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Original Article

Burden of 10 mental disorders in low and middle-income countries, 1990-2023, with forecasts to 2050: a Global Burden of Disease Study

Subtitle: **Burden of mental disorders in LMICs and LICs**

GBD 2023 LMIC Mental Disorders Collaborators[1,2]

[1]Further details can be found in the supplementary information

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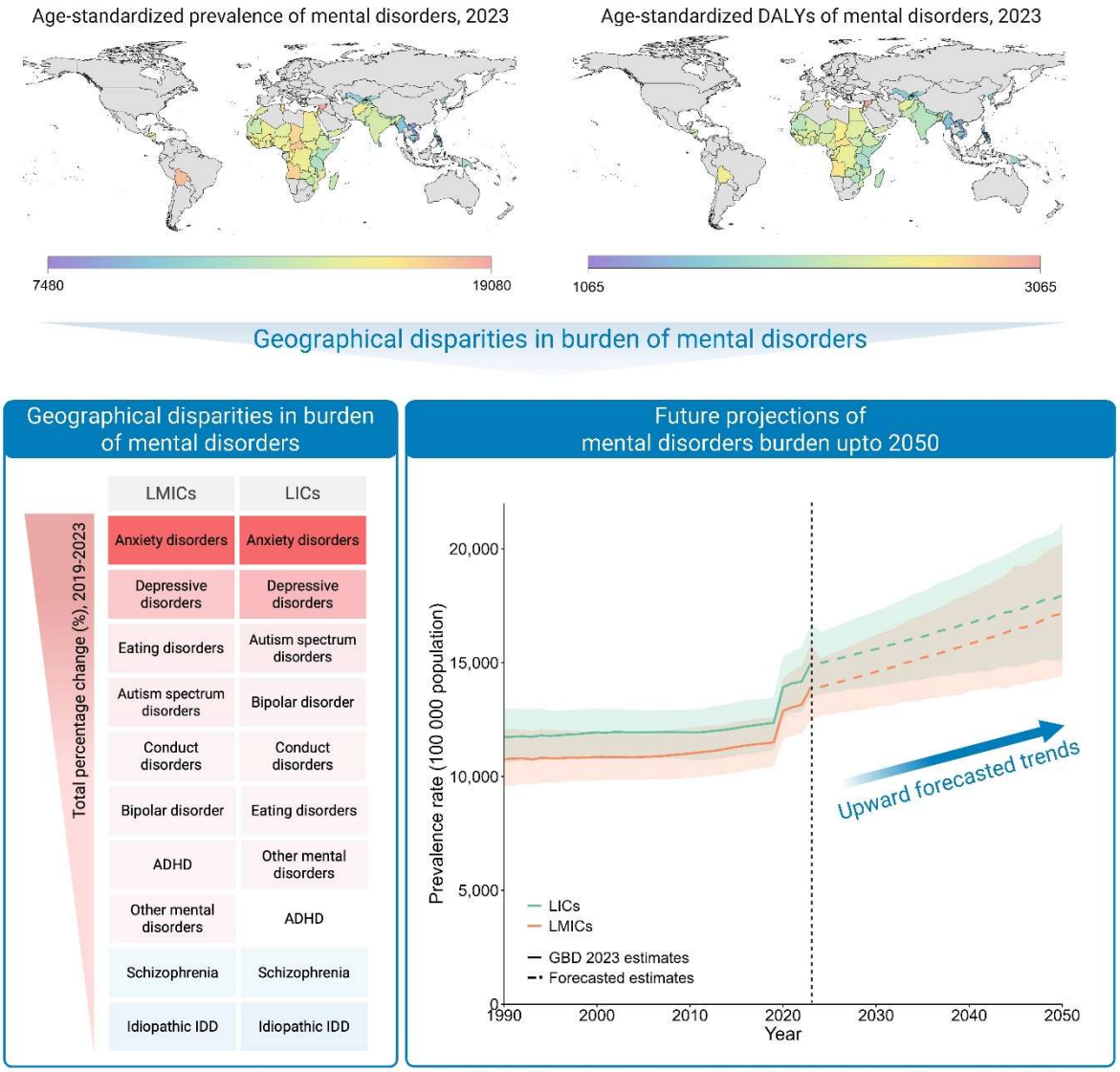
Graphical abstract



Abbreviations: ADHD, attention-deficit/hyperactivity disorder; DALY, disability-adjusted life year; GBD 2023, Global Burden of Disease Study 2023; Idiopathic IDD, idiopathic intellectual developmental disability; LIC, low-income country; LMIC, low-middle income country

Summary

Background: Mental disorders impose a disproportionate burden on populations in low- and middle-income countries (LMICs) and low-income countries (LICs), yet longitudinal assessments across these settings remain limited.

Methods: Using the Global Burden of Disease Study 2023, we investigated prevalence and disability-adjusted life years (DALYs) for ten mental disorder subcategories across 76 LMICs and LICs from 1990 to 2023, and projected trends through 2050 via a generalized ensemble modelling approach.

Findings: Age-standardized prevalence rose markedly between 1990 and 2023, from 10,759.9 (95% uncertainty interval, 9560.1-12,088.6) to 13,929.3 (12,512.5-15,829.0) per 100,000 in LMICs and from 11,723.6 (10,577.7-12,987.5) to 14,979.1 (13,512.9-16,770.7) in LICs, accompanied by corresponding increases in age-standardized DALY rates. The most pronounced increases in both age-standardized prevalence and DALYs were observed during the COVID-19 pandemic. Anxiety disorders (total percentage change: 102.3% in LMICs; 67.3% in LICs), eating disorders (40.7% in LMICs; 4.8% in LICs), depressive disorders (28.6% in LMICs; 29.8% in LICs), and autism spectrum disorders (14.9% in LMICs; 22.5% in LICs) showed the largest increases in prevalence. Under a reference scenario where past trends persist, age-standardized prevalence is projected to reach 17,155.8 (14,449.5-20,212.5) per 100,000 in LMICs and 17,968.4 (15,109.8-21,090.9) in LICs by 2050.

Conclusions: These findings reveal persistent and widening disparities in mental health burden across resource-limited settings, substantially exacerbated by the pandemic. Without targeted, scalable, and sustained policy interventions, the burden in LMICs and LICs will continue to worsen, underscoring the critical need for context-specific public health action.

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Keywords: Global Burden of Disease; GBD 2023; mental disorders; low and middle-income countries; low-income countries.

Introduction

Mental disorders rank among the top ten causes of disease burden and are increasingly recognized as a major public health concern.[1] The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) has previously reported the global burden attributable to mental disorders through GBD 2010 and GBD 2016.[1,2] The burden of mental disorders also imposes a significant economic impact, with 418 million disability-adjusted life years (DALYs) reported in the GBD 2019, translating to an estimated economic value of approximately USD 5 trillion.[3] In result, these findings have been instrumental in guiding policy implications, mitigating modifiable risk factors, monitoring and evaluating the burden of mental disorders at global, regional, and national levels, and ultimately improving public health recommendations.[1,3]

Globally, the burden attributable to mental disorders has shown a gradual upward trend from 1990 to 2019.[1] Moreover, for mental disorders, significant disparities exist based on socioeconomic and geographical locations, including access to and quality of healthcare infrastructure, social stigma against mental disorders, timeliness of medical interventions, and regional exposure to specific risk factors.[4] Mental disorders are often perceived as less life-threatening and relatively challenging to diagnose due to their continuum from mild, transient distress to chronic, progressive, and severely disabling conditions, leading to inadequate prioritization in certain low- and middle-income countries (LMICs) and low-income countries (LICs).[5] The burden of mental disorders remains one of the most pronounced global health inequalities, with limited research focused on LMICs and LICs compared to high-income countries (HICs) or Western countries.[1,2,6,7] In fact, mental disorders are often more prevalent among marginalized populations, increasing their exposure to social determinants.[4] For instance, refugees, individuals living in poverty, asylum seekers, displaced persons, and

ethnoracial minoritized groups face heightened vulnerability to the burden of mental disorders due to structural and social disadvantages.[4]

Fortunately, while significant progress has been made in reducing and overcoming the burden of some infectious diseases (e.g., cholera or tuberculosis) over the past three decades, particularly in high-income countries, addressing the burden of mental disorders has received less comparable attention, where healthcare infrastructure remains limited.[8-10] Thus, understanding and capturing trends in the burden of mental disorders, particularly in LMICs and LICs, is essential for developing effective mitigation strategies and informing policy interventions. Furthermore, the landscape of global mental health may have undergone substantial shifts following the COVID-19 pandemic, particularly in LMICs and LICs.[11] During the COVID-19 pandemic, various implementations to prevent the burden of mental disorders or promote mental health and resilience, faced failure, resulting in breaches of the right to health, preventable suffering, and associated economic costs.[12]

Multiple contributing factors can likely influence the observed trends in the burden of mental disorders. Therefore, the GBD database, which provides internationally comparable estimates of longitudinal prevalence and DALYs, is well-suited for this study, enabling a comprehensive analysis.[8] Furthermore, its inclusion of high-population LMICs, such as India, makes it particularly appropriate for this research. Herein, this study aimed to analyze the longitudinal trends in the burden of mental disorders throughout three decades, pinpoint regions with concentrated preventable and vulnerable against mental disorders, and assess the impact of global crises such as the COVID-19 pandemic on disease burden. Utilizing the GBD 2023 dataset, we provide insights into regional and national trends in the burden of mental disorders and future projections up to 2050 across 76 countries with lower income. These findings may contribute to public health and policy planning by providing context for cross-

national differences in mental health burden. This manuscript was produced as part of the GBD Collaborator Network and in accordance with the GBD protocol.

Results

In LMICs, mental disorders accounted for 10,759.9 (95% uncertainty intervals [UI], 9560.1-12,088.6) age-standardized prevalence rates per 100,000 people in 1990 and 13,929.3 (95% UI, 12,512.5-15,829.0) rates in 2023, with substantial increases (**Table 1**). In LICs, age-standardized prevalence of mental disorders also increased from 11,723.6 (95% UI, 10,577.7-12,987.5) rates per 100,000 people in 1990 and 14,979.1 (95% UI, 13,512.9-16,770.7) rates in 2023. In 2023, the highest age-standardized prevalence rates of mental disorders was observed in the Syrian Arab Republic (19,072.9 [95% UI, 17,071.7-21,439.5] per 100,000 people), Bolivia (18,169.0 [95% UI, 15,842.5-20,721.3]), and Togo (18,129.9 [95% UI, 15,578.8-22,080.0]). In contrast, Viet Nam (8447.8 [95% UI, 7639.4-9366.6] rates per 100,000 people), Lao People's Democratic Republic (9440.7 [95% UI, 8444.5-10621.7]), and Timor-Leste (9676.4 [95% UI, 8680.1-10778.6]) had the lowest age-standardized prevalence in 2023. All LMICs and LICs showed increases in age-standardized prevalence rates from 1990 to 2023.

The age-standardized DALY rates for mental disorders in LMICs increased from 1507.6 (95% UI, 1073.4-1897.9) per 100,000 in 1990 to 2036.0 (95% UI, 1489.7-2739.4) in 2023. A similar increasing trend was observed in LICs, with age-standardized DALYs rising from 1713.5 (95% UI, 1205.2-2163.1) in 1990 to 2255.6 (95% UI, 1627.9-3020.9) in 2023. The most pronounced increases in both age-standardized prevalence and DALY rates occurred between 2019 and 2023, coinciding with the COVID-19 pandemic (**Figure 1**). While the highest age-standardized DALY rates in 2023 were recorded in the Syrian Arab Republic, Lebanon, and Togo, the lowest age-standardized DALY rates in 2023 are estimated in the Viet Nam (1302.6 [95% UI, 946.8-1684.3] per 100,000), Lao People's Democratic Republic (1378.3 [95% UI, 1000.4-1830.3]), and Timor-Leste (1415.8 [95% UI, 1034.9-1867.6]).

Throughout the observational period (1990-2023), the age-standardized prevalence rate of the ten major mental disorders increased substantially in both LMICs and LICs (**Figure**

2). In LMICs, the age-standardized prevalence rate of mental disorders rose modestly until 2019, then sharply increased from 11,503.3 (95% UI, 10,447.9-12,598.1) per 100,000 in 2019 to 13,929.3 (95% UI, 12,512.5-15,829.0) in 2023 (**Figure 2** and **Table 1**). Similarly, in LICs, age-standardized prevalence rate showed a slow upward trend from 1990 to 2019, then surged from 12,361.8 (95% UI, 11,164.2-13,499.1) per 100,000 in 2019 to 14,979.1 (95% UI, 13,512.9-16,770.7) in 2023. Similar patterns are observed in DALYs, reflecting the substantial increase in disease burden during the COVID-19 pandemic. Among the ten major mental disorders, depressive disorders (688.7 [95% UI, 461.8-993.7] age-standardized DALY per 100,000 population in LMICs and 854.8 [95% UI, 567.3-1241.0] DALY in LICs, respectively) accounted for the largest proportion of DALYs attributable to mental disorders in 2023, followed by anxiety disorders (655.4 [95% UI, 425.6-962.8] age-standardized DALY in LMICs and 710.8 [95% UI, 471.3-1043.7] DALY in LICs, respectively; **Figure 2** and **Table S1**).

Compared to the pre-pandemic period (2015-2019), the total percentage change in age-standardized DALYs was significantly higher in both LMICs (total percentage change, 2.35% in 2015-2019 versus 22.28% in 2019-2023) and LICs (2.13% in 2015-2019 versus 22.38% in 2019-2023) during pandemic periods (**Figure 3** and **Table S2**). The highest total percentage change in age-standardized DALYs during the pandemic is observed in Lestho (total percentage change, 31.32%), Gambia (29.81%), and Guinea-Bissau (28.72%).

Between 1990 and 2023, the age-standardized prevalence rate of mental disorders in LMICs increased substantially, with a total percentage change of 29.47% and anxiety disorders (total percentage change, 102.28%), eating disorders (40.65%), and depressive disorders (28.60%) showed the largest increases, emerging as the top three contributors to the increasing age-standardized prevalence rate (**Figure 4**). In contrast, among the ten mental disorders, the age-standardized prevalence rate of idiopathic intellectual and developmental disability (IDD)

(total percentage change, -27.24%) and other mental disorders (-0.53%) declined from 1990 to 2023 in LMICs.

In LICs, 27.7% of the total percentage change in age-standardized prevalence rate from 1990 to 2023 was primarily driven by anxiety disorders (total percentage change, 67.25%), depressive disorders (29.8%), and autism spectrum disorders (ASD) (22.46%) as ranked top three mental disorders (**Figure S2**). Conversely, idiopathic IDD (total percentage change, -14.83%), attention-deficit hyperactivity disorder (ADHD) (-0.74%), and schizophrenia (-0.70%) showed decreasing trends in age-standardized prevalence rate from 1990 to 2023. Notably, the pandemic period appears to have profoundly contributed to these overall changes in age-standardized prevalence rate across the past decade (**Figures S3 and S4**). Anxiety disorders, depressive disorders, eating disorders, and ASD consistently ranked among the leading contributors to the overall increase in age-standardized prevalence rate during the pandemic period (2019-2023), sustaining their position as dominant drivers of mental health burden in both LMICs and LICs.

In 2023, mental disorders contributed substantially to the DALYs across all age groups in both LMICs and LICs (**Figure S1**). In early childhood (<5 years), idiopathic IDD, ASD, anxiety disorders, ADHD, and depressive disorders were the predominant contributors. The burden of depressive and anxiety disorders persisted into older adulthood, remaining elevated across the lifespan. In LMICs, the DALY increased progressively from childhood and peaked between 35-44 years age group, and decreased after age 45 years. In contrast, in LICs, the highest burden was observed during adolescence, with a peak between ages 15-19 years. Although the relative contribution of each disorder varied by age and region, depressive and anxiety disorders consistently ranked among the leading causes of DALYs throughout adulthood. Additional analyses by sex, disorder, and age group are provided in the supplementary information (**Figure S1**).

If a reference scenario where past trends and patterns persist, we projected that the increasing trends in the estimated age-standardized prevalence rate of mental disorders between 1990 and 2023 will continue by 2050 (**Figure 5**). By 2050, the age-standardized prevalence of mental disorders is forecasted to reach 17,155.8 (95% UI, 14,449.5-20,212.5) rates per 100,000 population in LMICs and 17,968.4 (95% UI, 15,109.8-21,090.9) in LICs, respectively (**Table S3**). Supplementary information also provides further future projections for the age-standardized prevalence rate up to 2050 by each ten mental disorders (**Figures S5**).

Discussion

Key findings

This study provides a comprehensive analysis of the prevalence and burden of mental disorders at regional and national levels from 1990 to 2023 across LMICs and LICs, with projections to 2050. There are several key findings. First, the overall burden of mental disorders increased consistently across all LMICs and LICs from 1990 to 2023. This upward trend was particularly pronounced after the onset of the COVID-19 pandemic, during which sharp increases in both age-standardized prevalence and DALY rates were observed. Second, anxiety disorders, depressive disorders, and eating disorders accounted for the largest increases in age-standardized prevalence rate between 1990 and 2023 in both LMICs and LICs, with the most substantial surges occurring during the pandemic period. Third, in contrast to these increasing trends, idiopathic IDD showed the greatest declines in age-standardized prevalence rate across both LMICs and LICs during the study period, representing a notable exception to the overall pattern of growth in the burden of mental disorders. Lastly, future projections to 2050 suggest that the age-standardized prevalence rate of mental disorders will continue to increase across LMICs and LICs, indicating a sustained and growing public health challenge if current trends persist.

Possible explanations

Overall, the burden of mental disorders showed consistent upward trends across all LMICs and LICs during the study period. These findings highlight the urgent need for proactive policy action to reduce the burden of mental disorders and strengthen mental health systems in resource-limited settings. The increasing trends observed are likely multifactorial. Rapid urbanization, economic instability, sociopolitical conflicts, and rising youth populations may have contributed to growing mental health needs in these regions.[4] In addition, limited access

to diagnostic services, treatment infrastructure, and community-based mental health programmes may have exacerbated unmet needs.

In addition, both age-standardized prevalence and DALY rates attributable to mental disorders showed sharp increases following the COVID-19 pandemic. Global health crises, such as COVID-19, have had profound impacts on mental health due to widespread social isolation, diminished social interactions, heightened health concerns, economic instability, and uncertainty.[13] Several previous studies have reported an increase in neuropsychiatric symptoms, including anxiety and depression, during the pandemic.[13-15] While the prolonged uncertainty and limited control associated with the pandemic further intensified psychological distress, fear of infection, mandatory quarantines, and disruptions to daily life likely resulted in more vulnerable settings to develop mental disorders.[13]

Socioeconomic factors also played an imperative role. Economic instability regarding job security was closely associated with increased psychological distress.[16] During the pandemic, changes in employment dynamics, financial hardships, and potential income loss collectively contributed to the deterioration of mental health.[17] In terms of other perspectives, the observed increase in prevalence during the pandemic may, in part, be attributed to improvements in healthcare infrastructure, increased screening, and heightened awareness, particularly in LMICs and LICs. Previously underreported cases may have been more readily identified and diagnosed as mental health services expanded, contributing to an apparent rise in prevalence.

From 1990 to 2023, anxiety disorders, depressive disorders, and eating disorders have occupied the top three mental disorders with the highest increasing changes in age-standardized prevalence rate across LMICs and LICs, with a significant surge occurring during the COVID-19 pandemic. These increases can be linked to risk factors frequently encountered in these regions, including puberty-related challenges, housing instability, socioeconomic disparities,

unemployment, and political unrest.[14,15] The pandemic further exacerbated these vulnerabilities by amplifying social and economic uncertainty, driven by job losses, financial insecurity, and social isolation. In LMICs and LICs, where coping mechanisms and mental health support systems are often insufficient, the inability to provide timely interventions may have further aggravated these conditions.[18]

Fortunately, idiopathic IDD exhibited the greatest declines in age-standardized prevalence rate in both LMICs and LICs. Given that these conditions are primarily observed in childhood, the observed trend may, in part, reflect the success of public health interventions such as expanded prenatal screening, early cognitive developmental assessments, vaccination programmes, and nutritional improvement policies. Reductions in risk factors, such as iodine deficiency, congenital hypothyroidism, and congenital infections (e.g., Zika virus), may have contributed to the prevention of neurodevelopmental impairments.[19,20] However, this evident decline should be interpreted with caution. Limitations in the availability and quality of pediatric mental health services in low-resource settings may lead to systematic underdiagnosis and underreporting of IDD.[4] The observed decline is likely attributable to underreporting rather than an actual reduction in disease burden. Furthermore, during the pandemic, healthcare systems prioritized other mental disorders, such as depression and anxiety, potentially leading to decreased diagnosis and reporting of IDD cases.

Projections to 2050 suggest increasing trends in the age-standardized prevalence rate of mental disorders across LMICs and LICs. The persistence of stigma, a shortage of psychiatric experts, and inadequate healthcare infrastructure present substantial barriers to significant reductions in prevalence.[21] In addition, inconsistent mental health surveillance and underreporting may obscure the actual epidemiological trends.[1,7] To address this challenge, urgent and proactive policy interventions, including large-scale policy reforms and increased

investment in mental health services, are necessary to mitigate the stagnation in mental disorder prevalence and improve overall mental health outcomes.[18]

Comparisons with previous studies

Overall, the burden of mental disorders in LMICs and LICs increased over the past three decades. The study outcomes align with the previous findings on the global burden of mental disorders.[1] However, important distinctions differentiate the present study from prior GBD publications. First, most previous mental health analyses were based on GBD 2019 estimates and were therefore limited to data up to 2019,[1] whereas our study incorporates the updated GBD 2023 framework and extends the analysis through 2023, capturing more recent trends, including the period affected by the COVID-19 pandemic. Second, earlier studies primarily emphasized global estimates or focused on ASEAN countries and selected regions, with comparatively limited attention to LMICs and LICs.[1,22,23] In contrast, our analysis provides a dedicated and comprehensive assessment of ten mental disorders across LMICs and LICs, enabling a more detailed examination of heterogeneity and disparities within resource-limited settings. In addition, while prior GBD mental health studies largely concentrated on retrospective burden estimation, the present study extends the analytical scope by providing prevalence projections to 2050 under a reference scenario. These projections offer forward-looking insights into potential future trajectories of mental disorder burden in LMICs and LICs, thereby complementing existing retrospective evidence and enhancing the relevance of the findings for long-term planning and policy discussion, while acknowledging the inherent uncertainty of such projections.

Policy implications

Mental disorders account for at least 18% of the global disease burden, with an accompanying economic burden projected to reach $6 trillion by 2030.[12] These disorders are particularly challenging to detect and diagnose due to their heterogeneous and continuum from mild, transient distress to chronic, progressive, and severely disabling states.[5] In addition, unlike many other medical conditions that can be diagnosed through objective laboratory tests (e.g., fasting plasma glucose levels for diagnosing diabetes mellitus), the diagnosis of mental disorders primarily relies on clinical assessment and standardized criteria such as the Diagnostic and Statistical Manual of Mental Disorders (DSM).[24] Consequently, diagnosing mental disorders requires psychiatric specialists, potentially exacerbating underdiagnosis in LMICs and LICs. According to GBD 2023 estimates, the age-standardized prevalence of mental disorders in HICs was 16,042.68 (95% CI, 14,502.34-17,872.12) per 100,000 population, with age-standardized DALYs of 2,407.57 (95% CI, 1,769.15-3,152.39) per 100,000 population.[25] In contrast, our findings indicate substantially lower estimated burdens of mental disorders in LICs and LMICs, a pattern that is likely attributable to limitations in diagnostic capacity and surveillance rather than true differences in disease occurrence. This inherent complexity underscores the need for continued advancements in biomarker research to improve diagnostic precision and early detection, particularly in LMICs and LICs.

The lowest estimated burdens were observed in Viet Nam, the Lao People's Democratic Republic, and Timor-Leste. Although these countries have introduced national mental health policies or strategies, such as Viet Nam's National Community Mental Health Care project, implementation remains constrained by limited integration of mental health into primary care, lack of financial investment and trained specialists, and insufficient linkages with families and the community.[26] In the Lao People's Democratic Republic and Timor-Leste, mental health expenditure accounts for only a small proportion of total health spending, and high out-of-pocket payments, which are estimated to comprise approximately 80% of hospital

medical expenditures in Laos, may further limit access to sustained, long-term care for chronic mental disorders.[27] These structural limitations underscore the vulnerability of mental health systems in resource-limited settings. Policy efforts in these countries increasingly emphasize capacity building at the primary care level. In particular, the World Health Organization's Mental Health Gap Action Programme has been adopted to support task-sharing approaches, enabling non-specialist health workers to identify and manage common mental disorders.[28] Expanding such programs within universal primary care frameworks may represent a feasible strategy to reduce diagnostic gaps and improve access to care in LICs and LMICs.

Our findings indicate that anxiety and depressive disorders have shown the largest increase in prevalence over recent decades among the ten major mental disorders in LMICs and LICs. Depressive disorders, in particular, can be effectively managed in these settings through low-cost antidepressants or psychological interventions such as cognitive-behavioral therapy and interpersonal therapy.[29] Stepped-care and collaborative care models, which integrate psychological and pharmacological treatments, can improve treatment adherence and prognosis.[29] These approaches are especially beneficial in LMICs and LICs with insufficient healthcare infrastructure. Additionally, first-generation antipsychotics are effective and cost-efficient for treating schizophrenia, and their benefits can be enhanced through community-based psychosocial interventions.[30-32]

Projections through 2050 indicate a continued rise in the prevalence of mental disorders across LMICs and LICs, a trend further exacerbated during the COVID-19 pandemic. In the absence of proactive policy responses, the growing burden of mental disorders will increasingly demand the establishment of explicit coverage targets and the systematic expansion of mental health workforce capacity in these regions. Structural challenges, such as inconsistent diagnostic criteria, limited reporting systems, and pervasive social stigma, may exacerbate underdiagnosis and lead to an accelerated increase in burden.[1,3,33] These limitations

highlight the critical importance of strengthening surveillance infrastructure and improving mental health literacy at the population and policy levels. Raising awareness of mental disorders is essential to reducing stigma and increasing care-seeking behavior. Moreover, given that key risk factors include puberty, unemployment, and social instability, broader improvements in socioeconomic determinants are also necessary to mitigate the burden of mental disorders in these regions.[21]

Among the ten major mental disorders, ADHD and idiopathic IDDs have shown a decline in prevalence over the past decade. While this trend may reflect an actual reduction in disease burden, it could also be attributed to unmet healthcare needs in pediatric populations, particularly in LMICs and LICs. Addressing gaps in pediatric mental healthcare requires urgent attention and prioritization. Additionally, the burden of mental disorders increased significantly in LMICs and LICs during the COVID-19 pandemic, underscoring the critical need for targeted policy interventions during global crises. In such circumstances, telemedicine can serve as a feasible and efficient solution to improve accessibility to healthcare. For instance, in response to pandemic-related restrictions on healthcare access, the Australian government integrated telehealth services, including mental health care, into its public health insurance program, Medicare, from March to September 2020, later extending the policy until March 2021.[34] Adopting similar successful models could contribute to strengthening mental health infrastructure, enhancing access to care, and integrating mental health into broader public health strategies, ultimately mitigating the long-term impact of mental disorders.

Limitations of study

This GBD 2023 provides valuable insights into trends in the prevalence and DALYs of mental disorders, with future projections up to 2050. However, several limitations must be acknowledged. First, most of the epidemiological data included in our dataset adhere to DSM-

IV and International Classification of Diseases (ICD)-10 diagnostic classifications. As studies increasingly adopt DSM-5 and ICD-11 frameworks, further efforts will be required to account for the impact of these classification changes on GBD estimates.[1] Second, despite the standardized data integration and modeling approaches employed in the GBD framework, the limited availability and quality of data from LICs and LMICs may introduce additional uncertainty into the estimation of the burden of mental disorders. In addition, as these analyses relied on secondary, aggregated data inputs, individual-level sociodemographic characteristics, including socioeconomic status (e.g., income, education, and household resources), sex, age, and ethnicity, were not consistently available across included studies and could not be fully accounted for in the estimates. Moreover, much of the existing evidence on associations with outcomes derives from studies conducted in high-income Western countries, which may limit the generalizability of our findings to settings with limited data availability. Third, although DALYs provide a more comprehensive representation of disease burden, our projections for mental disorders were limited to prevalence estimates due to the methodological focus on changing trends in the occurrence of mental disorders over time. Fourth, our future projections are based on past trends in the prevalence of mental disorders from 1990 to 2023. Consequently, these theoretical projections, assuming no changes in policy interventions, health-system reforms, or service coverage, cannot fully capture the impact of future social, political, technological, public health, or environmental changes. In addition, because our analyses focused on LMICs and LICs, limitations in data availability and completeness for certain inputs may introduce uncertainty and potential bias into the estimates. Lastly, while this study provides a comprehensive overview of trends in burden attributable to mental disorders, further prospective studies are needed to control for potential confounders for estimating the risks and drivers of mental disorders more accurately.

Conclusion

Overall, our study highlights significant disparities and a persistent increase in the burden of mental disorders across LMICs and LICs from 1990 to 2023, with the COVID-19 pandemic markedly accelerating these trends. If current trends persist, the prevalence of mental disorders is forecasted to increase further by 2050. However, these estimates are theoretical and assume no changes in policy interventions, health-system reforms, or service coverage, and therefore warrant cautious interpretation. Therefore, these findings suggest the need for urgent and proactive strategies to address the burden of mental disorders in resource-limited settings.

Resource availability

Lead contact

Requests for further information and all the resources in this study should be directed to and will be fulfilled by the lead contact, Dong Keon Yon (yonkkang@gmail.com).

Materials availability

This study did not generate new unique reagents.

Data and code availability

The data used in this study are publicly available through the Global Health Data Exchange (GHDx) GBD 2023 website: https://ghdx.healthdata.org/gbd-2023. This study did not generate any original code. Any additional information required to reanalyze the data reported in this paper is available from the lead contact upon request.

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Please see appendix (pp 16-61) for more detailed information about individual affiliations.

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Author contributions

Please see appendix (pp 62-77) 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.

Members of the core research team from the Institute for Health Metrics and Evaluation (IHME) for this topic area had full access to the underlying data used to generate estimates presented in this study (A.H.M. and D.K.Y.). All other authors had access to and reviewed estimates as part of GBD and the research evaluation process, which includes additional stages of internal IHME and external formal collaborator review. J.K., H.J.K., J.P., and M.S.K. contributed equally as the first authors. D.K.Y. and J.I.S. contributed as corresponding authors. The corresponding authors (D.K.Y. and J.I.S.) had full access to the data in the study and had final responsibility for the decision to submit it for publication.

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STAR ★ Methods

Key resources table

REAGENT or RESOURCE	SOURCE	IDENTIFIER
Deposited data		
Data source of this paper	Global Burden of Diseases 2023. Available at https://ghdx.healthdata.org/gbd-2023.	GBD 2023 is publicly available as of the date of publication.
Software and algorithms		
Python (version 3.12.8)	https://www.python.org/	Python software (version 3.12.8)
R (version 4.4.2)	https://www.r-project.org/	R (version 4.4.2)

Experimental Model and Study Participant Details

The GBD 2023 employed advanced modeling strategies to evaluate the burden of diseases, injuries, and risk factors across LMICs and LICs, providing comprehensive estimates of mental disorders.[25] This study followed the World Bank 2023 income classification, which categorizes countries based on gross national income (GNI) per capita, rather than the GBD location hierarchy.[35] Under this framework, LICs were defined as countries with a GNI per capita of $1135 or less, while LMICs had a GNI per capita between $1136 and $4465. In total, 76 countries were classified as LMICs and LICs, with 50 categorized as LMICs and 26 as LICs (**Table S4**). This study adhered to the Guidelines for Accurate and Transparent Health Estimates Reporting (GATHER)[36] and utilized publicly available data sources from the GHDx. Previous publications have described detailed methodological approaches, including data sources, modeling frameworks, and forecasting techniques.

Method details

Overview

In this study, we used a three-step approach to comprehensively assess the prevalence and burden of mental disorders across 76 countries classified by the World Bank as LMICs and

LICs from 1990 to 2023 at both regional and national levels. First, we estimated the prevalence and DALYs of mental disorders and their 10 subcategories, analyzing trends and changes over time. Second, we examined the burden of mental disorders during the COVID-19 pandemic period (2019-2023) by estimating total percent changes in prevalence and the burden of diseases. The 10 mental disorder subcategories were ranked to assess the magnitude of change across conditions and to highlight those with the greatest increases or decreases during the pandemic. Third, based on previously observed trends, we projected the long-term prevalence of mental disorders and their 10 subcategories through 2050. These projections aimed to provide insights into the evolving mental health patterns in LMICs and LICs, considering potential variations in disease burden under changing socioeconomic and healthcare conditions.

To quantify the burden of mental disorders in these countries, GBD provides key health metrics, including prevalence, incidence, mortality, years of life lost (YLLs), years lived with disability (YLDs), and DALYs.[8,37] DALYs were estimated by summing YLLs, which capture years of life lost due to premature mortality from mental disorders, and YLDs, which capture years lived with disability from non-fatal mental disorders based on prevalence and their associated disability weights, stratified by age, sex, location, and year.[25] Trends were examined by stratifying the data by age group, sex, and country, with national and regional estimates produced where data availability allowed.[38] Results were reported as counts and age-standardized rates, which accounted for variations in population structure over time using the GBD 2023 world standard population. All estimates were presented with 95% UI, ensuring comparability across regions and time periods.[37]

Case definitions and data source

In this study, we focused on mental disorders classified at level-2, which covered the following ten level-3 disorders: anxiety disorders, ADHD, ASD, bipolar disorder, conduct disorder,

depressive disorders, eating disorders, idiopathic IDD, schizophrenia, and other mental disorders (a collective category that included personality disorders).[25] To ensure comparability in measurement, case definitions primarily followed DSM or ICD criteria, as these had been the standard classifications used in the majority of the included mental health surveys. Different versions of DSM (DSM-III, DSM-III-R, DSM-IV, DSM-IV-TR, DSM-5, and DSM-5-TR) and ICD (ICD-9, ICD-10, and ICD-11) were accepted.[25] Detailed definitions of each disorder were provided in **Table S5**.

For mental disorders estimates, data sources included scientific literature, household surveys, epidemiological surveillance systems, disease registries, and clinical informatics.[25] In addition, relevant studies were identified from government and international organization reports, published datasets, and primary data contributions from GBD collaborators. Detailed, country- and disorder-specific data sources are available through the IHME Sources Tool (https://sources.healthdata.org/collection/sources-2023).

Non-fatal estimation

Prevalence estimates for mental disorders were derived using DisMod-MR 2.1, a Bayesian meta-regression tool that integrates data from multiple sources while maintaining internal consistency.[25,39] This model accounted for variations across sex, location, year, and age group and was particularly useful in estimating prevalence for regions with limited or missing epidemiological data.[25] A hierarchical approach was employed, where prevalence estimates from broader geographic levels were used to inform estimates at more localized levels, ensuring continuity in data interpretation. In cases where epidemiological data were unavailable, uncertain estimates were preferred over missing values to provide a more comprehensive representation of disease burden.[40] To improve the accuracy of prevalence estimates, adjustments were applied to account for between study variability. Alternative

prevalence estimates were compared to reference values derived from gold-standard methodologies, and correction factors were determined using Bayesian network meta-analysis.[41] These adjustments accounted for variations arising from differences in recall periods, survey instruments, and interviewer types, helping to harmonize reported prevalence measures across studies.

In addition, location-specific covariates were incorporated to refine estimates of mental disorder prevalence. These included the mortality rate associated with war and terrorism, the Gallup Negative Experience Index, measuring daily experiences of physical pain, stress, sadness, and anger.[42] The inclusion of these covariates enabled more precise prevalence estimates, particularly in regions with limited direct epidemiological data. In GBD 2023, the impact of the COVID-19 pandemic was directly incorporated into the estimation process by introducing it as a location-level covariate within the DisMod-MR 2.1 modeling framework.

To quantify disability attributable to mental disorders, YLDs were estimated by combining prevalence with corresponding disability weights (DW) for each disorder, age group, sex, location, and year within the GBD 2023 framework. For disorders with defined severity classifications, prevalence was stratified into severity categories and weighted using severity-specific DWs to reflect differences in symptom severity and clinical presentation.[25] Comorbidity adjustment was applied to incorporate the impact of comorbid conditions on disability estimates. Further methodological details on disability burden estimation are described in previous GBD publications.[25,37,38]

Fatal estimation

Fatal estimates for mental disorders were generated within the GBD 2023 framework using the Cause of Death Ensemble model (CODEm).[37,39] CODEm combines all available cause-of-death data and evaluates a range of alternative model specifications with different covariate

sets to identify the best-performing ensemble for mortality estimation.[37,38] Predictive performance was assessed using out-of-sample validation, enabling consistent estimation of cause-specific mortality patterns across age groups, sexes, locations, and years. Mortality estimates were summarized as age-standardized rates based on the GBD standard population and were used to calculate YLLs for mental disorders.[38]

Forecast of the prevalence of mental disorders up to 2050

Projections were generated under a reference scenario that maintained past trends and associations. To estimate mental disorders prevalence for the period from 2024 to 2050, a generalized ensemble modeling approach was applied, utilizing prevalence data covering 1990 to 2023.[43,44] This approach provided estimates for the overall prevalence of mental disorders, as well as its subcategories, including each of the ten mental disorders. To strengthen the reliability of the predictions, the ensemble approach integrated 12 sub-models.[43] Among them, six utilized annualized rates of change, progressively weighting recent years, while the other six employed the MR-BRT spline model, which incorporated different statistical techniques and accounted for the Socio-demographic Index as an independent variable. Each model was evaluated by predicting prevalence from 2012 to 2023 using data from 1990 to 2011, with performance assessed based on root mean squared error.[45] Higher weights were assigned to models with superior predictive accuracy, contributing more to the final ensemble model. The final estimates were presented with a 95% UI, derived from 500 samples drawn from the model's predictive distributions.

Uncertainty estimation

Uncertainty was assessed by randomly drawing 250 samples from the parameter distributions and propagating this uncertainty throughout all stages of the analysis. The final estimates were

derived from the 2.5th and 97.5th percentiles of the posterior distribution, which defined the 95% UI.[46] All analyses and visualizations for the modeling process were performed independently using Python (version 3.11.9; Python Software Foundation, Wilmington, DE, USA) and R Software (version 4.1.2; R Foundation, Vienna, Austria).

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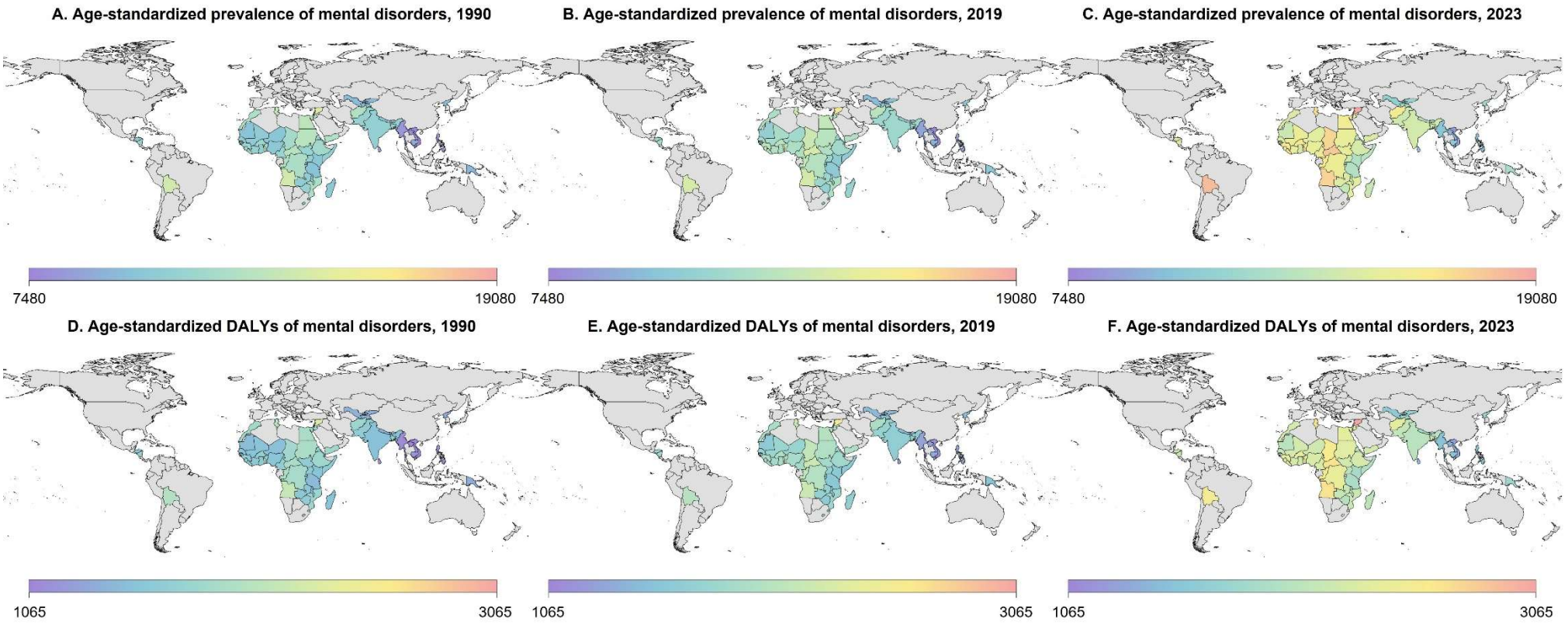
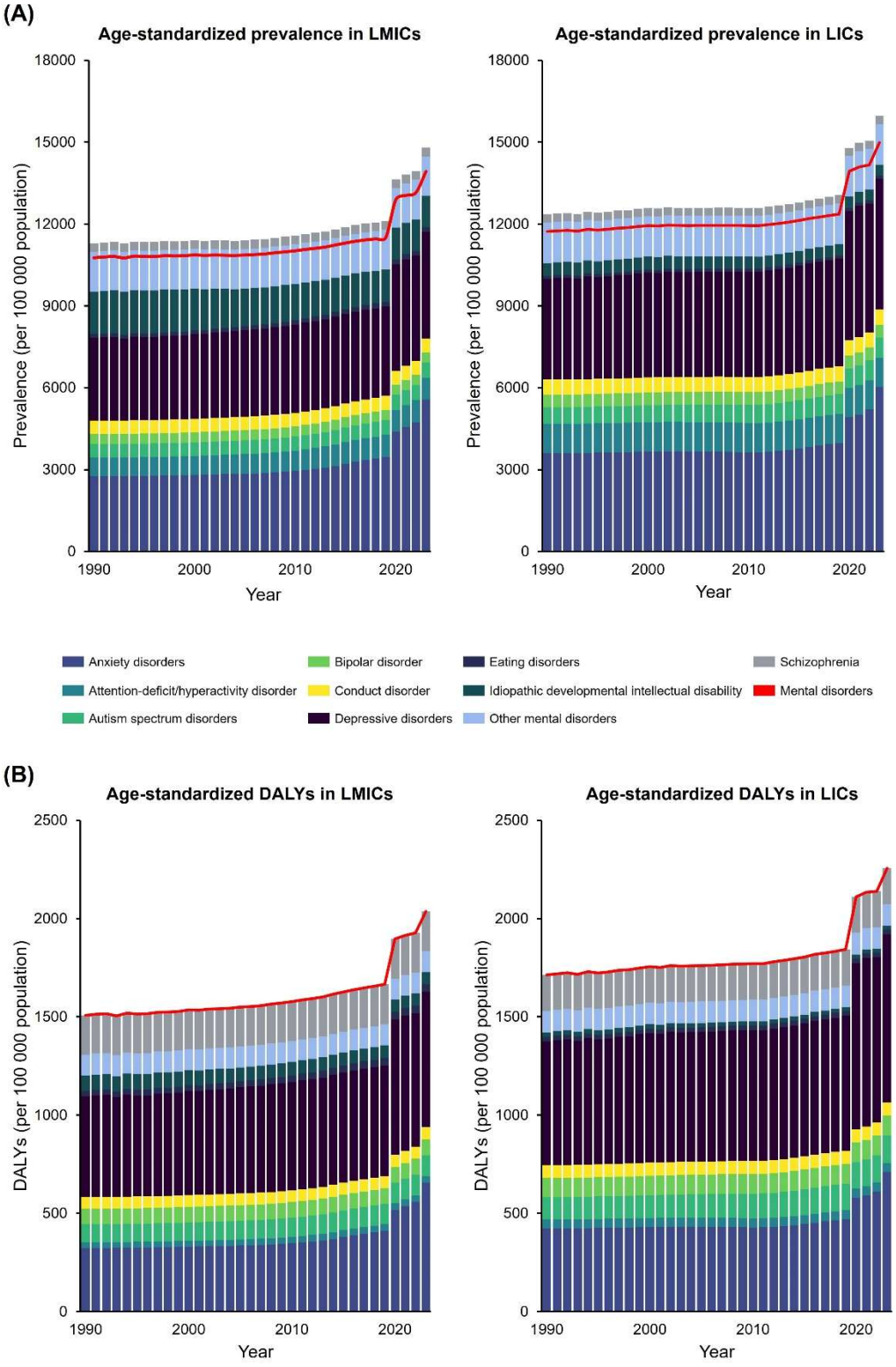
Figure Legend

Figure 1. Age-standardized prevalence and DALYs per 100,000 population for mental disorders in LMICs and LICs of the years 1990, 2019, and 2023.



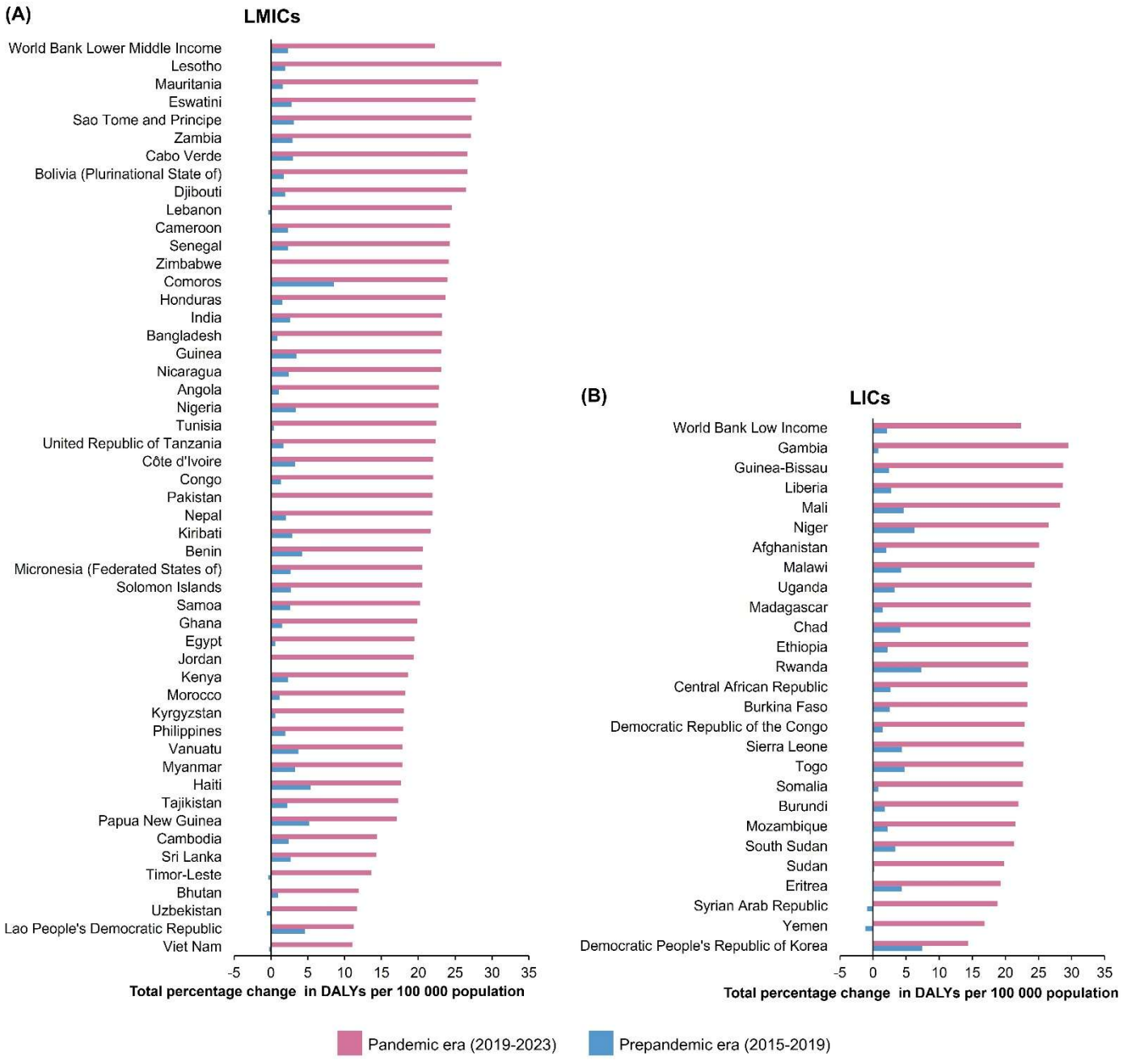
DALY, disability-adjusted life years; LIC, low-income country; LMIC, low-middle income country.

Figure 2. Trends of age-standardized prevalence and DALYs per 100,000 population for mental disorders in LMICs and LICs. **(A)** Total age-standardized prevalence of mental disorders; **(B)** Total DALY burden of mental disorders.



DALY, disability-adjusted life years; LIC, low-income country; LMIC, low-middle income country.

Figure 3. Total percentage change in age-standardized DALYs for mental disorders in LMICs and LICs before and during pandemic periods (2015-2019 vs. 2019-2023). (**A)** Total percentage change of age-standardized DALYs for mental disorders in LMICs; **(B)** Total percentage change of age-standardized DALYs for mental disorders in LICs.



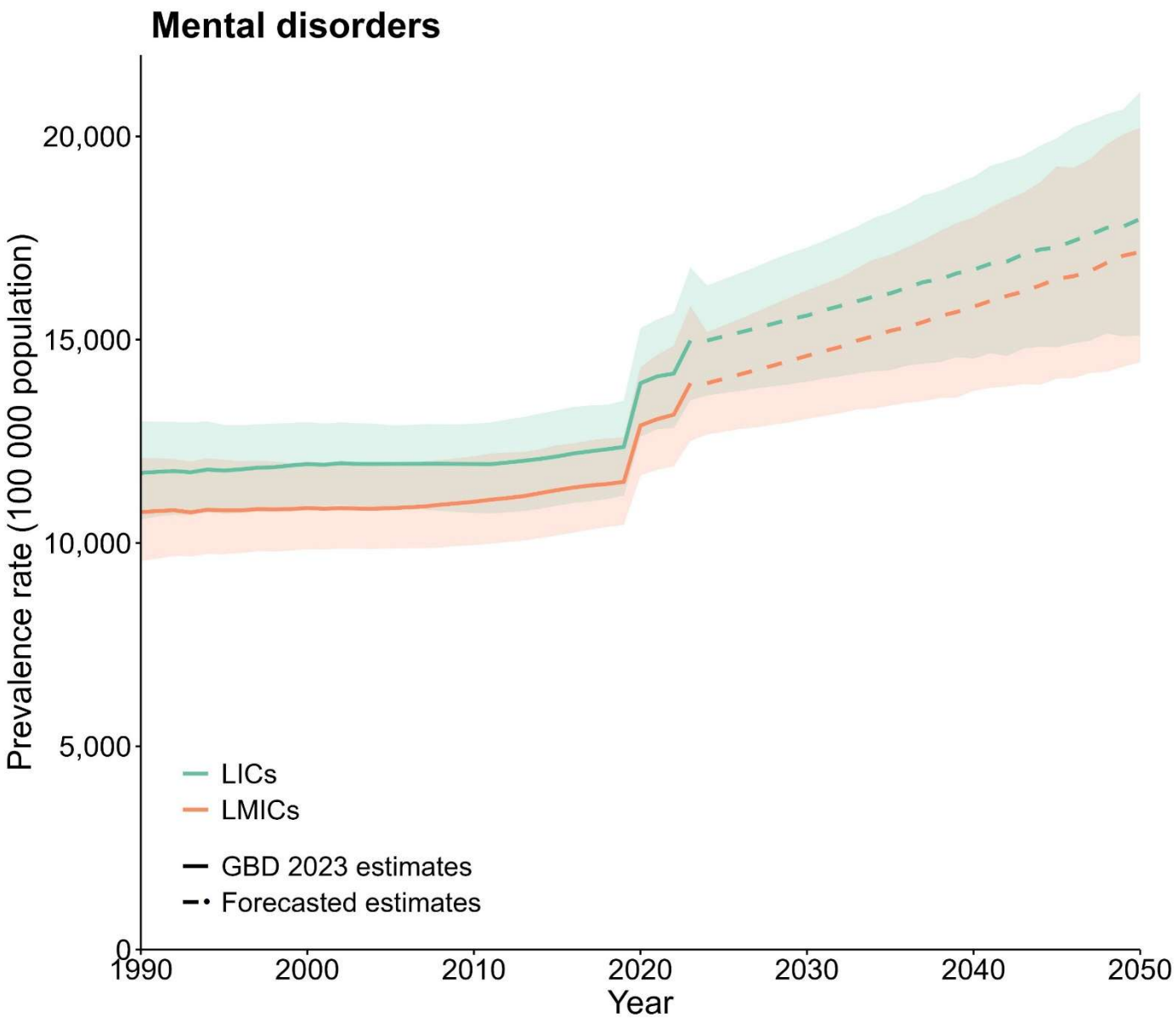
DALY, disability-adjusted life years; LIC, low-income country; LMIC, low-middle income country.

Figure 4. Total percentage change in age-standardized prevalence from 1990 to 2023, ranked by each mental disorder in LMICs.

Country	Mental disorders, total percent change (%)	1	2	3	4	5	6	7	8	9	10
LMIC	29.47	Anxiety disorders (102.28)	Eating disorders (40.65)	Depressive disorders (28.60)	ASD (14.91)	ADHD (14.85)	Conduct disorder (3.07)	Bipolar disorder (1.32)	Schizophrenia (0.72)	Other mental disorders (-0.53)	Idiopathic IDD (-27.24)
Nigeria	46.71	Anxiety disorders (143.68)	Depressive disorders (38.00)	Eating disorders (28.38)	ASD (12.25)	Conduct disorder (2.49)	Schizophrenia (1.12)	Bipolar disorder (0.27)	ADHD (-0.46)	Other mental disorders (-2.74)	Idiopathic IDD (-19.58)
Guinea	43.18	Anxiety disorders (96.34)	Depressive disorders (33.95)	ASD (14.57)	Eating disorders (6.39)	ADHD (0.04)	Bipolar disorder (0.00)	Other mental disorders (-0.01)	Schizophrenia (-0.08)	Conduct disorder (-0.11)	Idiopathic IDD (-11.57)
Cabo Verde	42.99	Anxiety disorders (108.21)	Eating disorders (35.96)	ASD (22.55)	Depressive disorders (21.04)	Idiopathic IDD (13.86)	Other mental disorders (2.73)	ADHD (2.37)	Conduct disorder (0.78)	Schizophrenia (-0.27)	Bipolar disorder (-0.34)
Sao Tome and Principe	42.61	Anxiety disorders (110.90)	Depressive disorders (22.99)	ASD (15.15)	Eating disorders (10.66)	Other mental disorders (0.89)	ADHD (0.44)	Bipolar disorder (-0.08)	Conduct disorder (-0.16)	Schizophrenia (-0.16)	Idiopathic IDD (-1.67)
Côte d'Ivoire	40.54	Anxiety disorders (102.09)	Depressive disorders (25.95)	ASD (17.29)	Eating disorders (5.24)	Conduct disorder (0.95)	ADHD (0.94)	Other mental disorders (0.20)	Bipolar disorder (-0.04)	Schizophrenia (-0.20)	Idiopathic IDD (-8.82)
Lesotho	38.52	Anxiety disorders (107.27)	Depressive disorders (28.63)	ASD (14.96)	Eating disorders (12.75)	ADHD (3.37)	Other mental disorders (2.69)	Schizophrenia (1.15)	Conduct disorder (1.06)	Bipolar disorder (0.39)	Idiopathic IDD (-8.61)
Mauritania	37.93	Anxiety disorders (115.40)	Depressive disorders (23.59)	ASD (19.61)	Eating disorders (8.39)	Schizophrenia (0.01)	Bipolar disorder (0.01)	Other mental disorders (-0.01)	Conduct disorder (-0.11)	ADHD (-0.23)	Idiopathic IDD (-18.73)
Senegal	37.45	Anxiety disorders (97.49)	Depressive disorders (24.45)	ASD (20.79)	Eating disorders (4.58)	Conduct disorder (2.63)	ADHD (2.18)	Schizophrenia (0.18)	Bipolar disorder (-0.01)	Other mental disorders (-0.15)	Idiopathic IDD (-4.54)
Cameroon	37.05	Anxiety disorders (82.25)	Depressive disorders (32.57)	ASD (15.28)	ADHD (0.64)	Other mental disorders (0.49)	Conduct disorder (0.15)	Schizophrenia (-0.02)	Bipolar disorder (-0.05)	Eating disorders (-0.45)	Idiopathic IDD (-9.30)
Zambia	36.08	Anxiety disorders (109.56)	Depressive disorders (23.67)	ASD (20.41)	Eating disorders (14.88)	Conduct disorder (0.99)	ADHD (0.40)	Bipolar disorder (0.16)	Schizophrenia (-0.03)	Other mental disorders (-0.78)	Idiopathic IDD (-9.70)
Honduras	35.38	Anxiety disorders (123.32)	Depressive disorders (25.42)	Eating disorders (17.14)	ASD (16.79)	Schizophrenia (0.30)	Bipolar disorder (0.26)	Conduct disorder (0.15)	ADHD (-0.17)	Other mental disorders (-0.68)	Idiopathic IDD (-21.05)
Comoros	34.76	Anxiety disorders (108.11)	Depressive disorders (28.56)	ASD (27.61)	ADHD (1.21)	Conduct disorder (0.72)	Other mental disorders (0.55)	Bipolar disorder (-0.11)	Schizophrenia (-0.30)	Eating disorders (-1.45)	Idiopathic IDD (-20.01)
Benin	33.33	Anxiety disorders (68.95)	Depressive disorders (29.68)	ASD (17.19)	Eating disorders (11.79)	Other mental disorders (0.70)	ADHD (0.64)	Bipolar disorder (-0.07)	Schizophrenia (-0.20)	Conduct disorder (-0.40)	Idiopathic IDD (-16.45)
Ghana	33.26	Anxiety disorders (82.07)	Depressive disorders (36.36)	Eating disorders (25.15)	ASD (16.39)	Schizophrenia (0.59)	ADHD (0.18)	Other mental disorders (0.03)	Bipolar disorder (-0.00)	Conduct disorder (-0.22)	Idiopathic IDD (-10.17)
Djibouti	32.15	Anxiety disorders (145.43)	ASD (20.06)	Depressive disorders (15.75)	Eating disorders (10.91)	ADHD (1.30)	Conduct disorder (1.15)	Other mental disorders (0.59)	Schizophrenia (0.15)	Bipolar disorder (-0.12)	Idiopathic IDD (-11.15)
Kiribati	32.11	Anxiety disorders (68.36)	Depressive disorders (51.98)	ASD (22.22)	Eating disorders (2.54)	ADHD (0.45)	Conduct disorder (0.20)	Bipolar disorder (0.01)	Schizophrenia (0.00)	Other mental disorders (0.26)	Idiopathic IDD (5.38)
Micronesia	30.34	Anxiety disorders (67.91)	Depressive disorders (48.12)	ASD (24.57)	Eating disorders (8.30)	Schizophrenia (0.17)	ADHD (0.11)	Bipolar disorder (0.00)	Other mental disorders (0.02)	Conduct disorder (0.06)	Idiopathic IDD (8.75)
Samoa	30.25	Anxiety disorders (69.10)	Depressive disorders (47.38)	ASD (19.03)	Eating disorders (16.61)	Bipolar disorder (0.03)	Schizophrenia (0.10)	Other mental disorders (0.61)	Conduct disorder (0.79)	ADHD (1.65)	Idiopathic IDD (3.01)
India	29.78	Anxiety disorders (123.49)	Eating disorders (52.52)	ADHD (26.37)	Depressive disorders (22.77)	ASD (10.06)	Schizophrenia (1.48)	Conduct disorder (0.90)	Bipolar disorder (0.39)	Other mental disorders (0.60)	Idiopathic IDD (23.85)
Solomon Islands	29.69	Anxiety disorders (62.27)	Depressive disorders (53.68)	ASD (17.99)	Eating disorders (3.48)	Bipolar disorder (0.03)	ADHD (0.16)	Conduct disorder (0.18)	Schizophrenia (0.59)	Other mental disorders (0.80)	Idiopathic IDD (3.44)
Congo	29.31	Anxiety disorders (64.93)	Depressive disorders (29.86)	ASD (19.50)	Idiopathic IDD (8.33)	Eating disorders (0.99)	Other mental disorders (0.95)	Bipolar disorder (0.10)	ADHD (-0.14)	Schizophrenia (-0.24)	Conduct disorder (-0.52)
Vanuatu	28.53	Anxiety disorders (63.54)	Depressive disorders (46.89)	ASD (17.42)	Eating disorders (3.41)	Schizophrenia (0.05)	Bipolar disorder (0.05)	Conduct disorder (0.05)	ADHD (-0.21)	Other mental disorders (-1.20)	Idiopathic IDD (2.83)
Eswatini	28.51	Anxiety disorders (63.36)	Depressive disorders (31.73)	Eating disorders (17.63)	ASD (16.96)	ADHD (2.53)	Schizophrenia (1.10)	Other mental disorders (1.02)	Conduct disorder (0.86)	Bipolar disorder (-0.16)	Idiopathic IDD (-2.15)
Nicaragua	28.36	Anxiety disorders (79.83)	ASD (19.75)	Depressive disorders (17.67)	Eating disorders (12.32)	ADHD (1.38)	Conduct disorder (0.93)	Schizophrenia (0.67)	Other mental disorders (-0.09)	Bipolar disorder (-0.11)	Idiopathic IDD (-13.97)
Bolivia	27.85	Anxiety disorders (64.46)	Eating disorders (29.31)	ASD (18.47)	Depressive disorders (13.26)	ADHD (0.83)	Schizophrenia (0.60)	Conduct disorder (0.56)	Other mental disorders (0.17)	Bipolar disorder (-0.08)	Idiopathic IDD (-21.61)
Papua New Guinea	26.95	Anxiety disorders (57.82)	Depressive disorders (47.07)	ASD (18.72)	Eating disorders (6.79)	Conduct disorder (0.23)	ADHD (0.05)	Other mental disorders (0.03)	Bipolar disorder (-0.00)	Schizophrenia (-0.19)	Idiopathic IDD (-4.29)
Nepal	26.89	Anxiety disorders (129.60)	Eating disorders (33.38)	Depressive disorders (14.60)	Conduct disorder (0.47)	Bipolar disorder (0.03)	Schizophrenia (0.11)	ADHD (0.14)	Other mental disorders (0.87)	ASD (7.77)	Idiopathic IDD (18.94)
Tunisia	26.81	Depressive disorders (52.24)	Anxiety disorders (39.65)	ASD (29.70)	Eating disorders (23.73)	Conduct disorder (0.61)	Schizophrenia (0.08)	Bipolar disorder (0.08)	ADHD (0.07)	Other mental disorders (0.37)	Idiopathic IDD (13.75)
United Republic of Tanzania	26.62	Anxiety disorders (78.39)	Depressive disorders (32.81)	Eating disorders (25.25)	ASD (20.99)	ADHD (0.56)	Schizophrenia (0.50)	Conduct disorder (0.24)	Other mental disorders (0.06)	Bipolar disorder (0.03)	Idiopathic IDD (20.68)
Haiti	26.37	Anxiety disorders (82.76)	Depressive disorders (25.19)	ASD (17.56)	ADHD (1.18)	Conduct disorder (1.03)	Bipolar disorder (0.02)	Other mental disorders (0.33)	Schizophrenia (0.82)	Eating disorders (3.64)	Idiopathic IDD (13.79)
Pakistan	25.52	Anxiety disorders (82.24)	Depressive disorders (32.56)	Eating disorders (23.03)	Bipolar disorder (0.03)	Schizophrenia (0.24)	Other mental disorders (0.51)	Conduct disorder (0.59)	ADHD (1.03)	ASD (4.19)	Idiopathic IDD (12.02)
Lebanon	24.06	Depressive disorders (42.31)	Anxiety disorders (36.13)	ASD (30.57)	Eating disorders (11.72)	ADHD (1.74)	Conduct disorder (0.52)	Schizophrenia (0.11)	Other mental disorders (0.00)	Bipolar disorder (0.04)	Idiopathic IDD (10.27)
Myanmar	23.99	Eating disorders (65.07)	Anxiety disorders (64.84)	Depressive disorders (55.32)	ASD (33.17)	Schizophrenia (2.02)	Conduct disorder (0.28)	ADHD (0.06)	Bipolar disorder (0.03)	Other mental disorders (-0.62)	Idiopathic IDD (31.57)
Tajikistan	22.79	Anxiety disorders (80.84)	Depressive disorders (30.59)	ASD (11.05)	Other mental disorders (0.69)	ADHD (0.60)	Conduct disorder (0.37)	Schizophrenia (0.00)	Bipolar disorder (-0.08)	Eating disorders (-6.98)	Idiopathic IDD (10.33)
Jordan	22.44	Depressive disorders (44.87)	Anxiety disorders (34.81)	ASD (24.14)	Eating disorders (6.22)	Other mental disorders (0.90)	ADHD (0.72)	Schizophrenia (0.07)	Bipolar disorder (-0.16)	Conduct disorder (-0.28)	Idiopathic IDD (-8.51)
Kenya	22.35	Anxiety disorders (65.56)	Depressive disorders (22.41)	ASD (15.64)	Eating disorders (13.88)	ADHD (2.14)	Schizophrenia (0.60)	Bipolar disorder (0.00)	Other mental disorders (-0.13)	Conduct disorder (-0.43)	Idiopathic IDD (-8.66)
Angola	21.80	Anxiety disorders (45.43)	Depressive disorders (21.43)	Eating disorders (20.60)	ASD (14.61)	Schizophrenia (0.22)	Bipolar disorder (0.21)	Conduct disorder (0.70)	ADHD (1.60)	Other mental disorders (1.67)	Idiopathic IDD (24.31)
Sri Lanka	21.21	Anxiety disorders (73.27)	Eating disorders (50.43)	Depressive disorders (35.32)	ASD (34.68)	ADHD (11.10)	Schizophrenia (1.36)	Bipolar disorder (0.10)	Conduct disorder (0.04)	Other mental disorders (0.97)	Idiopathic IDD (16.04)
Laos	20.80	Anxiety disorders (100.70)	Eating disorders (58.46)	Depressive disorders (29.01)	ASD (28.12)	Schizophrenia (2.60)	ADHD (1.46)	Other mental disorders (0.82)	Conduct disorder (0.74)	Bipolar disorder (0.05)	Idiopathic IDD (29.23)
Zimbabwe	20.76	Anxiety disorders (46.81)	Depressive disorders (23.11)	ASD (9.17)	Conduct disorder (0.21)	Bipolar disorder (0.12)	ADHD (0.09)	Schizophrenia (0.32)	Other mental disorders (0.91)	Idiopathic IDD (6.32)	Eating disorders (7.86)
Egypt	20.05	Depressive disorders (35.94)	Eating disorders (34.51)	Anxiety disorders (31.95)	ASD (22.63)	ADHD (6.29)	Schizophrenia (0.65)	Other mental disorders (0.32)	Conduct disorder (0.14)	Bipolar disorder (0.06)	Idiopathic IDD (9.35)
Bangladesh	19.39	Anxiety disorders (67.55)	Eating disorders (49.02)	Depressive disorders (23.16)	Schizophrenia (0.08)	Bipolar disorder (0.11)	Other mental disorders (1.36)	ADHD (3.33)	Conduct disorder (4.27)	ASD (16.75)	Idiopathic IDD (32.62)
Philippines	18.81	Depressive disorders (44.43)	Anxiety disorders (42.21)	Eating disorders (28.75)	ASD (20.09)	Schizophrenia (1.22)	ADHD (0.89)	Conduct disorder (0.60)	Other mental disorders (0.01)	Bipolar disorder (0.00)	Idiopathic IDD (23.67)
Kyrgyzstan	18.38	Anxiety disorders (59.53)	Depressive disorders (31.63)	ASD (12.99)	Conduct disorder (0.50)	Other mental disorders (0.41)	ADHD (0.34)	Bipolar disorder (0.05)	Schizophrenia (0.21)	Eating disorders (4.57)	Idiopathic IDD (10.28)
Cambodia	18.22	Eating disorders (42.59)	Depressive disorders (41.42)	Anxiety disorders (39.14)	ASD (28.61)	Schizophrenia (2.45)	ADHD (2.01)	Other mental disorders (1.21)	Conduct disorder (0.96)	Bipolar disorder (0.07)	Idiopathic IDD (27.18)
Morocco	17.24	Depressive disorders (38.75)	ASD (32.16)	Eating disorders (23.05)	Anxiety disorders (21.40)	ADHD (1.16)	Conduct disorder (0.92)	Other mental disorders (0.28)	Schizophrenia (0.26)	Bipolar disorder (0.07)	Idiopathic IDD (13.57)
Bhutan	15.20	Eating disorders (61.01)	Anxiety disorders (52.12)	Depressive disorders (13.26)	Schizophrenia (0.54)	Bipolar disorder (-0.03)	Other mental disorders (-0.24)	ADHD (2.04)	Conduct disorder (2.31)	ASD (5.36)	Idiopathic IDD (13.16)
Timor-Leste	13.35	Anxiety disorders (43.15)	ASD (28.27)	Depressive disorders (23.34)	Eating disorders (22.41)	Schizophrenia (1.08)	Bipolar disorder (0.01)	Other mental disorders (-0.06)	ADHD (-1.11)	Conduct disorder (-1.44)	Idiopathic IDD (18.33)
Viet Nam	12.91	Eating disorders (64.36)	Depressive disorders (36.12)	ASD (27.87)	Anxiety disorders (27.60)	Schizophrenia (1.51)	Other mental disorders (1.28)	Bipolar disorder (0.15)	ADHD (3.87)	Conduct disorder (5.53)	Idiopathic IDD (33.10)
Uzbekistan	10.53	Anxiety disorders (31.05)	Eating disorders (20.18)	Depressive disorders (19.88)	ASD (10.15)	ADHD (0.72)	Conduct disorder (0.71)	Schizophrenia (0.44)	Other mental disorders (0.42)	Bipolar disorder (0.05)	Idiopathic IDD (12.25)

ADHD, attention-deficit/hyperactivity disorder; ASD, autism spectrum disorders; DALY, disability-adjusted life years; DPRK, Democratic People's Republic of Korea; Idiopathic IDD, idiopathic intellectual developmental disability; LIC, low-income country; LMIC, low-middle income country.

Figure 5. Estimated and forecasted prevalence of age-standardized mental disorder rate per 100,000 population through 2050.



LIC, low-income country; LMIC, low-middle income country.

Table 1. Age-standardized prevalence and DALYs per 100,000 population of mental disorders in LMICs and LICs across 76 countries in 1990, 2019, and 2023.

Country	Age-standardized prevalence per 100,000 population (95% UI)			Age-standardized DALYs per 100,000 population (95% UI)		
	1990	2019	2023	1990	2019	2023
LMICs	10,759.0 (9560.1 to 12,088.6)	11,503.3 (10,447.9 to 12,598.1)	13,929.3 (12,512.5 to 15,829.0)	1507.6 (1073.4 to 1897.9)	1665.0 (1221.7 to 2160.2)	2036.0 (1489.7 to 2739.4)
LICs	11,723.6 (10,577.7 to 12,987.5)	12,361.8 (11,164.2 to 13,499.1)	14,979.1 (13,512.9 to 16,770.7)	1713.5 (1205.2 to 2163.1)	1843.0 (1351.9 to 2402.0)	2255.6 (1627.9 to 3020.9)
Afghanistan	12,702.2 (11,574.0 to 14,067.1)	13,057.5 (11,946.6 to 14,177.9)	16,130.6 (14,692.3 to 17,821.2)	1775.3 (1265.8 to 2272.1)	1890.6 (1401.8 to 2436.3)	2365.2 (1720.1 to 3102.6)
Angola	14,240.7 (12,462.5 to 16,098.6)	14,282.3 (12,709.2 to 16,061.8)	17,344.4 (15,548.5 to 19,671.6)	2141.2 (1479.1 to 2797.6)	2169.2 (1542.0 to 2883.9)	2663.7 (1881.5 to 3625.5)
Bangladesh	11,522.9 (10,128.6 to 13,031.1)	11,208.5 (10,064.8 to 12,554.4)	13,757.5 (12,305.4 to 15,681.3)	1746.7 (1238.3 to 2267.3)	1758.1 (1275.2 to 2308.5)	2166.0 (1576.9 to 2921.4)
Benin	11,948.0 (10,660.0 to 13,249.7)	13,250.9 (11,748.0 to 14,699.5)	15,929.9 (13,968.9 to 18,195.8)	1694.0 (1204.5 to 2172.2)	1913.0 (1382.6 to 2520.7)	2307.7 (1668.3 to 3106.1)
Bhutan	10,388.1 (9363.9 to 11,790.0)	10,784.4 (9845.5 to 11,843.5)	11,966.7 (10,778.0 to 13,417.9)	1488.3 (1060.1 to 1896.7)	1564.8 (1147.4 to 2042.0)	1751.7 (1284.8 to 2336.3)
Bolivia (Plurinational State of)	14,211.2 (12,859.1 to 15,847.4)	14,421.4 (12,917.5 to 16,043.7)	18,169.0 (15,842.5 to 20,721.3)	1966.3 (1387.5 to 2585.0)	2003.9 (1437.3 to 2634.1)	2538.4 (1819.3 to 3427.5)
Burkina Faso	11,633.6 (10,434.5 to 12,880.0)	13,216.7 (11,753.0 to 14,628.1)	16,212.4 (14,327.3 to 18,432.3)	1668.4 (1189.7 to 2110.5)	1946.3 (1429.9 to 2552.8)	2399.7 (1746.1 to 3232.4)
Burundi	10,930.7 (9804.7 to 12,029.8)	11,365.7 (10,309.5 to 12,431.7)	13,707.7 (12,343.3 to 15,239.8)	1587.9 (1133.8 to 2027.8)	1660.6 (1209.2 to 2152.4)	2025.9 (1489.0 to 2700.0)
Cabo Verde	10,818.5 (9692.1 to 11,967.9)	12,177.2 (10,805.3 to 13,486.7)	15,469.5 (13,564.7 to 17,703.0)	1587.2 (1132.2 to 2000.6)	1786.3 (1304.4 to 2337.3)	2262.8 (1640.1 to 3041.8)
Cambodia	9029.4 (8032.3 to 10,137.1)	9382.1 (8477.6 to 10,376.1)	10,674.8 (9616.9 to 11,932.0)	1212.5 (861.4 to 1520.9)	1347.7 (978.3 to 1735.6)	1541.4 (1125.5 to 2037.3)
Cameroon	11,478.4 (10,297.1 to 12,719.1)	12,729.8 (11,308.2 to 14,110.7)	15,731.4 (13,883.2 to 17,920.3)	1638.8 (1155.5 to 2069.8)	1845.9 (1342.3 to 2422.8)	2294.9 (1651.2 to 3106.2)
Central African Republic	12,905.6 (11,345.8 to 14,486.5)	14,466.9 (12,811.6 to 16,331.4)	17,768.4 (15,913.5 to 20,120.2)	1885.9 (1311.3 to 2443.9)	2161.5 (1540.7 to 2874.0)	2666.0 (1890.4 to 3619.9)
Chad	11,975.4 (10,607.9 to 13,356.1)	13,963.1 (12,421.7 to 15,469.5)	17,231.2 (15,211.4 to 19,629.4)	1803.7 (1254.7 to 2300.7)	2092.2 (1509.5 to 2759.5)	2589.7 (1877.8 to 3536.5)
Comoros	10,799.2 (9674.2 to 11,985.1)	11,725.1 (10,618.9 to 12,914.0)	14,553.1 (13,115.7 to 16,434.9)	1600.9 (1135.7 to 2043.1)	1775.4 (1286.6 to 2316.8)	2200.5 (1594.8 to 2974.2)
Congo	12,721.3 (11,220.3 to 14,227.4)	13,544.0 (12,119.3 to 15,023.3)	16,450.1 (14,801.1 to 18,417.8)	1930.5 (1339.5 to 2513.6)	2089.7 (1487.9 to 2765.5)	2549.8 (1832.9 to 3460.6)
Côte d'Ivoire	11,041.8 (9852.4 to 12,244.2)	12,727.7 (11,267.7 to 14,136.0)	15,518.7 (13,681.2 to 17,756.8)	1572.3 (1102.9 to 1981.2)	1839.6 (1334.2 to 2401.4)	2244.6 (1620.6 to 3055.4)
Democratic People's Republic of Korea	10,014.0 (9099.9 to 11,036.7)	10,644.0 (9596.6 to 11,807.5)	12,048.2 (10,797.8 to 13,818.1)	1361.5 (976.4 to 1738.2)	1511.9 (1099.4 to 1952.4)	1729.5 (1262.6 to 2340.3)

Democratic Republic of the Congo	12,384.8 (10,868.4 to 13,935.2)	12,859.5 (11,392.0 to 14,500.8)	15,610.2 (13,986.1 to 17,809.3)	1858.2 (1295.6 to 2434.0)	1974.6 (1411.3 to 2633.0)	2426.4 (1719.3 to 3329.2)
Djibouti	10,135.5 (9151.9 to 11,186.2)	10,754.2 (9797.8 to 11,742.4)	13,394.3 (12,106.3 to 14,922.2)	1511.4 (1080.5 to 1906.9)	1581.7 (1146.6 to 2024.5)	1999.9 (1470.7 to 2664.7)
Egypt	13,242.0 (11,794.9 to 14,673.7)	13,475.2 (12,174.4 to 14,932.7)	15,897.4 (14,225.8 to 17,842.5)	1896.9 (1326.0 to 2432.2)	1991.3 (1424.8 to 2599.1)	2379.2 (1721.1 to 3196.4)
Eritrea	11,210.0 (10,060.2 to 12,386.9)	11,430.2 (10,389.3 to 12,497.4)	13,555.1 (12,214.8 to 15,049.6)	1626.8 (1163.0 to 2077.5)	1671.3 (1210.1 to 2161.3)	1993.9 (1473.4 to 2650.7)
Eswatini	11,104.6 (9866.2 to 12,266.3)	11,338.7 (10,191.4 to 12,523.3)	14,270.8 (12,666.2 to 16,308.8)	1634.7 (1146.9 to 2099.2)	1662.1 (1198.3 to 2169.6)	2123.4 (1518.3 to 2888.8)
Ethiopia	11,830.6 (10,567.3 to 13,000.7)	11,827.9 (10,780.6 to 12,954.5)	14,392.7 (13,012.0 to 16,099.7)	1794.6 (1286.0 to 2317.2)	1818.7 (1320.5 to 2377.7)	2245.2 (1662.4 to 2983.6)
Gambia	10,835.8 (9713.1 to 11,994.1)	12,191.7 (10,797.3 to 13,512.3)	15,765.6 (13,830.6 to 18,058.3)	1562.6 (1102.8 to 1963.9)	1761.3 (1289.8 to 2283.8)	2281.1 (1656.4 to 3079.1)
Ghana	10,927.6 (9776.5 to 12,134.1)	12,232.6 (11,014.3 to 13,520.8)	14,562.4 (12,993.3 to 16,498.8)	1630.7 (1154.7 to 2060.6)	1869.4 (1369.6 to 2440.0)	2240.7 (1616.4 to 3008.9)
Guinea	11,470.1 (10,256.2 to 12,700.2)	13,355.0 (11,810.6 to 14,846.7)	16,423.1 (14,452.5 to 18,788.0)	1635.2 (1150.9 to 2074.1)	1931.4 (1392.6 to 2541.0)	2377.7 (1720.4 to 3190.6)
Guinea-Bissau	10,781.9 (9678.1 to 11,935.5)	12,095.1 (10,745.5 to 13,400.4)	15,395.7 (13,521.7 to 17,586.0)	1538.8 (1086.5 to 1939.3)	1726.4 (1251.8 to 2266.9)	2222.2 (1608.7 to 2993.1)
Haiti	13,365.2 (12,138.3 to 14,668.7)	14,616.7 (13,112.0 to 16,110.4)	16,889.0 (15,257.5 to 18,947.0)	1876.9 (1342.3 to 2408.5)	2069.8 (1498.9 to 2729.5)	2435.0 (1760.4 to 3264.2)
Honduras	10,651.6 (9723.7 to 11,598.6)	11,717.0 (10,640.6 to 12,918.2)	14420.6 (12913.4 to 16348.3)	1596.0 (1142.7 to 2012.1)	1747.4 (1270.0 to 2275.5)	2162.2 (1569.4 to 2893.8)
India	11,012.9 (9613.8 to 12,681.2)	11,735.9 (10,602.1 to 12,918.5)	14,292.2 (12,853.1 to 16,276.8)	1493.9 (1069.5 to 1898.1)	1646.3 (1202.1 to 2130.9)	2028.4 (1499.6 to 2704.0)
Jordan	12,338.2 (11,242.7 to 13,665.2)	12,763.5 (11,618.6 to 13,855.3)	15,106.3 (13,689.1 to 16,728.1)	1826.4 (1292.8 to 2341.4)	1949.7 (1432.1 to 2499.7)	2327.8 (1673.8 to 3069.5)
Kenya	10,326.3 (9240.7 to 11,413.4)	10,692.8 (9793.2 to 11,744.1)	12,634.0 (11,482.3 to 14,029.4)	1513.4 (1085.1 to 1931.8)	1587.4 (1156.4 to 2040.6)	1882.9 (1382.1 to 2488.6)
Kiribati	9659.5 (8429.3 to 11,116.9)	10,604.9 (9336.9 to 12,014.6)	12,760.8 (11,207.0 to 15,020.3)	1386.9 (953.9 to 1779.5)	1570.8 (1122.6 to 2088.2)	1911.2 (1360.4 to 2659.3)
Kyrgyzstan	9631.9 (8648.8 to 10,832.1)	9817.3 (8775.9 to 11,013.0)	11,402.0 (10,082.4 to 12,850.6)	1371.7 (970.7 to 1719.7)	1435.4 (1039.3 to 1863.0)	1694.1 (1210.3 to 2258.5)
Lao People's Democratic Republic	7815.4 (6940.9 to 8768.1)	8521.2 (7675.9 to 9503.8)	9440.7 (8444.5 to 10,621.7)	1068.0 (765.3 to 1330.7)	1239.2 (903.4 to 1587.4)	1378.3 (1000.4 to 1830.3)
Lebanon	14,328.6 (12,990.0 to 16,052.3)	14,355.0 (12,916.5 to 15,875.6)	17,776.5 (15,754.1 to 20,142.4)	2124.2 (1523.9 to 2730.7)	2206.8 (1612.0 to 2929.5)	2748.6 (2009.8 to 3717.2)
Lesotho	10,123.6 (9097.1 to 11,130.5)	10,814.2 (9660.4 to 12,003.4)	14,023.6 (12,264.0 to 16,017.0)	1455.5 (1028.9 to 1852.9)	1533.0 (1118.2 to 2011.2)	2013.0 (1456.5 to 2738.7)
Liberia	11,743.8 (10,507.5 to 13,015.0)	12,880.1 (11,425.0 to 14,252.7)	16,535.5 (14,489.7 to 18,957.3)	1669.9 (1189.8 to 2120.2)	1842.1 (1352.9 to 2419.9)	2371.0 (1734.0 to 3214.0)

Madagascar	10,479.7 (9457.8 to 11,509.7)	11,236.7 (10,211.8 to 12,286.8)	13,725.0 (12,364.4 to 15,270.8)	1515.4 (1084.8 to 1928.5)	1657.8 (1205.9 to 2127.4)	2052.7 (1493.8 to 2718.4)
Malawi	10,430.6 (9391.7 to 11,468.8)	11,248.7 (10,204.4 to 12,295.1)	13,946.1 (12,511.0 to 15,704.3)	1497.0 (1076.5 to 1894.4)	1646.9 (1196.4 to 2139.8)	2048.6 (1480.1 to 2741.9)
Mali	10,598.4 (9475.5 to 11,737.8)	12,170.5 (10,786.9 to 13,486.2)	15,604.8 (13,745.6 to 17,919.4)	1510.5 (1071.6 to 1896.9)	1750.4 (1274.0 to 2306.9)	2245.7 (1634.4 to 3054.5)
Mauritania	10,061.3 (9018.8 to 11,154.9)	10,870.3 (9739.5 to 12,008.8)	13,877.4 (12,269.7 to 15,888.8)	1467.7 (1035.0 to 1840.3)	1589.2 (1173.6 to 2048.3)	2036.4 (1472.1 to 2742.3)
Micronesia (Federated States of)	9403.6 (8260.8 to 10,734.3)	10,244.5 (9039.3 to 11,537.8)	12,257.0 (10,697.4 to 14,345.3)	1336.5 (926.1 to 1724.9)	1490.7 (1067.5 to 1954.3)	1797.4 (1280.0 to 2496.9)
Morocco	12,502.2 (11,423.6 to 13,797.2)	12,519.9 (11,496.3 to 13,461.6)	14,657.4 (13,389.6 to 16,136.0)	1826.7 (1300.2 to 2344.0)	1902.3 (1398.4 to 2447.7)	2249.0 (1646.5 to 2911.2)
Mozambique	12,443.2 (11,048.4 to 13,775.1)	12,483.7 (11,234.9 to 13,674.2)	15,030.8 (13,436.1 to 16,883.8)	1772.8 (1257.3 to 2274.4)	1777.1 (1298.4 to 2341.6)	2159.4 (1575.8 to 2885.4)
Myanmar	8228.7 (7339.2 to 9184.1)	8747.0 (7964.1 to 9628.2)	10,202.6 (9204.5 to 11,289.7)	1113.2 (801.1 to 1388.3)	1281.5 (931.0 to 1634.7)	1509.9 (1105.8 to 1981.1)
Nepal	10,050.6 (9053.7 to 11,284.0)	10,549.6 (9607.1 to 11,666.2)	12,753.1 (11,467.8 to 14,317.8)	1386.6 (1000.6 to 1758.2)	1491.5 (1103.7 to 1936.5)	1818.4 (1342.0 to 2396.4)
Nicaragua	11,406.1 (10,432.2 to 12,400.0)	11,947.8 (10,861.6 to 13,180.0)	14,640.4 (13,063.7 to 16,589.2)	1701.7 (1216.7 to 2192.8)	1766.2 (1284.7 to 2295.0)	2174.1 (1580.0 to 2908.3)
Niger	10,229.5 (9245.0 to 11,300.3)	11,879.8 (10,635.3 to 13,118.6)	15,002.1 (13,249.9 to 17,135.3)	1487.9 (1057.7 to 1867.8)	1737.7 (1277.7 to 2247.6)	2198.3 (1593.5 to 2963.3)
Nigeria	10,385.2 (9330.0 to 11,500.8)	12,446.2 (10,935.2 to 14,363.3)	15,236.6 (13,228.7 to 18,317.0)	1532.4 (1088.8 to 1947.9)	1865.1 (1369.2 to 2514.3)	2289.0 (1648.9 to 3146.5)
Pakistan	11,156.8 (10,006.9 to 12,613.1)	11,665.8 (10,610.9 to 12,836.7)	14,003.7 (12,626.8 to 15,685.9)	1629.7 (1168.6 to 2092.8)	1728.8 (1261.6 to 2260.4)	2107.9 (1547.7 to 2811.8)
Papua New Guinea	9561.0 (8383.2 to 10,931.2)	10,454.4 (9232.0 to 11,801.4)	12,137.4 (10,654.5 to 14,095.9)	1360.9 (938.9 to 1746.2)	1533.0 (1109.9 to 2016.3)	1794.8 (1274.4 to 2482.6)
Philippines	8515.8 (7621.2 to 9538.8)	8668.5 (7901.6 to 9502.7)	10,118.0 (9141.2 to 11,134.0)	1196.0 (856.0 to 1501.9)	1278.8 (936.8 to 1623.8)	1508.1 (1112.2 to 1990.8)
Rwanda	10,260.0 (9253.7 to 11,259.9)	11,358.5 (10,325.6 to 12,389.7)	14,016.0 (12,586.8 to 15,758.7)	1507.0 (1078.5 to 1930.0)	1670.3 (1211.4 to 2148.5)	2061.9 (1512.3 to 2774.6)
Samoa	9365.0 (8268.0 to 10,632.8)	10,202.4 (8984.3 to 11,514.4)	12,197.9 (10,622.2 to 14,264.1)	1346.6 (935.9 to 1726.8)	1500.8 (1085.9 to 1974.4)	1804.3 (1283.2 to 2503.5)
Sao Tome and Principe	10,866.2 (9735.2 to 12,023.6)	12,159.9 (10,802.5 to 13,446.3)	15,496.5 (13,604.7 to 17,767.1)	1585.5 (1127.7 to 1985.9)	1771.4 (1298.7 to 2326.7)	2254.1 (1634.4 to 3026.2)
Senegal	10,702.1 (9544.4 to 11,825.6)	11,823.8 (10,550.6 to 13,088.0)	14,710.3 (13,020.4 to 16,829.4)	1556.1 (1104.3 to 1963.2)	1733.5 (1273.2 to 2289.1)	2154.7 (1561.9 to 2911.5)
Sierra Leone	11,518.8 (10,341.6 to 12,779.1)	13,033.7 (11,519.8 to 14,452.4)	15,919.8 (14,005.7 to 18,199.0)	1635.7 (1155.0 to 2070.2)	1866.6 (1360.9 to 2450.8)	2292.1 (1674.1 to 3086.9)
Solomon Islands	9576.3 (8385.7 to 10,899.3)	10,452.3 (9216.0 to 11,846.5)	12,419.7 (10,885.9 to 14,463.4)	1376.5 (952.4 to 1758.6)	1537.2 (1108.3 to 2019.0)	1853.5 (1311.0 to 2583.3)

Somalia	10,943.7 (9847.3 to 12,046.4)	10,751.1 (9756.9 to 11,759.3)	12,995.8 (11,758.6 to 14,398.1)	1597.7 (1144.0 to 2049.3)	1589.4 (1155.3 to 2060.4)	1949.3 (1442.7 to 2571.3)
South Sudan	11,283.9 (10,164.0 to 12,423.1)	12,616.4 (11,407.5 to 13,807.4)	15,261.2 (13,692.5 to 17,166.1)	1624.4 (1167.1 to 2066.4)	1830.4 (1334.6 to 2412.1)	2220.6 (1610.8 to 2957.6)
Sri Lanka	8321.6 (7449.6 to 9273.8)	8961.2 (8163.9 to 9863.2)	10,086.2 (9203.5 to 11,158.3)	1120.3 (793.5 to 1391.7)	1255.1 (912.6 to 1595.8)	1434.5 (1051.4 to 1869.7)
Sudan	13,018.8 (11,850.0 to 14,550.6)	13,005.4 (11,880.5 to 14,162.1)	15,293.9 (13,845.7 to 16,849.9)	1888.2 (1312.7 to 2422.5)	1950.8 (1431.9 to 2516.5)	2336.8 (1679.5 to 3051.2)
Syrian Arab Republic	14,858.6 (13,186.1 to 16,622.7)	16,214.3 (14,595.0 to 18,157.2)	19,072.9 (17,071.7 to 21,439.5)	2304.2 (1572.9 to 2972.5)	2579.0 (1852.0 to 3450.3)	3064.1 (2174.1 to 4178.6)
Tajikistan	9850.1 (8803.3 to 11,091.4)	10,487.0 (9360.7 to 11,750.3)	12,095.0 (10,724.4 to 13,788.5)	1402.0 (995.6 to 1769.0)	1513.9 (1087.2 to 1979.6)	1775.2 (1249.9 to 2376.8)
Timor-Leste	8536.4 (7520.6 to 9621.6)	8634.1 (7779.6 to 9662.4)	9676.4 (8680.1 to 10,778.6)	1187.9 (845.0 to 1498.1)	1245.8 (908.9 to 1596.0)	1415.8 (1034.9 to 1867.6)
Togo	13,006.9 (11,273.0 to 15,400.4)	14,839.2 (12,708.5 to 17,542.2)	18,129.9 (15,578.8 to 22,080.0)	1888.6 (1294.7 to 2512.0)	2183.0 (1537.2 to 2968.0)	2677.6 (1899.4 to 3807.4)
Tunisia	13,378.8 (12,150.3 to 14,767.0)	13,968.9 (12,697.9 to 15,209.0)	16,966.2 (15,296.6 to 18,836.5)	1989.2 (1405.5 to 2560.2)	2169.9 (1594.2 to 2831.0)	2656.1 (1915.0 to 3533.1)
Uganda	11,047.0 (9914.8 to 12,182.1)	11,510.4 (10,392.9 to 12,608.6)	14,172.3 (12,472.1 to 15,920.1)	1586.9 (1134.3 to 2032.3)	1663.8 (1221.4 to 2155.7)	2062.8 (1505.2 to 2733.1)
United Republic of Tanzania	10,030.7 (9061.5 to 11,062.9)	10,522.0 (9590.3 to 11,532.4)	12,700.8 (11,519.1 to 14,040.1)	1452.8 (1050.4 to 1842.2)	1565.9 (1138.3 to 2021.5)	1915.5 (1412.6 to 2519.7)
Uzbekistan	9828.9 (8868.4 to 11,031.4)	9841.6 (8782.9 to 10,976.2)	10,863.7 (9656.4 to 12,182.7)	1396.2 (985.7 to 1763.5)	1434.9 (1035.4 to 1877.0)	1602.3 (1157.2 to 2117.3)
Vanuatu	9399.0 (8246.4 to 10,731.2)	10,308.0 (9106.5 to 11,675.7)	12,080.4 (10,539.4 to 14,076.0)	1338.1 (924.8 to 1731.8)	1511.8 (1083.3 to 1997.5)	1781.5 (1265.2 to 2459.8)
Viet Nam	7481.7 (6732.1 to 8320.6)	7669.1 (6959.3 to 8470.5)	8447.8 (7639.4 to 9366.6)	1074.2 (777.9 to 1339.5)	1172.6 (862.1 to 1480.3)	1302.6 (946.8 to 1684.3)
Yemen	12,676.9 (11,545.8 to 14,023.8)	12,731.5 (11,628.2 to 13,785.9)	14,684.8 (13,385.9 to 16,149.3)	1813.2 (1289.6 to 2319.1)	1918.3 (1416.7 to 2480.7)	2242.1 (1643.8 to 2911.9)
Zambia	10,790.3 (9680.2 to 11,887.9)	11,619.7 (10,522.4 to 12,707.4)	14,683.3 (13,169.6 to 16,568.3)	1557.9 (1109.3 to 1983.1)	1682.1 (1223.1 to 2199.3)	2139.5 (1542.8 to 2866.4)
Zimbabwe	11,257.6 (9951.7 to 12,456.6)	11,048.2 (9844.5 to 12,281.1)	13,594.7 (11,953.9 to 15,550.3)	1630.8 (1144.7 to 2095.5)	1605.4 (1155.9 to 2101.8)	1992.7 (1415.7 to 2724.3)

DALY, disability-adjusted life years; LIC, low-income country; LMIC, low-middle income country; UI, uncertainty interval.