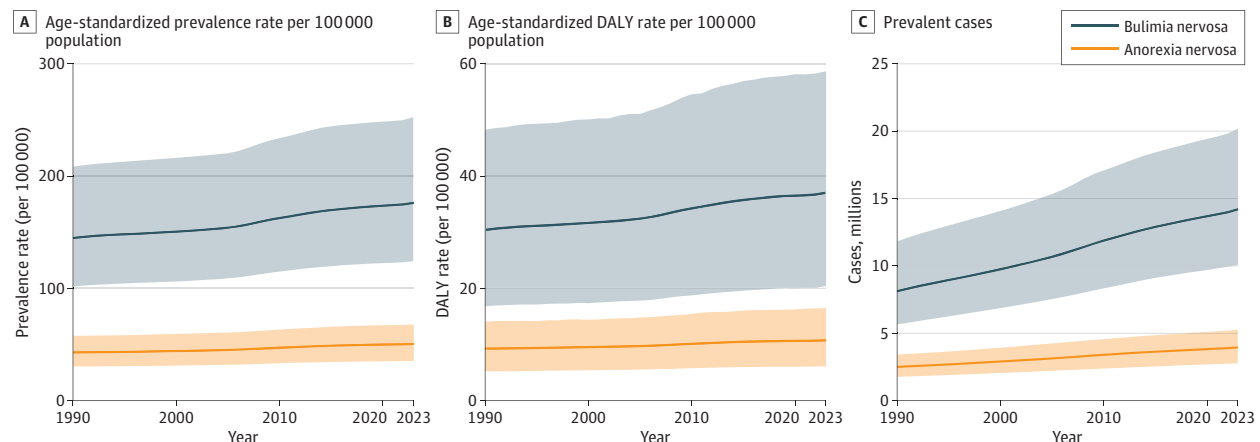
Data Processing and Modeling

Epidemiological data were harmonized before modeling, including age-sex splitting and meta-regression-bayesian, regularized, trimmed (MR-BRT) adjustments where required. For bulimia nervosa, crosswalks were applied to account for differences in recall periods and diagnostic criteria. DisMod-MR version 2.1 was used to estimate incidence, prevalence, and remission by age, sex, location, and year.⁶ Excess mortality was modeled for anorexia nervosa only; no excess mortality was modeled for bulimia nervosa. Mortality attributable to anorexia nervosa was estimated using the Cause of Death Ensemble Model.¹⁴ Fatal outcomes were not estimated for bulimia nervosa because mortality data were sparse for most countries and territories, making reliable modeling and interpretation of mortality estimates infeasible.¹⁵ Detailed preprocessing procedures, model assumptions, covariates, and parameter specifications are provided in eMethods 2 and 3 in [Supplement 1](#).

DALYs

DALYs were calculated as the sum of years lived with disability (YLDs) and years of life lost (YLLs). YLDs were estimated

Figure 1. Line Graphs of Global Trends in Anorexia Nervosa and Bulimia Nervosa



Shaded areas represent 95% uncertainty intervals. DALY indicates disability-adjusted life-years.

by multiplying prevalence by the corresponding disability weight,¹⁶ with comorbidity correction applied to account for co-occurring conditions. YLLs were calculated for anorexia nervosa by multiplying attributable deaths by the standard life expectancy at the corresponding age.^{15,17} Details of disability weights and comorbidity correction are provided in eMethods 2 and 4 in Supplement 1.

Forecasting

Prevalence of anorexia nervosa and bulimia nervosa, separately and combined, was forecast from 2024 to 2050 by sex, age, and location using a multistage forecasting framework consistent with approaches used in previous GBD forecasting analyses.¹⁸ Data from 1990 to 2019 were used to fit the forecasting model to avoid potential bias related to the COVID-19 pandemic.¹⁸ Forecast prevalence rates were multiplied by forecast population counts to obtain the number of cases.¹⁹

Calculating Uncertainty

Uncertainty was propagated throughout the estimation process, with 95% uncertainty intervals (UI) defined as the 2.5th and 97.5th percentiles of 250 draws from the estimated posterior distributions. GBD 2023 analyses were completed using Python versions 3.8.17 and 3.10.4 (Python Software Foundation), Stata version 15.1 (Stata Corp), and R versions 3.5 and 4.2 (R Project). The statistical code used in GBD 2023 is available upon request.

Results

Disease Burden of Anorexia Nervosa and Bulimia Nervosa in 2023

In 2023, an estimated 18.1 million (95% UI, 13.9-24.0) people were living with anorexia nervosa or bulimia nervosa globally, corresponding to an age-standardized prevalence of 225.6 (95% UI, 173.1-301.2) per 100 000 population (Figure 1) (Table).

Females accounted for 12.6 million (69.4%) of these cases, males accounted for 5.5 million (30.6%), and 41.2% of cases occurred among young people aged 10 to 24 years. By subtype, an estimated 3.92 million (95% UI, 2.78-5.30) had anorexia nervosa and 14.2 million (95% UI, 10.1-20.2) had bulimia nervosa worldwide in 2023 (eTables 1 and 2 in Supplement 2). In 2023, there were an estimated 237 (95% UI, 116-373) deaths due to anorexia nervosa.

Globally, these eating disorders accounted for 3.83 million DALYs (95% UI, 2.23-5.69) in 2023, corresponding to an age-standardized DALY rate of 47.8 (95% UI, 27.7-71.0) per 100 000 population (Figure 1) (Table). Among the 2 subtypes studied, anorexia nervosa accounted for 847 000 (95% UI, 477 000-1 290 000) DALYs, whereas bulimia nervosa accounted for 2.98 million (95% UI, 1.66-4.72) DALYs (eTables 1 and 2 in Supplement 2).

Changes in Disease Burden From 1990 to 2023

From 1990 to 2023, the number of anorexia nervosa and bulimia nervosa cases increased by 71.0% (95% UI, 65.8%-78.0%), and the age-standardized prevalence rate increased by 20.6% (95% UI, 19.6%-21.6%) (Figure 1) (Table). Cases increased by 57.9% (95% UI, 54.0%-62.5%) for anorexia nervosa and 75.1% (95% UI, 68.0%-83.7%) for bulimia nervosa, with corresponding increases in age-standardized prevalence of 17.0% (95% UI, 15.2%-18.5%) and 21.7% (95% UI, 20.5%-23.0%), respectively (eTables 1 and 2 in Supplement 2).

During the same period, DALYs due to these eating disorders increased by 70.5% (95% UI, 65.1%-77.6%) and the corresponding age-standardized DALY rate increased by 20.5% (95% UI, 18.9%-21.9%) (Figure 1, Table). DALYs increased by 57.4% (95% UI, 52.8%-62.7%) for anorexia nervosa and 74.6% (95% UI, 67.3%-83.9%) for bulimia nervosa, with corresponding increases in age-standardized DALY rates of 16.6% (95% UI, 13.9%-18.8%) and 21.7% (95% UI, 20.1%-23.3%), respectively (eTables 1 and 2 in Supplement 2).

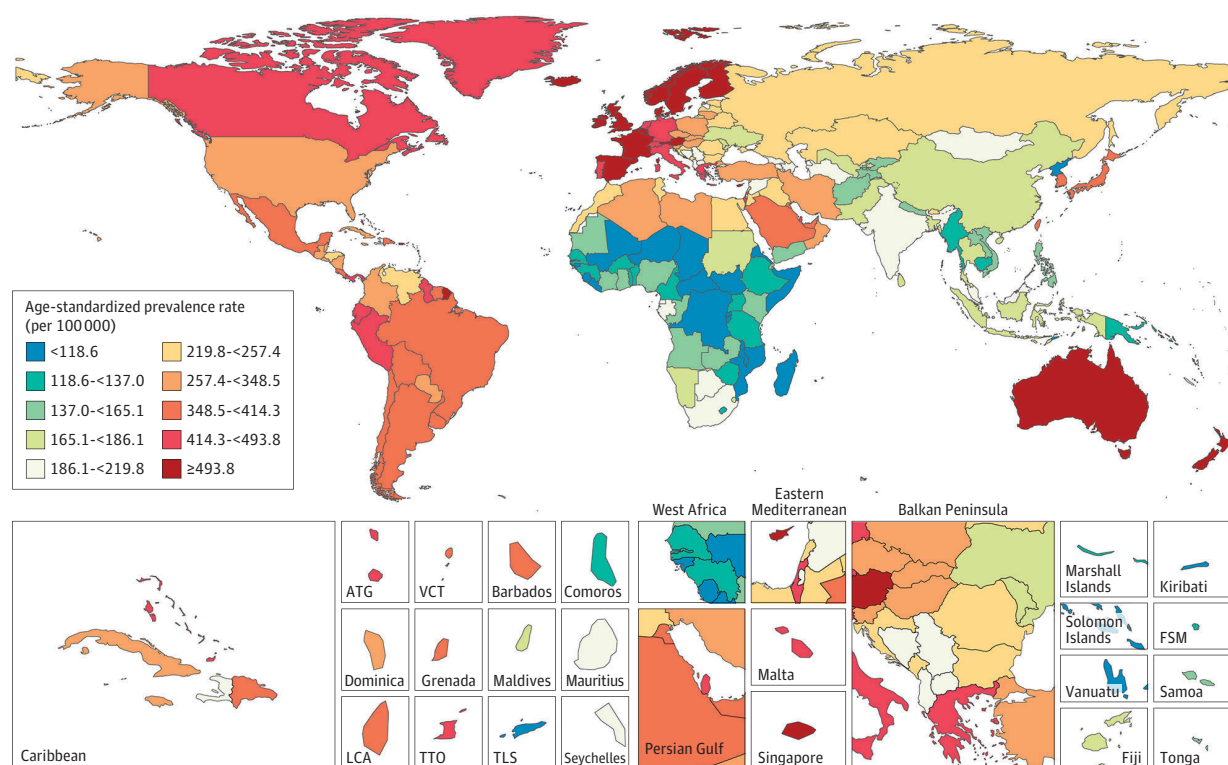
Table. Prevalence and Disability-Adjusted Life-Years (DALYs) Burden of Eating Disorders^a in 2023 and Changes From 1990 to 2023, by Sex and Region

Location	(95% UI)							
	No. of prevalent cases		Age-standardized prevalence rate		No. of DALYs		Age-standardized DALY rate	
	No. (millions), ^b 2023	% Change, 1990-2023	Rate per 100 000, 2023	% Change, 1990-2023	No. (millions), ^b 2023	% Change, 1990-2023	Rate per 100 000, 2023	% Change, 1990-2023
Global	18.1 (13.9 to 24.0)	71.0 (65.8 to 78.0)	225.6 (173.1 to 301.2)	20.6 (19.6 to 21.6)	3.8 (2.2 to 5.7)	70.5 (65.1 to 77.6)	47.8 (27.7 to 71.0)	20.5 (18.9 to 21.9)
Males	5.5 (4.1 to 7.6)	74.6 (68.3 to 82.5)	135.7 (101.0 to 186.9)	22.9 (20.9 to 24.6)	1.2 (0.7 to 1.8)	74.4 (67.4 to 83.1)	29.0 (16.7 to 44.0)	23.0 (20.4 to 25.4)
Females	12.6 (9.8 to 16.3)	69.5 (64.5 to 76.1)	318.3 (246.8 to 416.7)	19.8 (18.6 to 21.1)	2.6 (1.5 to 3.9)	68.8 (63.7 to 75.5)	67.1 (39.2 to 99.1)	19.6 (18.0 to 20.9)
Central Europe, Eastern Europe, and Central Asia	0.9 (0.7 to 1.1)	3.4 (−0.6 to 8.3)	227.4 (173.1 to 308.1)	15.5 (14.1 to 17.0)	0.2 (0.1 to 0.3)	3.4 (−0.9 to 8.8)	48.5 (27.7 to 72.0)	15.8 (13.5 to 18.2)
Central Asia	0.2 (0.1 to 0.3)	54.3 (46.8 to 64.0)	192.9 (147.6 to 262.6)	13.8 (10.6 to 17.6)	0 (0 to 0.1)	54.2 (44.1 to 65.9)	41.0 (23.3 to 61.7)	14.0 (8.4 to 19.2)
Central Europe	0.2 (0.2 to 0.3)	1.7 (−2.6 to 6.9)	250.0 (192.7 to 340.8)	31.5 (28.8 to 34.5)	0.1 (0 to 0.1)	2.1 (−3.0 to 7.3)	53.4 (30.4 to 80.2)	32.4 (28.2 to 36.4)
Eastern Europe	0.4 (0.3 to 0.6)	−9.2 (−13.5 to −4.5)	234.7 (177.9 to 316.7)	12.1 (10.3 to 13.6)	0.1 (0.1 to 0.1)	−9.4 (−14.1 to −4.1)	50.0 (28.9 to 73.7)	12.2 (9.2 to 15.2)
High-income	4.1 (3.2 to 5.3)	18.9 (15.1 to 22.4)	424.8 (331.3 to 552.7)	15.0 (12.8 to 17.6)	0.9 (0.5 to 1.3)	18.3 (13.9 to 21.8)	90.4 (52.4 to 134.1)	14.6 (12.0 to 17.5)
Australasia	0.3 (0.2 to 0.4)	83.5 (61.0 to 112.0)	946.4 (709.6 to 1260.7)	31.9 (16.6 to 53.7)	0.1 (0 to 0.1)	82.0 (59.8 to 112.7)	198.7 (112.8 to 305.6)	31.0 (15.2 to 52.9)
High-income Asia Pacific	0.6 (0.4 to 0.8)	−3.3 (−8.6 to 1.7)	396.5 (304.9 to 519.5)	20.9 (18.0 to 23.9)	0.1 (0.1 to 0.2)	−4.7 (−10.0 to 1.5)	84.5 (49.2 to 127.2)	19.7 (15.3 to 23.5)
High-income North America	1.1 (0.8 to 1.4)	16.3 (12.4 to 20.5)	318.1 (247.2 to 416.5)	0.4 (−1.8 to 3.0)	0.2 (0.1 to 0.3)	16.4 (12.4 to 20.8)	67.2 (39.4 to 99.1)	0.8 (−2.0 to 4.0)
Southern Latin America	0.3 (0.2 to 0.3)	73.6 (62.3 to 84.7)	372.4 (288.3 to 487.7)	23.3 (16.7 to 29.3)	0.1 (0 to 0.1)	72.5 (60.8 to 84.2)	78.6 (46.2 to 118.0)	22.7 (15.1 to 29.9)
Western Europe	1.9 (1.5 to 2.4)	17.1 (13.2 to 21.1)	502.4 (392.9 to 660.3)	20.1 (16.7 to 23.7)	0.4 (0.2 to 0.6)	16.7 (11.9 to 21.0)	107.6 (62.1 to 158.3)	19.8 (16.2 to 23.6)
Latin America and Caribbean	2.3 (1.7 to 3.1)	65.7 (57.5 to 76.1)	372.2 (285.6 to 511.6)	15.1 (13.4 to 16.9)	0.5 (0.3 to 0.7)	64.8 (56.4 to 74.9)	78.2 (45.4 to 118.6)	15.0 (12.8 to 17.2)
Andean Latin America	0.3 (0.2 to 0.4)	113.9 (100.9 to 127.6)	451.6 (351.4 to 607.3)	25.9 (20.6 to 31.9)	0.1 (0 to 0.1)	113.3 (97.4 to 128.4)	95.5 (56.0 to 146.9)	26.0 (18.6 to 32.6)
Caribbean	0.2 (0.1 to 0.2)	44.5 (37.7 to 52.3)	327.0 (251.6 to 448.9)	14.0 (10.5 to 18.0)	0 (0 to 0.1)	43.5 (34.9 to 52.0)	68.8 (39.7 to 106.2)	13.6 (8.7 to 18.5)
Central Latin America	0.9 (0.7 to 1.3)	65.8 (55.9 to 77.3)	346.1 (265.5 to 477.3)	8.6 (6.2 to 10.7)	0.2 (0.1 to 0.3)	65.1 (55.7 to 76.5)	72.8 (42.1 to 111.0)	8.6 (5.7 to 11.3)
Tropical Latin America	0.9 (0.7 to 1.2)	57.0 (48.1 to 67.8)	388.0 (298.1 to 537.0)	18.7 (15.8 to 21.6)	0.2 (0.1 to 0.3)	55.7 (46.9 to 66.7)	81.2 (46.7 to 122.3)	18.3 (14.1 to 21.6)
North Africa and Middle East	1.8 (1.4 to 2.4)	135.9 (122.1 to 152.9)	263.2 (202.8 to 355.7)	19.7 (16.8 to 22.9)	0.4 (0.2 to 0.6)	135.5 (120.3 to 153.7)	55.2 (31.9 to 81.9)	20.0 (15.6 to 23.5)
South Asia	4.1 (3.1 to 5.5)	170.7 (159.8 to 183.6)	197.5 (151.1 to 264.5)	48.5 (44.5 to 52.7)	0.9 (0.5 to 1.3)	171.2 (158.7 to 185.4)	41.6 (24.4 to 61.7)	49.0 (44.4 to 54.6)
Southeast Asia, East Asia, and Oceania	3.3 (2.5 to 4.3)	56.2 (45.8 to 70.8)	164.2 (123.8 to 223.7)	55.1 (51.2 to 58.9)	0.7 (0.4 to 1.1)	56.3 (45.5 to 71.2)	35.3 (19.9 to 53.4)	55.7 (51.3 to 61.1)
East Asia	2.1 (1.6 to 2.8)	37.8 (26.2 to 51.8)	167.9 (124.9 to 233.2)	61.5 (56.6 to 66.2)	0.4 (0.3 to 0.7)	37.9 (26.0 to 54.4)	36.1 (20.0 to 55.7)	62.2 (56.5 to 69.9)
Oceania	0 (0 to 0)	127.5 (117.3 to 139.2)	126.9 (96.0 to 174.0)	3.5 (−0.8 to 7.8)	0 (0 to 0)	126.5 (104.2 to 147.4)	26.8 (15.6 to 41.0)	3.2 (−6.6 to 12.5)
Southeast Asia	1.2 (0.9 to 1.6)	102.5 (92.3 to 115.4)	160.3 (123.5 to 210.6)	44.2 (41.1 to 47.9)	0.3 (0.1 to 0.4)	102.9 (91.1 to 117.4)	34.3 (19.9 to 51.1)	44.8 (40.5 to 50.0)
Sub-Saharan Africa	1.7 (1.3 to 2.3)	193.1 (188.7 to 197.8)	135.3 (103.6 to 180.7)	13.2 (11.9 to 14.7)	0.4 (0.2 to 0.5)	193.8 (187.2 to 200.7)	28.4 (16.6 to 42.1)	13.5 (11.2 to 15.6)
Central sub-Saharan Africa	0.2 (0.1 to 0.2)	177.5 (165.7 to 187.9)	114.8 (87.8 to 154.1)	−0.4 (−4.5 to 3.5)	0 (0 to 0.1)	179.6 (153.8 to 204.0)	24.1 (14.0 to 35.4)	0.4 (−8.2 to 8.8)
Eastern sub-Saharan Africa	0.6 (0.5 to 0.8)	203.0 (195.5 to 210.4)	119.4 (91.5 to 160.1)	18.9 (16.5 to 21.3)	0.1 (0.1 to 0.2)	204.8 (193.0 to 217.1)	25.2 (14.5 to 37.7)	19.6 (15.2 to 24.2)
Southern sub-Saharan Africa	0.2 (0.1 to 0.2)	84.9 (75.5 to 96.1)	188.0 (145.1 to 248.8)	6.9 (4.5 to 9.5)	0 (0 to 0.1)	83.2 (72.1 to 95.3)	39.4 (23.0 to 58.2)	6.3 (2.4 to 11.1)
Western sub-Saharan Africa	0.8 (0.6 to 1.1)	234.3 (228.4 to 239.8)	144.8 (111.1 to 192.5)	18.1 (15.9 to 20.6)	0.2 (0.1 to 0.2)	234.9 (225.6 to 243.9)	30.4 (17.8 to 44.3)	18.4 (14.8 to 21.4)

^a Eating disorder burden specifically refers to the burden of anorexia nervosa and bulimia nervosa and excludes other eating disorders.

^b Counts are presented in millions and rounded to 1 decimal place; values shown as 0 indicate fewer than 50 000.

Figure 2. Map of Age-Standardized Prevalence of Anorexia Nervosa and Bulimia Nervosa in 204 Countries and Territories, 2023



Values are grouped by deciles. ATG indicates Antigua and Barbuda; FSM, Federated States of Micronesia; LCA, Saint Lucia; TLS, Timor-Leste; TTO, Trinidad and Tobago; VCT, Saint Vincent and the Grenadines.

Geographical Distribution of Anorexia Nervosa and Bulimia Nervosa

In 2023, Australasia had the highest regional age-standardized prevalence of anorexia nervosa and bulimia nervosa combined, at 946.4 (95% UI, 709.6-1260.7) per 100 000 population, whereas central sub-Saharan Africa had the lowest prevalence, at 114.8 (95% UI, 87.8-154.1) per 100 000 population. From 1990 to 2023, the largest regional increase in age-standardized prevalence occurred in East Asia (61.5%; 95% UI, 56.6%-66.2%), followed by South Asia (48.5%; 95% UI, 44.5%-52.7%) and Southeast Asia (44.2%; 95% UI, 41.1%-47.9%) (Table). Australasia also had the highest regional prevalence for each disorder, and East Asia had the largest increases for both anorexia nervosa and bulimia nervosa (eTables 1 and 2 in Supplement 2).

At the country and territory level, age-standardized prevalence in 2023 ranged from 1026.5 (95% UI, 770.3-1370.5) per 100 000 population in Australia to 78.1 (95% UI, 59.5-106.5) in Somalia. From 1990 to 2023, the age-standardized prevalence rate increased in 156 of 204 countries and territories, with the largest increase in Equatorial Guinea (92.6%; 95% UI, 78.4%-107.5%). By contrast, 11 countries experienced declining trends, with the greatest decrease occurring in the Bolivarian Republic of Venezuela (27.2%; 95% UI, 20.0%-35.1%) (Figure 2) (eTable 3 in Supplement 2). Disorder-specific geographical estimates are shown in eFigures 1 and 2 in Supplement 1 and eTables 4 and 5 in Supplement 2.

The geographical pattern of age-standardized DALY rates was similar to that observed for prevalence, ranging regionally from 198.7 (95% UI, 112.8-305.6) per 100 000 population in Australasia to 24.1 (95% UI, 14.0-35.4) in central sub-Saharan Africa (Table). Country- and disorder-specific DALY estimates are provided in eTables 1 through 5 in Supplement 2.

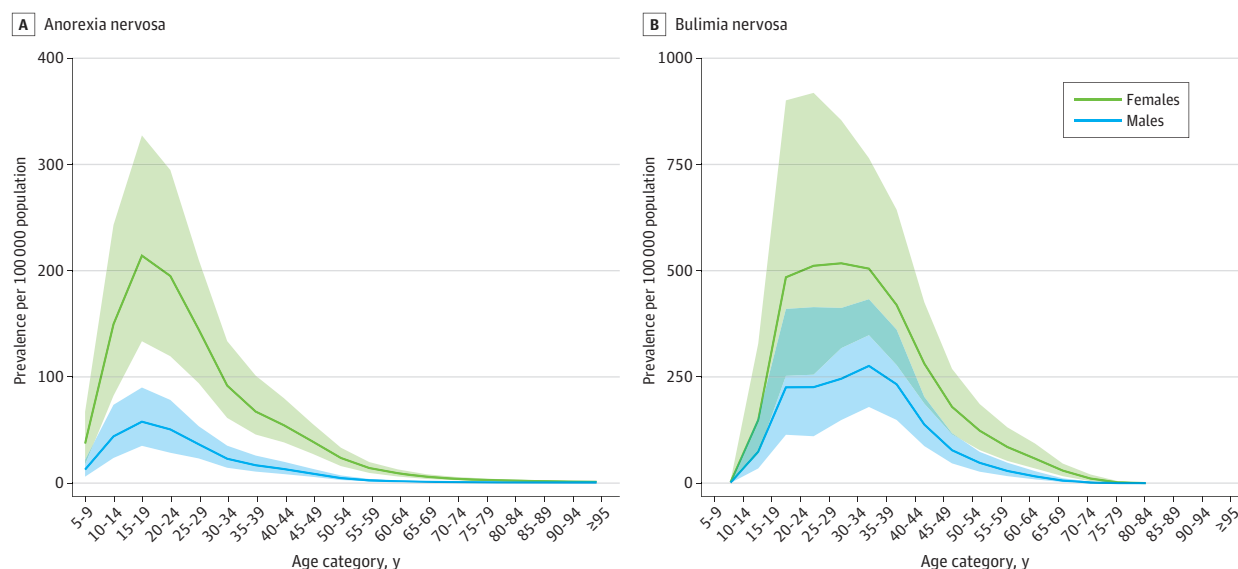
Sex and Age Patterns

The age-standardized prevalence of these eating disorders was higher among females than males, at 318.3 (95% UI, 246.8-416.7) per 100 000 population in females compared with 135.7 (95% UI, 101.0-186.9) per 100 000 population in males (Table). Similar sex differences were observed for both anorexia nervosa and bulimia nervosa (Figure 3) (eTables 1 and 2 in Supplement 2). Across age groups, the prevalence of the 2 disorders combined peaked among individuals aged 20 to 24 years (487.3; 95% UI, 302.5-816.7 per 100 000 population) and subsequently declined at older ages. Peak prevalence occurred at ages 15 to 19 years for anorexia nervosa (133.8; 95% UI, 82.7-206.4 per 100 000 population) and 30 to 34 years for bulimia nervosa (388.8; 95% UI, 261.7-594.0 per 100 000 population) (eFigure 3 in Supplement 1).

Forecasts

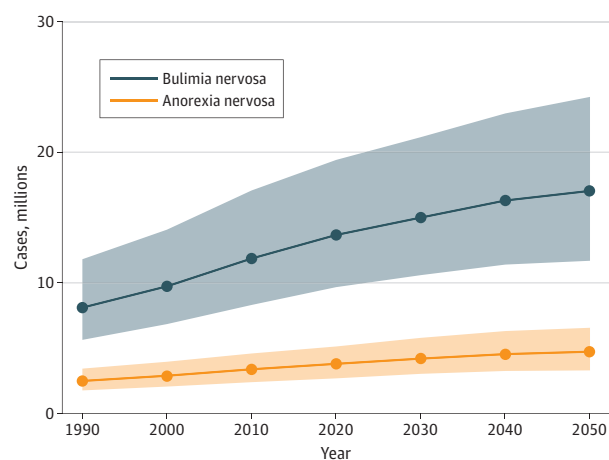
It was estimated that 21.8 million (95% UI, 16.0-28.6) individuals globally are forecast to be living with anorexia ner-

Figure 3. Line Graphs of Age- and Sex-Specific Prevalence of Anorexia Nervosa and Bulimia Nervosa, 2023



Shaded areas represent 95% uncertainty intervals.

Figure 4. Line Graph of Global Prevalent Cases of Anorexia Nervosa and Bulimia Nervosa Forecast to 2050



Shaded areas represent 95% uncertainty intervals.

vosa or bulimia nervosa in 2050 (Figure 4), corresponding to an age-standardized prevalence of 255.2 (95% UI, 186.6-335.2) per 100 000 population (eFigure 4 in Supplement 1). The total number of cases is forecast to increase by 20.3% (95% UI, 17.0%-25.8%) between 2023 and 2050, reaching 4.7 million (95% UI, 3.3-6.6) cases of anorexia nervosa and 17.0 million (95% UI, 11.7-24.2) cases of bulimia nervosa (Figure 4).

Discussion

This study provides estimates of the prevalence and disability associated with anorexia nervosa and bulimia nervosa and

forecasts future prevalence through 2050. We estimated that 18.1 million individuals were living with one of these eating disorders globally in 2023, including 3.9 million with anorexia nervosa and 14.2 million with bulimia nervosa. Forecasts indicate that this number will increase to 21.8 million by 2050, comprising 4.7 million individuals with anorexia nervosa and 17.0 million with bulimia nervosa.

This study represents, to our knowledge, the most substantive update of anorexia nervosa and bulimia nervosa estimates since GBD 2017.⁵ Compared with previous GBD iterations, updated data resources and methodological refinements were incorporated. New evidence was identified through an updated systematic literature review of studies published between 2017 and 2023, supplemented by gray literature searches and expert consultation. We also refined the modeling strategy. For anorexia nervosa, we removed cause-specific mortality inputs from the DisMod-MR modeling process and instead allowed DisMod-MR to be informed by mortality data derived from systematic literature reviews, thereby strengthening the data-driven basis of the estimates.^{13,20} For bulimia nervosa, we introduced an MR-BRT crosswalk approach to adjust for known biases before modeling, including differences in recall periods and diagnostic criteria.^{13,20} These methodological changes partly explain the higher prevalence estimates for these eating disorders compared with previous GBD iterations.^{5,20}

Although our estimated global prevalence was higher than that reported in previous GBD iterations,^{5,20} the estimates were generally lower than those reported in other studies. Galmiche and colleagues²¹ reported prevalence estimates of anorexia nervosa of 0.1% in males and 0.05% in females (0.02% in males and 0.08% in females in our study), and bulimia nervosa of 0.4% in males and 0.7% in females (0.11% in males and 0.24% in females in our study). Differences

between these estimates and ours are likely attributable to differences in inclusion criteria. In the present study, to ensure measurement comparability and clinical relevance, we included only studies in which cases were defined using *DSM* or *ICD* criteria. These diagnostic frameworks are widely used in mental disorder research and provide clinically meaningful information.¹⁶ In addition, we excluded self-reported diagnoses to minimize potential reporting bias. During the modeling process, rather than relying directly on raw input data, we applied multiple adjustment procedures to address known sources of bias, including recall-period corrections and adjustments for differences in diagnostic criteria.¹³ Differences may also be driven by estimation methods. GBD estimates are age standardized using population weights across locations and age groups, whereas many previous studies focus primarily on age ranges in which eating disorders are most prevalent. Furthermore, prevalence estimates for anorexia nervosa and bulimia nervosa were generated using DisMod-MR 2.1, a well-established bayesian meta-regression framework specifically designed to address common challenges in epidemiological modeling, including data inconsistency, missing data, and methodological heterogeneity across data sources.²² This approach has been widely applied in previous GBD epidemiological analyses.^{5,6,13,20}

Some register-based studies provide useful complementary evidence for understanding the epidemiology of anorexia nervosa and bulimia nervosa from the perspective of clinically diagnosed cases.²³ However, the prevalence estimates in this study represent modeled population-level estimates and are not directly equivalent to hospital-register diagnosed prevalence or incidence. Nevertheless, comparisons of age- and sex-specific patterns across studies remain informative for interpreting differences in case ascertainment and treatment seeking.^{23,24} Some register-based studies have reported a higher cumulative diagnosed prevalence of anorexia nervosa than bulimia nervosa,²³ whereas the present estimates showed higher prevalence of bulimia nervosa. This discrepancy may partly reflect the fact that register-based studies fail to capture patients who remain undiagnosed, do not seek specialist care, or receive care in settings not recorded in health registers.²³ Such underascertainment may be particularly relevant for bulimia nervosa, given the secrecy surrounding binge eating and purgative behaviors and because bulimia nervosa is less frequently associated with low body weight or physiological instability requiring hospital admission.²⁵ The present study provides annual GBD-modeled population-level prevalence estimates derived from population-based studies, and these estimates are intended to reflect prevalence in the general population. Our higher estimates of bulimia nervosa prevalence relative to anorexia nervosa are also consistent with community-based epidemiological studies, including one conducted in 6 European countries.²⁶

This study indicates that both age-standardized prevalence and the number of prevalent cases of anorexia nervosa and bulimia nervosa increased substantially between 1990 and 2023. These observed increases may reflect a combination of true epidemiological change, evolving diagnostic criteria, broader social and behavioral shifts, and model structure; how-

ever, the relative contribution of each factor cannot be disentangled in this analysis. Females had a substantially higher prevalence of eating disorders than males. Several biological, psychosocial, and sociocultural mechanisms have been hypothesized to contribute to this sex difference.²⁷⁻²⁹ However, the salience and expression of these factors may vary substantially across cultural contexts.

Geographical variation in the prevalence of anorexia nervosa and bulimia nervosa likely reflects a complex interplay of genetic, epidemiological, socioeconomic, and sociocultural factors.^{7,30,31} Prevalence was generally higher in Australasia and other high-income regions, which may reflect not only epidemiological differences but also data availability. East Asia experienced the largest increase in the age-standardized prevalence of these eating disorders, coinciding with rapid economic growth and profound socioeconomic transformation in the region.³² By contrast, the lowest prevalence estimates were observed in parts of sub-Saharan Africa,³³ which may partly reflect differences in sociocultural norms related to body image and in the expression of eating disorder psychopathology across settings.³⁴ At the same time, epidemiological data remain sparse in many of these locations, contributing to greater uncertainty in the estimates. Accordingly, country-level comparisons should be interpreted with caution given heterogeneous data availability, measurement differences, and model-based borrowing across locations.

We forecast that the global number of individuals living with these eating disorders will continue to increase through 2050. Population growth is likely to contribute to the projected increase in case numbers.¹⁹ At the same time, the forecast increase in age-standardized prevalence suggests that the future rise in burden cannot be explained by demographic change alone. These findings support integrating eating disorder prevention, early detection, and care into national mental health plans and service packages, establishing structured detection pathways in schools and primary care, dedicating resources to workforce training, routinely including eating disorders in mental health surveillance, and explicitly addressing stigma and barriers to access.³⁵⁻³⁷ Improved population-based surveillance is particularly important in low- and middle-income settings and among groups in whom eating disorders may be underrecognized, including males.³⁸

Limitations

Several limitations should be acknowledged, some of which have been discussed previously.^{13,16} First, substantial efforts have been made to incorporate an increasing volume of data into analyses.^{5,13} Nevertheless, important data gaps remain, particularly in low-income countries, where high-quality primary data are still scarce. As a result, fine-grained geographical comparisons should be interpreted with caution.

Second, in prevalence estimation, it is difficult to fully quantify and eliminate all sources of variation arising from measurement error. Although we adjusted for several known biases, the availability of empirical data to inform these adjustments remains limited. Although the use of *DSM* and *ICD* diagnostic classifications improves consistency across studies, these criteria may not be equally applicable across all cul-

tural contexts.³⁹ In addition, although eligible studies were required to be representative of the general population, survey-based studies may still be affected by selection bias due to nonresponse. Moreover, the uncertainty intervals in our estimates do not capture these difficult-to-quantify sources of bias.

Third, in this study, we could only focus on anorexia nervosa and bulimia nervosa. Other eating disorders, such as binge eating disorder and other specified feeding or eating disorder, were not included because disability weights did not exist for these disorders at the time of the study. As noted by Santomauro and colleagues,¹¹ this exclusion is likely to result in an underestimation of the overall health burden of eating disorders.

Fourth, the disability weights used in this study were derived from large-scale community-based surveys, with most data collected from high-income countries.^{13,16} Applying common disability weights across settings may not fully capture geographical and cultural variation in the health loss associated with eating disorders. In addition, the disability weights were not stratified by severity, which may limit the extent to which variation in disease severity is reflected in burden estimates.

Fifth, owing to the very limited availability of mortality data, we did not estimate deaths attributable to bulimia nervosa. Existing evidence suggests that mortality associated with bulimia nervosa may be lower than that of anorexia nervosa, but still elevated,^{40,41} and its exclusion is therefore likely to affect estimates of the overall DALY burden of bulimia nervosa. Thus, caution is warranted when interpreting DALYs as capturing the total health loss associated with bulimia nervosa. In addition, the estimated number of deaths attribut-

able to anorexia nervosa was extremely low. Similar to other mental disorders, premature death in individuals with eating disorders is often assigned to the direct cause of death, most commonly another disease or injury.^{16,42} Further evidence is needed to better elucidate causal pathways between eating disorders and related health outcomes and to improve the attribution of mortality in future analyses.

Sixth, the interpretation of long-term forecasts should be undertaken with caution. Changes in diagnostic practices, evolving classification systems, and improvements in case detection over time may influence observed prevalence independently of true underlying disease risk, potentially biasing future forecasts upward or downward. In addition, as with all forecasting analyses, unforeseen events, such as major societal, technological, or health-system changes, could alter future trends in eating disorder prevalence. Although the COVID-19 pandemic may have affected service demand and symptom burden in some settings, this analysis does not estimate a causal effect of the pandemic on population prevalence. Forecasting models were fitted using data from 1990 to 2019 to reduce potential pandemic-related bias.

Conclusions

Anorexia nervosa and bulimia nervosa contribute substantially to global health loss, and their prevalence is forecast to continue increasing. These findings support strengthening prevention, early detection, and evidence-based treatment capacity, particularly in regions experiencing rapid growth in case numbers, and integrating eating-disorder care into broader mental health strategies.

ARTICLE INFORMATION

Accepted for Publication: September 3, 2026.

Published Online: October 28, 2026.

doi:10.1001/jamapsychiatry.2026.3457

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Author Contributions: Dr Bai had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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Conflict of Interest Disclosures: Dr Radojčić reported grants from the Barts Charity Precision Medicine Programme Grant (MGU0504). Dr Agostinis Sobrinho reported financial support from the Fundação para a Ciência e a Tecnologia, Portugal. Prof Arnone reported sponsorships from Viatrix. Prof Bhaskar reported grants or fellowship support from the Japan Society for the Promotion of Science, the Japanese Ministry of Education, Culture, Sports, Science and Technology, and the Japan Society for the Promotion of Science with the Australian Academy of Science, including

grant-in-aid for Scientific Research (23KF0126) and the Japan Society for the Promotion of Science International Fellowship (P23712); honoraria from the Japan Stroke Society and from Semey Medical University, Kazakhstan, for an invited professorship and teaching course in neurocardiovascular therapy outside the submitted work; travel or meeting support from the Japan Stroke Society and from Asialink, The University of Melbourne, and the following paid or unpaid leadership, editorial, advisory, reviewer, and committee roles from district chair, Diversity, Equity, Inclusion and Belonging, Rotary District 9675, Sydney, Australia; Chair, Founding Member and Manager, Global Health and Migration Hub Community, Global Health Hub Germany, Berlin, Germany; editorial board member for PLOS One, BMC Neurology, Frontiers in Neurology, Frontiers in Stroke, Frontiers in Public Health, Journal of Aging Research, Neurology International, VasCog Japan, TouchNeurology, Diagnostics, and BMC Medical Research Methodology; Member, College of Reviewers, Canadian Institutes of Health Research, Government of Canada; director of research, World Headache Society, Bengaluru, India; expert adviser/reviewer, Cariplo Foundation, Milan, Italy; visiting director, National Cerebral and Cardiovascular Center, Department of Neurology, Division of Cerebrovascular Medicine and Neurology, Suita, Osaka, Japan; member, Scientific Review Committee, Cardiff University Biobank, Cardiff, United Kingdom; chair, Rotary Reconciliation Action Plan; and Healthcare and Medical Adviser, Japan Connect, Osaka, Japan. Prof Cortese reported support from the British Association of Psychopharmacology, Association for Child and Adolescent Mental Health. Prof Jozwiak reported personal fees from Novartis, Amgen, Boehringer Ingelheim, Servier, Novo Nordisk, MSD, and Adamed. Dr Khubchandani reported research support from MSD, the National Science Foundation New Mexico IDeA Networks of Biomedical Research (the National Institutes of Health P20GM103451 subgrant). Prof Kieling reported grants from the Wellcome Trust, the UK Academy of Medical Sciences, and Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq, Brazil); consulting fees from the Wellcome Trust and Child Mind Institute; and is a cofounder of Wida, a digital mental health platform. Dr Monasta reported support from the Italian Ministry of Health (Ricerca Corrente 34/2017), payments made to the Institute for Maternal and Child Health IRCCS Burlo Garofolo. Dr Mughal reported doctoral fellowship (NIHR300957) funded by the National Institute for Health and Care Research from 2021 through 2025 and is now funded by a Pre-Application Support Fund (NIHR508051). Dr Palma-Alvarez reported speaker honoraria from Angelini, Casen Recordati, Exeltis, Lundbeck, MSD, Mundipharma, Neuraxpharm, Rubió, Servier, and Takeda. Dr Ronfani reported support from the Italian Ministry of Health through the contribution given to the Institute for Maternal and Child Health IRCCS Burlo Garofolo, Trieste - Italy (Ricerca Corrente 34/2017). Dr Santomauro reported that the University of Queensland received funding via a contract from the Institute for Health Metrics and Evaluation, University of Washington, to support this work. Prof Shaban-Nejad reported grants from the National Cancer Institute, the Tennessee Department of Health, and the National Institute on Minority

Health and Health Disparities, consulting fees from Halon, payment or honoraria for presentations from the National Comprehensive Cancer Network, and travel support to attend a meeting from Haleon and the National Comprehensive Cancer Network. Dr Singh reported consultant fees from ROMTech, Atheneum, Clearview health care partners, Yale, Hulo, Horizon Pharmaceuticals/DINORA, ANI/Exeltis, Frictionless Solutions, Schipher, Crealta/Horizon, Medisys, Fidia, PK Med, Two Labs, Adept Field Solutions, Clinical Care Options, Putnam Associates, Focus Forward, Navigant Consulting, Spherix, MediQ, Jupiter Life Science, UBM, Trio Health, Medscape, WebMD, Practice Point Communications, the National Institutes of Health, and the American College of Rheumatology, institutional research support from Zimmer Biomet Holdings, food and beverage payments from Intuitive Surgical/Philips Electronics North America, stock options in Atrr Pharmaceutical, Atai Life Sciences, Kintara Therapeutics, Intelligent Biosolutions, Acumen Pharmaceutical, TPT Global Tech, Vaxart Pharmaceuticals, Atyu Biopharma, Adaptimmune Therapeutics, GeoVax Labs, Pieris Pharmaceuticals, Enzolytics, Seres Therapeutics, Tonix Pharmaceuticals Holding, Aebona Pharmaceuticals, and Charlotte's Web Holdings and has previously owned stock options in Amarin, Viking, and Moderna pharmaceuticals, speakers fees from the Bureau of Simply Speaking, was a member of the executive of Outcomes Measures in Rheumatology, an organization that develops outcome measures in rheumatology and receives arms' length funding from 8 companies, and previously served on the US Food and Drug Administration Arthritis Advisory Committee. Prof Tabarés-Seisdedos reported grants from the Valencian Regional Government's Ministry of Education (PROMETEO/CIPROM/2022/58) and the Spanish Ministry of Science, Innovation and Universities (PID2021-129099OB-I00). Dr Trico reported speaking fees from AstraZeneca, Eli Lilly, and Novo Nordisk. Dr Tromans reported funding as a coapplicant in 2022 from National Health Services Digital (via the Department of Health and Social Care) for an epidemiological research study, funding from a pharmaceutical company (Jazz Pharmaceuticals) for a research study (unrelated to eating disorders) for which they are colead, funding from organizations for research relating to mental health and/or neurodevelopmental conditions, including the National Institute for Health and Care Research and the Baily Thomas Charitable Fund, travel accommodation from the Royal College of Psychiatrists and Cornwall Intellectual Disability Equitable Research, speaking fees from Dartmouth Health, member of the Academic Secretary and an executive committee member in the Neurodevelopmental Psychiatry Special Interest Group, and outgoing academic secretary, incoming financial officer, and an executive committee member in the Faculty of Psychiatry of Intellectual Disability, both at the Royal College of Psychiatrists, editorial board roles at BJPsych Open, Progress in Neurology and Psychiatry, Advances in Autism, Advances in Mental Health and Intellectual Disability, BMC Psychiatry, and the Journal of Mental Health Research in Intellectual Disabilities, and is an editor of the textbook Psychiatry of Intellectual Disability Across Cultures (Oxford University Press), for which they receive royalties.

Funding/Support: This manuscript was developed as part of the Global Burden of Disease Collaborator

Network and Global Burden of Disease Protocol with support from the Global Burden of Disease Secretariat, Institute for Health Metrics and Evaluation, and the Global Burden of Disease Collaborator Network under the Institute for Health Metrics and Evaluation ID 6149. This work was supported in whole or in part by the Gates Foundation (OPP1152504).

Role of the Funder/Sponsor: The funders had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

Data Sharing Statement: See [Supplement 3](#).

Additional Information: ChatGPT (OpenAI) was used to assist in refining language in portions of the manuscript. The authors carefully reviewed all generated language and thoroughly revised it for accuracy and comprehensiveness. All analyses, interpretations, and final editorial decisions were made by the first and senior authors, who assume full responsibility for the accuracy, integrity, and originality of the work.

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