Global, regional, and national burden of 12 mental disorders in 204 countries and territories, 1990–2019: a systematic analysis from the Global Burden of Disease Study 2019

Authors: GBD 2019 Mental Disorders Collaborators

Corresponding author:

Dr Alize Ferrari

The University of Queensland, School of Public Health

Queensland Centre for Mental Health Research, The Park Centre for Mental Health, Locked Bag 500, Archerfield, 4108, Queensland, Australia

a.ferrari@uq.edu.au

Accepted for publication at The Lancet Psychiatry

Summary

Background

In this study, we assessed prevalence and burden estimates from the Global Burden of Diseases, Injuries, and Risk Factors Study 2019 (GBD 2019) for 12 mental disorders, males and females, 23 age groups, 204 countries and territories, between 1990 and 2019. The mental disorders included in GBD 2019 were depressive disorders, anxiety disorders, bipolar disorder, schizophrenia, autism spectrum disorders, conduct disorder, attention-deficit hyperactivity disorder, eating disorders, idiopathic developmental intellectual disability, and a residual category of other mental disorders.

Methods

Disability-adjusted life-years (DALYs) were estimated as the sum of years lived with disability (YLDs) and years of life lost to premature mortality (YLLs). Systematic reviews of the literature compiled data on the prevalence, incidence, remission, duration, severity, and excess-mortality imposed by each disorder. These informed a Bayesian meta-regression analysis to estimate prevalence by disorder, age, sex, year, and location. Prevalence was multiplied by corresponding disability weights to estimate YLDs. Cause-specific deaths were compiled from mortality surveillance databases. A Cause of Death Ensemble modelling strategy estimated deaths by age, sex, year, and location. These were multiplied by the years of life expected to be remaining at death based on a normative life expectancy to estimate YLLs. Deaths and YLLs could only be calculated for anorexia nervosa and bulimia nervosa, as these were the only mental disorders identified as underlying causes of death. These are not reflective of all premature mortality in individuals with mental disorders where the direct cause of death is another disease or injury.

Findings

From 1990 to 2019, the global number of DALYs due to mental disorders increased from 80·8 million to 125·3 million, and the proportion contributed by mental disorders increased from 3·1% (95% uncertainty interval 2·4–3·9) to 4·9% (3·9–6·1). Age-standardised DALY rates remained largely consistent between 1990 (1581·2 DALYs [1170·9–2061·4] per 100,000 population) and 2019 (1566·2 DALYs [1160·1–2042·8] per 100,000 population). YLDs contributed to almost all of the mental disorder burden, accounting for 125·3 million (93·0–163·2) YLDs or 14·6% (12·2–16·8) of global YLDs in 2019. Eating disorders accounted for 17 361·5 YLLs (15 518·5–21 459·8). Globally, males were responsible for 1426.5 (1056.4-1869.5) and females for 1703.3 (1261.5 - 2237.8) age standardized DALYs per 100,000 population for mental disorders. These DALYs were present across all age groups, emerging prior to 5 years with idiopathic intellectual disability and autism spectrum disorders, and continuing into older ages with depressive disorders, anxiety disorders, and schizophrenia. Although the relative contribution of each disorder changed with age and sex, overall DALYs increased steadily during childhood and adolescence, peaked between 25 and 34 years, and decreased steadily into the older ages. Age-standardised DALY rates were highest in Australasia, Tropical Latin America, and high-income North America.

Interpretation

GBD 2019 continued to emphasise the large proportion of the world's burden attributable to mental disorders and the disparities in that burden. Mental disorders remained among the top ten leading causes of burden worldwide, with no evidence of sufficient global reduction in the burden. To reduce the burden of mental disorders, a coordinated response by governments and the global health community is imperative. We need to expand the delivery of effective prevention and treatment programmes with established efficacy to cover more of the population for the necessary duration. This study provided a detailed analysis of mental disorder burden but did not incorporate substance use disorders or suicide

categorised separately within the GBD cause hierarchy. We also acknowledge that the estimated YLLs for mental disorders were extremely low, and not reflective of premature mortality in individuals with mental disorders. Further work to establish causal pathways between mental disorders and other fatal health outcomes is recommended so that this may be addressed within the GBD study.

Funding

Bill & Melinda Gates Foundation, Australian National Health and Medical Research Council, Queensland Department of Health, Australia.

Research in Context

Evidence before this study

The Global Burden of Diseases, Injuries, and Risk Factors Study 2019 (GBD 2019) estimated the prevalence and burden due to 12 mental disorders by age, sex, year, and location. High-level GBD 2019 findings were presented in a capstone publication, covering all diseases and injuries simultaneously. We searched PubMed, PsycInfo, Embase, and PROPERO for papers on the global burden of mental disorders published since 17th October 2020 when the GBD 2019 capstone paper was published up to 6th October 2021. We used the following search term: ((("Mental disorders"[Title/Abstract]) AND (Global[Title/Abstract],)) AND (2019[Title/Abstract])) AND ((((("GBD 2019"[Title/Abstract]) OR (Disability[Title/Abstract])) OR (Prevalence[Title/Abstract])) OR (Burden[Title/Abstract])). There were no additional restrictions used, except for the PROSPERO search where the following filters were applied: Health area of review: *Mental health and behavioural conditions*; Type and method of review: *Epidemiologic, Systematic review, meta-analysis, review of reviews*. Overall, our search identified 102 studies, of which 12 looked relevant to our research aim. Of these relevant studies, there were two publications reporting GBD 2019 results for eating disorders in China, and mental disorders in Mexico respectively. Our search did not reveal any publication dedicated to GBD 2019 mental disorders findings globally or covering any other location by age, sex, and year. The last comprehensive review of the global burden of mental disorders was published using GBD 2010 findings and there have since been significant updates to the burden estimation methodology and epidemiological datasets. Here we present an updated and more detailed analysis of the distribution and burden of mental disorders. This did not incorporate substance use disorders or suicide categorised separately within the GBD cause hierarchy, and for which separate publications exist.

Added value of this study

The current study brings together the most up-to-date information on the prevalence and burden of mental disorders across the world's populations. In 2019, we observed similar disparities in the burden of mental disorders as in 1990. They remained among the leading causes of burden globally despite research demonstrating that interventions can achieve a reduction in the burden. Mental disorder DALYs were present across all age groups, emerging prior to 5 years with idiopathic intellectual disability and autism spectrum disorders, and continuing into older ages with depressive disorders, anxiety disorders, and schizophrenia. Finally, there have been constructive comments and concerns about the epidemiological data and burden estimation methodology for mental disorders. Here we identify priority areas for improvement, with recommendations as to how they may addressed.

Implications of all the available evidence

GBD 2019 further emphasised the large proportion of the world's disease burden that is attributable to mental disorders, but it also demonstrated that we do not yet have evidence of a global reduction in that burden. The persistence of these disorders is especially concerning as they also increase one's risk of other negative health outcomes like suicide. The impact of the COVID-19 pandemic is likely to increase the global burden of mental disorders, making the need for response to this burden imperative.

Introduction

Mental disorders are increasingly recognised as leading causes of disease burden.[1] The Lancet Commission on global mental health and sustainable development emphasised mental health as a fundamental human right and essential to the development of all countries. It called for more investment in mental health services as part of universal health coverage, and better integration of these services into the global response to other health priorities.[1] To meet the mental health needs of individual countries in a way that prioritises systems transformation, we need in-depth understanding of the scale of the impact of these disorders.[2] This includes their distribution in the population, the disability imposed, and their broader health consequences.

The Global Burden of Diseases, Injuries, and Risk Factors Study 2019 (GBD 2019) is a comprehensive international effort measuring the burden of mental disorders. GBD 2019 used the disability-adjusted life-year (DALY), a metric that measures the gap between the current health of the population and a normative standard life expectancy spent in full health. GBD 2019 builds on previous iterations of the GBD study by incorporating new data and methodological improvements. It allows us to systematically compare the prevalence and burden imposed by 369 diseases and injuries, for males and females, 23 age groups, 21 regions, 204 countries and territories, from 1990 onwards.[4-6] Between 1990 and 2019, a reduction in DALYs from communicable, maternal, neonatal, and nutritional diseases has been offset by an increase in burden due to non-communicable diseases, including mental disorders.[4-6] In this study we investigate where, by whom, and how many of these increasing years of life spent in poor health occurred because of mental disorders.

The last comprehensive review of the global burden of mental disorders was published based on GBD 2010 findings where the combined burden of mental and substance use disorders was presented .[7] Mental and substance use disorders are a heterogeneous group of disorders. Health systems in many

131 countries organise their services for these disorder groups separately, while in resource poor settings it
132 is also useful to group these disorders within essential health care packages and delivery platforms. We
133 focused on mental disorders which allowed us to present a more detailed analysis of its distribution and
134 burden by age, sex, location, and year compared to what has been covered by previous publications. [6,7]
135 This supplements more recent findings for substance use disorders published separately.[8] There have
136 also been significant updates to the burden estimation methodology and epidemiological datasets
137 underpinning GBD findings since this publication.[7] We expand on these epidemiological datasets,
138 present an updated methodology for how variation in the mental disorder prevalence data can be
139 explored, and measurement error minimized.

140 The aims of this work are to (a) Facilitate access and interpretation of the latest GBD estimates
141 for stakeholders, including governments and international agencies, researchers, and clinicians involved
142 in the identification, management, and prevention of mental disorders; (b) Present and evaluate the
143 methods used to estimate the burden of mental disorders; and (c) Highlight priority areas for
144 improvement in the mental disorder burden estimation methodology.

145

Methods

Case definitions

This manuscript was produced as part of the GBD Collaborator Network and in accordance with the GBD Protocol. GBD 2019 analyses adhere to Guidelines for Accurate and Transparent Health Estimates Reporting (GATHER, Appendix p 2).[11] Comprehensive explanations of burden estimation methods have been published elsewhere.[4-6] The methodology for estimating the burden due to mental disorders is summarised here.

The mental disorders included in GBD 2019 were depressive disorders (major depressive disorder [MDD] and dysthymia), anxiety disorders (a combined estimate of all subtypes), bipolar disorder (a combined estimate of all subtypes), schizophrenia, autism spectrum disorders (ASD), conduct disorder, attention-deficit hyperactivity disorder (ADHD), eating disorders (anorexia nervosa and bulimia nervosa), idiopathic developmental intellectual disability (estimated as part of the broader intellectual disability impairment envelope in GBD 2019, constituting of intellectual disability from any unknown source after all other sources of intellectual disability are accounted for), and a residual category of "other mental disorders" (an aggregate group of personality disorders). To allow for comparability in measurement, case definitions predominantly adhered to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)[12] or the International Classification of Diseases and Related Health Problems (ICD-10)[13] criteria as these were used by the majority of included mental health surveys. As more epidemiological data using DSM-5 and ICD-11 classifications [14,15] become available, it will be possible to explore the impact of changes to diagnostic classifications within our GBD estimates. The mental disorders included in GBD 2019 and their definitions are further explained in the Appendix (p 4) . The 369 diseases and injuries included in GBD 2019 are organised into a four-level cause hierarchy.

Causes within each level are mutually exclusive and collectively exhaustive. These four levels and the position of each mental disorder within the cause hierarchy is presented in the Appendix (p 5) .

Estimation of YLDs

Years lived with disability (YLDs) were estimated by multiplying prevalence estimates at varying levels of severity by an appropriate disability weight. Disability weights quantified the amount of health loss associated with each sequela (or consequence of a disease or injury).[6] A flowchart presenting the methodology for estimating YLDs is shown in the Appendix (p 6).

Data sources. To compile the epidemiological datasets required to estimate YLDs for each disorder, we undertook a systematic literature review involving electronic searches of the peer-reviewed literature (i.e., via PsycInfo, Embase, and PubMed), the grey literature, and expert consultation. The keywords used in our search of electronic databases are presented in the Appendix (p 7). As part of the grey literature search we also reviewed data sources archived in the Global Health Data Exchange,[16] major multinational survey data catalogs, and those recommended by GBD collaborators as they reviewed the results of our search for each disorder. Accepted data sources were surveys reporting estimates of mental disorder prevalence, incidence, remission, or excess mortality. Surveys published during or after 1980, using probability sampling to capture a representative sample of the general population were required. Selection bias and non-response were considered as part of the assessment for eligibility for inclusion and weighted estimates were prioritised during data extraction. Surveys with recruitment strategies producing samples with a different risk profile for mental disorders compared to the general population were not accepted. These included surveys using non probabilistic sampling and reporting on population subgroups (e.g., minority groups, veterans). Treatment samples were only considered if the source was likely to capture all cases of the disorder in the population. For instance, for schizophrenia or ASD with a bias correction (described below). No restriction was set on language of publication. Studies

utilising different versions of DSM and ICD were accepted. For prevalence, we accepted estimates reporting past-year prevalence or less for all disorders. Due to the risk of recall bias for many disorders in measures of lifetime prevalence, this measure was accepted only for bipolar disorder and ASD, using prospective design.[17]

Epidemiological disease models. The epidemiological data obtained from our systematic reviews were analysed in two steps. At Step 1, we tested and adjusted for biases in epidemiological estimates reported between studies. At Step 2, "gold-standard" (ie, estimates using the desired data-collection methodology and not requiring bias adjustments) and adjusted estimates were modelled within a meta-regression analysis. Both of these steps are explained below.

For each disorder, we identified the major sources of bias in the extracted data. These were based on known sources of measurement error such as recall type (point, 12-month, or lifetime prevalence), survey instrument (diagnostic or symptom scale), and survey interviewer (lay or clinician). Estimates with these biases were considered alternative estimates to gold-standard estimates and were to be adjusted. The adjustment factor was the pooled ratio between gold-standard estimates and these alternative estimates. We compiled studies reporting both the gold-standard estimate and the alternative estimate (e.g., both point prevalence and 12-month prevalence) and calculated the ratios within these studies. We also looked for pairs of gold-standard and alternative estimates between studies, matched by age (0 to 99), sex, location (across 82 locations), and year (1980 onwards), and calculated the ratio between these estimates.

In addition to prevalence ratios between gold-standard and alternative estimates, we took advantage of available prevalence ratios between alternative estimates and analysed all the prevalence ratios within a network. This was especially useful for alternative estimate types with limited gold-standard : alternative ratios available. Direct vs indirect effects were inspected for transitivity and

214 indirect estimates excluded when these effects were extremely different. Network meta-analyses on
215 these ratios were conducted via meta-regression—Bayesian, regularised, trimmed (MR-BRT) to produce
216 pooled ratios between gold-standard estimates and alternative estimates.[18] These pooled ratios were
217 used as an adjustment factor to correct alternative estimates prior to analysis. More information on this
218 bias correction process was presented elsewhere.[6]

219 The gold-standard and adjusted estimates were modelled using DisMod-MR 2.1, a Bayesian
220 meta-regression tool.[19] DisMod-MR 2.1 pools data from different sources to produce internally
221 consistent estimates of prevalence, incidence, remission, and excess mortality by age, sex, location, and
222 year. As part of this process, estimates were generated for locations where high-quality raw
223 epidemiological data was unavailable by using the modelled output from surrounding locations.[19] As per
224 the GBD protocol, an uncertain estimate is preferable to no estimate when data are sparse or not
225 available, because no estimate would result in no health loss from that condition being recorded.
226 DisMod-MR 2.1 also used location-level covariates to better predict prevalence by location. We included
227 location-level covariates for MDD and anxiety disorders. The first covariate identified for each GBD
228 location, the mean mortality rate in the previous ten years due to war and terrorism, given the known
229 association between conflict and elevated levels of MDD and anxiety disorder prevalence.[20] The second
230 made use of the Gallup Negative Experience Index. This measured past-day experiences of physical pain,
231 worry, sadness, stress, and anger from population surveys conducted within the Gallup Initiative.[21] It
232 was included as a means to test for an association between negative emotions at a location level and
233 MDD and anxiety disorder prevalence. The third made use of the fraction of MDD burden caused by two
234 of its risk factors (intimate partner violence and childhood sexual abuse) to inform the estimation of
235 prevalence. The choice of scale for location-level covariates differed by disorder and covariate. Both the
236 untransformed and log-transformed covariates were tested as part of the modelling process for each
237 disorder. The final decision for scale was determined based on the coefficient, statistical significance,

and skew of the location-level covariate. The priors used to inform the DisMod-MR 2.1 models for each disorder are summarised in the Appendix (p 8). More information on DisMod-MR 2.1, covariates and priors was presented elsewhere.[6,19]

Severity proportions. Severity proportions were calculated to reflect the varying levels of disability (or sequelae) associated with a given disorder, eg, mild, moderate, and severe presentations. For conduct disorder, ADHD, ASD, bipolar disorder, and schizophrenia, severity distributions were obtained from meta-analyses of survey data.[22,23] For depressive disorders, anxiety disorders, and other mental disorders, individual-level survey data from the US National Epidemiologic Survey on Alcohol and Related Conditions,[24] and/or the 1997 Australian National Survey of Mental Health and Wellbeing[25] were used.[6,26] No severity distribution was estimated for eating disorders. Severity proportions, shown in the Appendix (p 9), were applied to the total prevalent cases estimated by DisMod-MR 2.1 to obtain prevalence estimates for each level of severity. Further detail on severity proportions was presented elsewhere.[6,26]

Disability weights. Severity-specific prevalence estimates were multiplied by a corresponding disability weight to estimate YLDs.[6] We used disability weights derived from community-based surveys in Bangladesh, Indonesia, Peru, Tanzania, the United States, Hungary, Italy, Sweden, and the Netherlands, and an open web-based survey available in English, Spanish, and Mandarin. In these surveys, participants were presented with pairs of health state descriptions and asked to select the "healthier." Responses were anchored on a scale ranging from 0 (perfect health) to 1 (death) using additional population health equivalence questions that compared the benefits of lifesaving and disease-prevention programmes for several health states. The analysis of pair-wise comparisons indicated the relative position of health states to each other, and the population health equivalence questions were required to anchor those relative positions as values on a 0 to 1 scale. Sequela-specific health state

descriptions and disability weights have been summarised in the Appendix (p 9). More information on the disability weights analysis was presented elsewhere.[6]

Comorbidity adjustments. As burden attributable to each GBD cause was estimated separately, a simulation method was employed to adjust for comorbidity. The co-occurrence of different diseases and injuries was estimated by simulating populations of 40,000 individuals by location, age, sex, and year. Simulated individuals within each population were exposed to the independent probability of having any combination of sequelae in GBD 2019. The comorbidity correction estimated the difference between the average disability weight of individuals experiencing one sequela and the multiplicatively combined disability weight of those experiencing multiple sequelae. The average comorbidity correction estimated for each sequela was applied to the respective location-, age-, sex-, and year-specific YLDs. Further information on GBD's comorbidity correction was presented elsewhere.[6]

Estimation of YLLs

Years of life lost (YLLs) were calculated by multiplying cause-specific deaths by the years of life expected to be remaining at death based on a normative life expectancy.[6] The GBD 2019 cause of death database contained vital registration, verbal autopsy, cancer registry, police records, sibling history, surveillance, and survey/census data dating back to 1980. The Cause of Death Ensemble modelling (CODEm) strategy was used to model cause of death data by location, age, sex, and year. Deaths were scaled to total mortality. Normative life tables were generated using data on the lowest observed death rates for any age group within all GBD locations with a total population greater than 5 million.[4]

Each death in GBD could only be allocated to one underlying cause as per ICD's categorisation of causes of death. Deaths and YLLs could only be calculated for anorexia nervosa and bulimia nervosa, as these were the only mental disorders identified as underlying causes of death. These are not reflective of all premature mortality in individuals with mental disorders where the direct cause of death is another

disease or injury. For instance, suicide was categorised separately under injuries and not included within the mental disorders group. A method for capturing the proportion of premature deaths from these other health causes, that can be causally attributed to the mental disorder experienced by a person, is not yet available for our estimation of YLLs.

Estimation of DALYs

Overall, we included 29 incidence, 1075 prevalence, 52 remission, 1930 cause of death, and 149 severity/other types of data sources in the estimation of YLDs, YLLs, and DALYs for mental disorders. The Appendix (p 11) summarises the number of data sources available by disorder and parameter. Further information on data sources was also presented elsewhere.[9,10,27-31]

DALYs were derived by summing YLDs and YLLs. For mental disorders not recognised as causes of death, YLLs were not estimated and YLDs approximated DALYs. Age-standardised rates per 100,000 of the population were estimated using the GBD world population age-standard. Change in prevalence and burden across time was estimated by comparing the change in age-standardised rate and the change in total numbers. The GBD 2019 geographical hierarchy included 204 countries and territories aggregated into 21 regions and seven super-regions. YLDs, YLLs, and DALYs were estimated at all levels of this geographical hierarchy, by sex, for 23 age groups covering 0 to 95 years and older, and every year from 1990 to 2019. We estimated 95% uncertainty intervals (UIs) for all estimates derived from the ordinal 25^{th} and 975^{th} draw of a total of 1000 draws of the posterior distribution at each step of the burden estimation process. Tables and Figures were generated for this manuscript using Microsoft Excel or the maptools package in R.

Role of the funding source

The funder of the study had no role in study design, data collection, data analysis, data interpretation, or the writing of the report. Authors had full access to the data in the study and final responsibility for the decision to submit for publication.

Results

A summary of the main GBD findings for mental disorders is presented here. All GBD 2019 outputs by age, sex, year, location are available in a set of interactive online visualisations.[31]

Table 1 presents the global prevalence of mental disorders by sex for 1990 and 2019. Mental disorders accounted for 654·8 million (95% UI 603·6–708·1) prevalent cases in 1990 and 970·1 million (900·9–1044·4) cases in 2019, corresponding to an increase in cases of 48·1% between 1990 and 2019. There was no notable increase in the age-standardised prevalence across any disorder between 1990 and 2019.

The age-standardised prevalence for the aggregate of mental disorders was largely consistent across sex in 2019, (11 727.3 per 100,000 [95% UI 10 835.7–12 693.9] cases in males versus 12 760.0 per 100,000 [11 831.7–13 763.1] cases in females). There were larger sex differences at the disorder level with depressive disorders, anxiety disorders, and eating disorders more common in females. ADHD and ASD were more common in males. Across both sex and year, the two most common mental disorders were depressive disorders and anxiety disorders. The least common were schizophrenia and eating disorders.

Table 2 presents age-standardised prevalence by mental disorder and region in 2019. For the aggregate of mental disorders, Australasia, Tropical Latin America, and high-income North America had the highest prevalence. Across individual disorders, other regional patterns emerged, for instance depressive disorders prevalence was also high in sub-Saharan African regions and north Africa and the Middle East in addition to the previous regions. Eating disorders, ADHD, conduct disorder, and ASD were highest in high-income regions. Bipolar disorder and schizophrenia varied to a lesser extent across regions. Disorder-specific prevalence by country is also presented in the Appendix (p 12 and p 24).

In terms of deaths, eating disorders were responsible for 318·3 deaths (95% UI 285·7–386·0) worldwide in 2019. Anorexia nervosa accounted for most of these deaths, 268·7 (242·5–326·9). The remaining deaths (49·6, 36·4–72·2) occurred because of bulimia nervosa. As previously explained, eating disorders were the only mental disorders for which YLLs could be estimated.

Mental disorders accounted for 125·3 million (95% UI 93·0–163·2) DALYs in 2019, equating to an age-standardised DALY rate of 1566·2 per 100,000 (1160·1–2042·8) population or 4·9% (3·9–6·1) of global DALYs. The number and proportion of DALYs due to mental disorders increased from 1990 (80·8 million [59·5–105·9] DALYs; 3·1% [2·4–3·9] of global DALYs) although the age-standardised DALY rates were largely consistent between since 1990 (1581·2 DALYs [1170·9–2061·4] per 100 000). Estimated DALYs for mental disorder do not represent fatal burden as they comprised almost entirely of YLDs. There were 125·3 million (93·0–163·2) YLDs estimated for mental disorders equivalent to 14·6% (12·2–16·8) of global YLDs in 2019. YLLs were estimated only for eating disorders which accounted for 17 361·5 YLLs (15 518·5–21 459·8).

Globally, males were responsible for 1426.5 (1056.4-1869.5) and females for 1703.3 (1261.5 - 2237.8) age standardized DALYs per 100,000 population for mental disorders. Depressive disorders accounted for the largest proportion of mental disorder DALYs in 2019 (37·4%), followed by anxiety disorders (22·9%) and schizophrenia (12·1%), as shown in the Appendix (p 38). Burden due to mental disorders was present across all age groups, emerging prior to 5 years of age with idiopathic intellectual disability and ASD, and continuing into older ages with depressive disorders, anxiety disorders, and schizophrenia. Although the relative contribution of each disorder changed with age and sex, the number of DALYs increased steadily during childhood and adolescence, peaked between 25 and 34 years, and decreased steadily into the older ages. Figure 1 shows global DALYs by disorder, age, and sex in 2019.

Global rankings of mental disorder YLDs and DALYs by age group in 2019 are shown in Table 3. Globally, mental disorders were the 13th leading cause of DALYs in 1990 and seventh leading cause of DALYs in 2019. At the disorder level, depressive disorders featured in the top 25 leading causes of DALYs, ranked 13th in 2019. Mental disorders were the second leading cause of YLDs worldwide in both 1990 and 2019. At the disorder level, depressive disorders (second), anxiety disorders (eighth), and schizophrenia (20th) featured in the top 25 leading causes of YLDs in 2019. Within mental disorders, depressive disorders ranked the highest in all age groups except for 0–14-year-olds, where conduct disorder was the leading cause of burden. The rankings of mental disorders differed by sex and age, as shown in the Appendix (p 39 and p 40).

Figure 2 shows the global distribution of mental disorder DALYs in 2019 by country, which followed the trends in prevalence discussed. The USA, Australia, New Zealand, Brazil, selected locations within western Europe (eg, Greenland, Portugal, Greece, Ireland, Spain), sub-Saharan Africa (eg, Uganda) and north Africa and the Middle East (eg, Palestine, Lebanon, Iran) were among those with the highest DALY rates. Locations in southeast Asia (eg, Vietnam, Myanmar, Indonesia), east Asia (eg, Taiwan [province of China], China, North Korea), high-income Asia Pacific (eg, Brunei) and central Asia (eg, Poland, Azerbaijan) were among those with the lowest DALY rates. While country-specific DALY rates varied from each other, they were within overlapping bounds of uncertainty when compared to the global mean (Appendix, p 41).

Discussion

In 2019, we observed similar disparities in the global distribution and burden of mental disorders as in 1990. Depressive and anxiety disorders remained among the leading causes of burden worldwide (ranked 13th and 24th leading causes of DALYs, respectively) with their prevalence estimates and disability weights comparatively higher than many other diseases. Schizophrenia impacted a smaller proportion of the world's population, but the disability weight for an acute state of psychosis was the highest estimated across the GBD study. The persistence of these disorders, in addition to bipolar disorder and eating disorders, is especially concerning, as they not only impact on health in their own right, but also increase one's risk of other conditions like suicide (rated as the 18th leading cause of mortality in GBD 2019).[6]

We found no marked variation in burden by sex for bipolar disorder and schizophrenia. Burden of depressive disorders, anxiety disorders, and eating disorders was greater in females. Burden of ASD and ADHD was greater in males. In 2019, 80.6% of the burden due to mental disorders occurred at working ages (between 16 and 65 years). Around 9.2% of the remaining burden occurred in those younger than 16 years. With 23.2% of the world's children and adolescents located in sub-Saharan Africa in 2019, this poses considerable challenges to economies that already have limited resources dedicated to mental health at a point in time when the implementation of prevention and early intervention strategies for mental disorders is crucial.

Overall, mental disorder DALY rates were elevated in many high-income countries and lowest in parts of sub-Saharan Africa and Asia where we also have the least coverage of epidemiological data and therefore more uncertainty surrounding estimates. Disorder-specific trends were also present, for instance with depressive and anxiety disorders DALYs high in countries impacted by high rates of childhood sexual abuse,[5] intimate partner violence,[5] and conflict and war.[20]

The age-standardised DALY rates for mental disorders remained fairly constant between 1990 and 2019, but the overall number of DALYs increased by 55.1%. This growth is expected to continue and highlights the need for health systems, especially those in low- and middle-income countries, to deliver the treatment and care needed for this growing population. Effective intervention packages for mental disorders exist. These have the potential to reduce the burden due to mental disorders by decreasing the severity of symptoms, increasing remission, or reducing the risk of mortality.[32] However, at the global level, there are significant shortages in access to these services, in the resources allocated their scale-up, as well as various barriers to care such as one's perceived need for care and stigma against mental health issues.[33,34] In high-income countries where we have seen increases in the uptake of mental health treatment, treatment is still not reaching minimally adequate standards or those in the population who need it the most.[33] To reduce the burden of mental disorders, we need to expand the delivery of effective prevention and treatment programmes with established efficacy[32] to cover more of the population for the necessary duration.

The emergence of the COVID-19 pandemic in the year 2020 has created an environment where many determinants of poor mental health outcomes are exacerbated. Epidemiological research conducted in response to the pandemic suggests that the direct psychological effects of the pandemic as well as its long-term impacts on the economic and social circumstances of a population may increase the prevalence of common mental disorders.[38] Work to establish the dataset and methodology from which the impact of the COVID-19 pandemic on the burden of mental disorders can be quantified within the GBD study has been summarised elsewhere. [39] Our findings demonstrated that pre-pandemic, poor mental health already imposed substantial burden, with health services in most countries ill-equipped at reducing this burden. While it is important to consider the impact of COVID-19 on mental health, the existing unmet mental health needs of the population must also be considered as we focus on a successful

response and recovery from this pandemic. Our GBD 2019 results serve as a stark reminder for countries to re-evaluate their mental health service response more broadly.

We would like to highlight key limitations around the burden estimation methodology for mental disorders and identify priority areas for improvement. First, despite the considerable amount of new epidemiological data incorporated since our last publication on the burden of mental disorders,[7] some of our estimates continue to rely on sparse datasets, and high-quality survey data are still required for many countries. Having undertaken burden of disease analyses since GBD 2010, we remain concerned about the quality of epidemiological data available for mental disorders. Our systematic literature review made use of inclusion criteria imposing minimum standards to data collection methodology across studies. We recommend that these be considered by researchers undertaking new mental health surveys, specifically in decisions around case definitions, instruments, sampling strategy, and standard of reporting.

Second, it is difficult to quantify and remove all variation due to measurement error in our prevalence estimates. We corrected for known sources of bias caused by survey methods but had very few datapoints to inform such adjustments for some disorders and other important sources of variation in prevalence remain unquantified. For instance, it is difficult to disentangle reasons for cross-national differences in our burden estimates. The importance of cross-culturally comparable case definitions and case-finding for mental disorders has been emphasized [40] but the epidemiological data informing burden estimates are limited in this respect. DSM and ICD classifications which necessarily ensures consistency in case definitions across studies may not be sensitive to all cultural contexts.[41] The cross-cultural applicability of our case definitions and data collection methodology need to be considered in future research. It should also be noted that the uncertainty intervals reported here do not incorporate these sources of bias which are difficult to quantify, including measurement bias not captured by our bias corrections, selection bias due to missing data, and model specification bias.

Third, our estimation of severity distributions was derived from few studies, mostly from high-income countries. Imposing severity distributions from high-income countries to all locations likely underestimated burden in countries with little or no access to treatment and needs to be reconsidered. Raw data on the severity distribution of mental disorders by location that would facilitate this work cannot be accessed. However, alternative work to model the impact of access to health care on the severity of mental disorders is currently underway within the GBD study.

Fourth, the majority of the epidemiological data within our datasets adhere to DSM-IV and ICD-10 diagnostic classifications.[12,13] With the emergence of more epidemiological surveys using DSM-5 and ICD-11 classifications,[14,15] work to account for the impact of changes to diagnostic classifications within our GBD estimates can be undertaken.

Fifth, the mental disorders included in GBD 2019 were those with sufficient epidemiological data at a global level required for burden of disease analysis. As more data on other mental disorders become available, we will be able to review the GBD cause list accordingly. Notably, personality disorders need to be formally included as a GBD cause for more comprehensive analysis of its distribution and burden. These disorders were captured through the residual group of other mental disorders in GBD 2019, with limited sources available to inform their prevalence and disability weight analysis. Work is currently underway within the GBD study to compile and analyse data on the global epidemiology of personality disorders. We also recently published a method demonstrating how binge eating disorder and the group of 'other specified feeding or eating disorders' could be incorporated within future iterations of the study. [42] These disorders likely explain a substantial proportion of eating disorder burden currently not captured by GBD analyses. Efforts to compile the required datasets and analyses highlighted by this work for formal inclusion in the GBD study is underway.

Sixth, the focus on mental disorders allowed us to present a more detailed analysis of the 12 mental disorders included in GBD 2019. That said, it is also necessary to consider the impact of these disorders on population health in combination with substance use disorders, and neurological disorders, especially in resource poor settings where the service response for these disorders may be grouped within essential health care packages and delivery platforms. An evaluation of the burden imposed by this broader group of disorders was undertaken for the latest review of Disease Control Priorities. [32]

Seventh, the differential mortality gap for those with mental disorders needs to be reflected within the GBD framework. Within the mental disorder group, deaths were estimated for only eating disorders. These estimated deaths are extremely low, and not reflective of premature mortality in individuals with eating disorders, or in other mental disorders where the direct cause of death is another disease or injury. Alternative mortality-based metrics have shown that excess deaths in those with mental disorders occur not just from suicide and other external causes but also from infectious diseases, neoplasms, diabetes, and circulatory system and respiratory diseases.[43,44] These deaths are assigned to those causes within the GBD 2019. A method for capturing the proportion of premature deaths from physical health causes, that can be causally attributed to the mental disorder experienced by a person, is not yet available for our estimation of YLLs. However, where the evidence exists, it is feasible to use comparative risk assessment to quantify the contribution of mental disorders to premature mortality. Supplementary GBD 2010 analyses found that the inclusion of attributable suicide DALYs would have increased the overall burden of mental and substance use disorders from 7.4% to 8.3% of all global DALYs, increasing their global ranking from fifth to third.[45] An update to this work using GBD 2020 estimates is currently underway, with the first publication in this pipeline using the application of meta-regression techniques to summarise the relative-risk of mental disorders as risk factors for suicide available.[46] Further work to establish causal pathways between mental disorders and other health outcomes is required so that this analysis can be replicated for other fatal outcomes within the GBD study.

Eighth, there are broader limitations in the GBD study to acknowledge. Our definition of disability reflects health loss but not welfare loss. Estimates therefore do not capture the full impact of mental disorders on society. Disability weights were derived from brief descriptions of disease states which may not capture the full complexity of symptoms, across settings. Replication of the disability weight survey across more locations, containing more lay descriptions related to mental disorders, is required to investigate the generalisability of estimates. We assume independent distributions of comorbid conditions when adjusting YLDs for comorbidity within GBD 2019. This is a limitation especially for mental disorders where comorbidity distributions may be dependent on the combination of disorders experienced. Efforts to incorporate dependent comorbidity within the GBD study have been challenging because of the lack of data to inform the correlation structure of prevalence consistently for all diseases and injuries. Even within mental disorders, this is an area where further research is required as this information is available for a small subset of possible combination of disorders and are limited to specific age groups and populations.

GBD 2019 continues to emphasise the large proportion of the world's burden attributable to mental disorders and the global disparities in that burden. Perhaps more importantly, it also demonstrated we do not yet have any evidence of sufficient global reduction in the burden. This is despite research demonstrating the interventions that exist to achieve a reduction in the burden across age, sex, and geography. The ongoing impact of the COVID-19 pandemic is likely to increase the global burden of mental disorders beyond this GBD 2019 benchmarking. We believe that this emphasises the need for a coordinated response by governments and the global health community before that can be fully enumerated.

Contributors

Please see the Appendix (p 47) for more detailed information about individual author contributions to the research, divided into the following categories: managing the estimation or publication process; writing the first draft of the manuscript; primary responsibility for applying analytical methods to produce estimates; primary responsibility for seeking, cataloguing, extracting, or cleaning data; designing or coding figures and tables; providing data or critical feedback on data sources; development of 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 overall research enterprise.

GBD 2019 Mental Disorders Collaborators

Alize J Ferrari, Damian F Santomauro, Ana M Mantilla Herrera, Jamileh Shadid, Charlie Ashbaugh, Holly E Erskine, Fiona J Charlson, Louisa Degenhardt, James G Scott, John J McGrath, Peter Allebeck, Corina Benjet, Nicholas J K Breitborde, Traolach Brugha, Xiaochen Dai, Lalit Dandona, Rakhi Dandona, Florian Fischer, Juanita A Haagsma, Josep Maria Haro, Christian Kieling, Ann Kristin Skrindo Knudsen, G Anil Kumar, Janni Leung, Azeem Majeed, Philip B Mitchell, Modhurima Moitra, Ali H Mokdad, Mariam Molokhia, Scott B Patten, George C Patton, Michael R Phillips, Joan B Soriano, Dan J Stein, Murray B Stein, Cassandra E I Szoeke, Mohsen Naghavi, Simon I Hay, Christopher J L Murray, Theo Vos, and Harvey A Whiteford.

Affiliations

School of Public Health (A J Ferrari PhD, D F Santomauro PhD, A M Mantilla Herrera PhD, J Shadid BSc, F J Charlson PhD, H E Erskine PhD, Prof H A Whiteford PhD), Queensland Brain Institute (Prof J J McGrath MD), Center for Youth Substance Abuse Research (J Leung PhD), The University of Queensland, Brisbane, QLD, Australia; Queensland Centre for Mental Health Research (A J Ferrari PhD, D F Santomauro PhD, A

M Mantilla Herrera PhD, J Shadid BSc, F J Charlson PhD, H E Erskine PhD, Prof J G Scott PhD, Prof J J McGrath MD, Prof H A Whiteford PhD), Wacol, QLD, Australia; Institute for Health Metrics and Evaluation (A J Ferrari PhD, D F Santomauro PhD, A M Mantilla Herrera PhD, J Shadid BSc, C Ashbaugh MA, F J Charlson PhD, H E Erskine PhD, Prof L Degenhardt PhD, X Dai PhD, Prof L Dandona MD, Prof R Dandona PhD, M Moitra MPH, Prof A H Mokdad PhD, Prof M Naghavi MD, Prof S I Hay FMedSci, Prof C J L Murray DPhil, Prof T Vos PhD, Prof H A Whiteford PhD), Department of Health Metrics Sciences, School of Medicine (X Dai PhD, Prof R Dandona PhD, Prof A H Mokdad PhD, Prof M Naghavi MD, Prof S I Hay FMedSci, Prof C J L Murray DPhil, Prof T Vos PhD), University of Washington, Seattle, WA, USA; National Drug and Alcohol Research Centre (Prof L Degenhardt PhD), School of Psychiatry (Prof P B Mitchell MD), University of New South Wales, Sydney, NSW, Australia; Mental Health Programme (Prof J G Scott PhD), QIMR Berghofer Medical Research Institute, Brisbane, QLD, Australia; National Centre for Register-based Research (Prof J J McGrath MD), Aarhus University, Aarhus, Denmark; Department of Global Public Health (Prof P Allebeck MD), Karolinska Institute, Stockholm, Sweden; Department of Epidemiology and Psychosocial Reseach (C Benjet PhD), Ramón de la Fuente Muñiz National Institute of Psychiatry, Mexico City, Mexico; Psychiatry and Behavioral Health Department (Prof N J K Breitborde PhD), Department of Psychology (Prof N J K Breitborde PhD), Ohio State University, Columbus, OH, USA; Department of Health Sciences (Prof T Brugha MD), University of Leicester, Leicester, UK; Public Health Foundation of India, Gurugram, India (Prof L Dandona MD, Prof R Dandona PhD, G Kumar PhD); Indian Council of Medical Research, New Delhi, India, (Prof L Dandona MD);Institute of Gerontological Health Services and Nursing Research (F Fischer PhD), Ravensburg-Weingarten University of Applied Sciences, Weingarten, Germany; Department of Public Health (J A Haagsma PhD), Erasmus University Medical Center, Rotterdam, Netherlands; Research Unit (J M Haro MD), University of Barcelona, Sant Boi de Llobregat, Barcelona, Spain; Biomedical Research Networking Center for Mental Health Network (CiberSAM), Barcelona, Spain (J M Haro MD); Department of Psychiatry (C Kieling MD), Federal

University of Rio Grande do Sul, Porto Alegre, Brazil; Division of Child & Adolescent Psychiatry (C Kieling MD), Clinical Hospital, Porto Alegre, Brazil; Centre for Disease Burden (A S Knudsen PhD), Norwegian Institute of Public Health, Bergen, Norway;; Department of Primary Care and Public Health (Prof A Majeed MD), Imperial College London, London, UK; Faculty of Life Sciences and Medicine (M Molokhia PhD), King's College London, London, UK; Department of Community Health Sciences (Prof S B Patten PhD), University of Calgary, Calgary, AB, Canada; Department of Pediatrics (Prof G C Patton MD), Faculty of Medicine, Dentistry, and Health Sciences (Prof C E I Szoeke PhD), University of Melbourne, Melbourne, VIC, Australia; Population Health Theme (Prof G C Patton MD), Murdoch Childrens Research Institute, Melbourne, VIC, Australia; Shanghai Mental Health Center (Prof M R Phillips MD), Shanghai Jiao Tong University, Shanghai, China; Department of Psychiatry (Prof M R Phillips MD), Columbia University, New York, NY, USA; Hospital Universitario de La Princesa (Princess University Hospital) (Prof J B Soriano MD), Autonomous University of Madrid, Madrid, Spain; Centro de Investigación Biomédica en Red Enfermedades Respiratorias (CIBERES) (Center for Biomedical Research in Respiratory Diseases Network), Madrid, Spain (Prof J B Soriano MD); Risk and Resilience in Mental Disorders Unit (Prof D J Stein MD), South African Medical Research Council, Cape Town, South Africa; Department of Psychiatry (M B Stein MD), University of California San Diego, La Jolla, CA, USA; The Brain Institute (Prof C E I Szoeke PhD), Australian Healthy Ageing Organisation, Melbourne, VIC, Australia.

Declaration of interests

C Kieling reports grants from MQ: Transforming Mental Health (UK), the Royal Academy of Engineering (UK), the Academy of Medical Sciences (USA), the National Institutes of Health (USA), Conselho Nacional de Desenvolvimento Científico e Tecnológico (Brazil), the Medical Research Council (UK), and Fundação de Amparo à Pesquisa do Estado do Rio Grande do Sul (Brazil) and consulting fees from the United Nations Children’s Fund, outside the submitted work. P B Mitchell reports grant number 1177991 from the Australian National Health and Medical Research Council and payment or honoraria for lectures,

presentations, speakers bureaus, manuscript writing or educational events from Janssen Australia, outside the submitted work. G C Patton reports support for the present manuscript from the Australia National Health and Medical Research Council. J B Soriano reports participation in the Institute for Health Metrics and Evaluation's Tobacco Advisory board, outside the submitted work. D J Stein reports royalties or licenses from Elsevier and the American Psychiatric Press, consulting fees from Johnson & Johnson, Lundbeck, Sanofi, and Vistagen, and payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events from Servier and Takeda, outside the submitted work. M B Stein reports grants or contracts from the National Institute of Mental Health (USA), Department of Defense (USA), and Department of Veterans Affairs (USA), consulting fees from Aptinyx, Acadia Pharmaceuticals, Bionomics, Boehringer-Ingelheim, Clexio, EmpowerPharm, Engrail, GW Pharmaceuticals, Janssen, Kazz Pharmaceuticals, and Roche/Genentech, stocks from Pfizer, stock options from Epivario and Oxeia Biopharmaceuticals, and mutual funds that may hold pharmaceutical stocks, and M B Stein is the Editor-in-Chief of *Depression and Anxiety*, Deputy Editor of *Biological Psychiatry*, and Co-Editor-in-Chief of *UptoDate (Psychiatry*), outside the submitted work. C E I Szoeke acknowledges support for the present manuscript from NHMRC Funding 1032350, 1062133, paid to the University of Melbourne; C E I Szoeke acknowledges payment for expert testimony from the Victorian Department of Health, Australia and for leadership or fiduciary role in board, society, committee or advocacy group, paid or unpaid with the American Medical Association, outside the submitted work. All other authors declare no competing interests.

Data sharing

To download the data used in these analyses, please visit the Global Health Data Exchange GBD 2019 website (http://ghdx.healthdata.org/gbd-2019).

Acknowledgments

We would like to thank everyone who contributed to the production and review of GBD mental disorder estimates. The GBD study is funded by the Bill & Melinda Gates Foundation. A J Ferrari, D F Santomauro, A M Mantilla Herrera, J Shadid, H E Erskine, F J Charlson, J G Scott, J J McGrath and H A Whiteford are affiliated with the Queensland Centre for Mental Health Research, which receives core funding from the Queensland Department of Health (Australia). A J Ferrari is supported by an Australian National Health and Medical Research Council Early Career Fellowship Grant (APP1121516). H E Erskine is the recipient of an Australian National Health and Medical Research Council (NHMRC) Early Career Fellowship (APP1137969). F J Charlson is supported by an Australian National Health and Medical Research Council (NHMRC) Early Career Fellowship (APP1138488). J J McGrath is supported by the Danish National Research Foundation (Niels Bohr Professorship). C Kieling is a UK Academy of Medical Sciences Newton Advanced Fellow and a CNPq (Brazil) researcher. P B Mitchell is support by the Australian NHMRC Investigator Grant No. 1177991. M Molokhia is supported by the National Institute for Health Research Biomedical Research Center at Guy's and St Thomas' National Health Service Foundation Trust and King's College London. S B Patten holds the Cuthbertson & Fischer Chair in Pediatric Mental Health at the University of Calgary. J B Soriano is supported by Centro de Investigación Biomédica en Red Enfermedades Respiratorias (CIBERES) (Center for Biomedical Research in Respiratory Diseases Network), Madrid, Spain. D J Stein is supported by the South Africa Medical Research Council.

References

1. Patel V, Saxena S, Lund C, et al. The Lancet Commission on global mental health and sustainable development. *The Lancet* 2018; **392**(10157): 1553-98.
2. Thornicroft G, Semrau M. Health system strengthening for mental health in low- and middle-income countries: introduction to the Emerald programme. *BJPsych Open* 2019; **5**(5): e66.
3. Murray CJL, Lopez AD, editors. The Global Burden of Disease: a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020. Cambridge, MA: Harvard School of Public Health on behalf of the Workld Health Organisation and the World Bank; 1996.
4. GBD 2019 Demographics Collaborators. Global age-sex-specific fertility, mortality, healthy life expectancy (HALE), and population estimates in 204 countries and territories, 1950–2019: a comprehensive demographic analysis for the Global Burden of Disease Study 2019. *The Lancet* 2020; **396**(10258): 1160-203.
5. GBD 2019 Risk Factors Collaborators. Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet* 2020; **396**(10258): 1223-49.
6. GBD 2019 Diseases and Injuries Collaborators. Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet* 2020; **396**(10258): 1204-22.
7. Whiteford HA, Degenhardt L, Rehm J, et al. Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. *The Lancet* 2013; **382**(9904): 1575-86.
8. GBD 2016 Alcohol and Drug Use Collaborators. The global burden of disease attributable to alcohol and drug use in 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet Psychiatry* 2018; **5**(12): 987-1012.
9. Baxter AJ, Scott KM, Vos T, Whiteford HA. Global prevalence of anxiety disorders: a systematic review and meta-regression. *Psychological Medicine* 2013; **43**(05): 897-910.
10. Ferrari AJ, Somerville AJ, Baxter AJ, et al. Global variation in the prevalence and incidence of major depressive disorder: a systematic review of the epidemiological literature. *Psychol Med* 2013; **43**(3): 471-81.
11. Stevens GA, Alkema L, Black RE, et al. Guidelines for Accurate and Transparent Health Estimates Reporting: the GATHER statement. *Lancet* 2016; **388**(10062): e19-e23.
12. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR). Fourth Edition, Text Revision ed. Washington DC: American Psychiatric Association; 2000.
13. World Health Organization. The ICD-10 Classification of Mental and Behavioural Disorders. Clinical descriptions and diagnostic guidelines. Geneva: World Health Organization; 1992.
14. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (5th ed.); 2013.
15. World Health Organization. International Statistical Classification of Diseases and Related Health Problems (11th ed.) 2020.
16. Institute for Health Metrics and Evaluation. Global Health Data Exchange. 2021. http://ghdx.healthdata.org/ (accessed 06/04/2021.
17. Moffitt TE, Caspi A, Taylor AJ, et al. How common are common mental disorders? Evidence that lifetime prevalence rates are doubled by prospective versus retrospective ascertainment. *Psychological Medicine* 2010; **40**: 899–909.
18. Zheng P, Aravkin A, Barber R, Sorensen R, Murray C. Trimmed Constrained Mixed Effects Models: Formulations and Algorithms. *bioRxiv* 2020: 2020.01.28.923599.

19. Flaxman AD, Vos T, Murray CJL, editors. An integrative metaregression framework for descriptive epidemiology. Washington: University of Washington Press; 2015.
20. Charlson F, van Ommeren M, Flaxman A, Cornett J, Whiteford H, Saxena S. New WHO prevalence estimates of mental disorders in conflict settings: a systematic review and meta-analysis. *Lancet* 2019; **394**(10194): 240-8.
21. Gallup G. The Gallup poll : public opinion 2003. Lanham, MD: Rowman & Littlefield; 2004.
22. Erskine HE, Ferrari AJ, Polanczyk GV, et al. The global burden of conduct disorder and attention-deficit/hyperactivity disorder in 2010. *J Child Psychol Psychiatry* 2014; **55**(4): 328-36.
23. Ferrari AJ, Saha S, McGrath JJ, et al. Health states for schizophrenia and bipolar disorder within the Global Burden of Disease 2010 Study. *Popul Health Metr* 2012; **10**(1): 16.
24. National Institute on alcohol abuse and alcoholism. Introduction to the National Epidemiologic Survey on Alcohol and Related Conditions 2016. http://pubs.niaaa.nih.gov/publications/arh29-2/74-78.htm (accessed 06/04/2021.
25. Australian Bureau of Statistics. National Survey of Mental Health and Wellbeing of Adults 1997. 2008. http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/D5A0AC778746378FCA2574EA00122887?opendocument (accessed 06/04/2021.
26. Burstein R, Fleming T, Haagsma J, Salomon JA, Vos T, Murray CJ. Estimating distributions of health state severity for the global burden of disease study. *Popul Health Metr* 2015; **13**: 31.
27. Baxter AJ, Brugha TS, Erskine HE, Scheurer RW, Vos T, Scott JG. The epidemiology and global burden of autism spectrum disorders. *Psychological Medicine* 2015; **45**(03): 601-13.
28. Charlson FJ, Ferrari AJ, Flaxman AD, Whiteford HA. The epidemiological modelling of dysthymia: Application for the Global Burden of Disease Study 2010. *Journal of Affective Disorders* 2013; **151**(1): 111-20.
29. Erskine HE, Ferrari AJ, Nelson P, et al. Epidemiological modelling of attention-deficit/hyperactivity disorder and conduct disorder for the Global Burden of Disease Study 2010. *J Child Psychol Psychiatry* 2013; **54**(12): 1263-74.
30. Ferrari AJ, Baxter AJ, Whiteford HA. A systematic review of the global distribution and availability of prevalence data for bipolar disorder. *J Affect Disord* 2011; **134**(1-3): 1-13.
31. Institute for Health Metrics and Evaluation. Global Burden of Disease Study 2019 (GBD 2019) Data Resources. 2021. http://ghdx.healthdata.org/gbd-2019 (accessed 06/04/2021.
32. Patel V, Chisholm D, Parikh R, et al. Addressing the burden of mental, neurological, and substance use disorders: key messages from Disease Control Priorities, 3rd edition. *Lancet* 2016; **387**(10028): 1672-85.
33. Jorm AF, Patten SB, Brugha TS, Mojtabai R. Has increased provision of treatment reduced the prevalence of common mental disorders? Review of the evidence from four countries. *World Psychiatry* 2017; **16**(1): 90-9.
34. Thornicroft G. Most people with mental illness are not treated. *Lancet* 2007; **370**(9590): 807-8.
35. Mihalopoulos C, Chatterton ML. Economic evaluations of interventions designed to prevent mental disorders: a systematic review. *Early Interv Psychiatry* 2015; **9**(2): 85-92.
36. Stockings EA, Degenhardt L, Dobbins T, et al. Preventing depression and anxiety in young people: a review of the joint efficacy of universal, selective and indicated prevention. *Psychol Med* 2016; **46**(1): 11-26.
37. Jacka FN, Reavley NJ, Jorm AF, Toumbourou JW, Lewis AJ, Berk M. Prevention of common mental disorders: what can we learn from those who have gone before and where do we go next? *Aust N Z J Psychiatry* 2013; **47**(10): 920-9.
38. Daly M, Sutin AR, Robinson E. Longitudinal changes in mental health and the COVID-19 pandemic: evidence from the UK Household Longitudinal Study. *Psychol Med* 2020: 1-10.

719 39. Santomauro D, Mantilla Herrera A, Shadid J, et al. Global prevalence and burden of depressive
720 and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *The*
721 *Lancet, In press* 2021.
722 40. Cheng AT. Case definition and culture: Are people all the same? *Br J Psychiatry* 2001; **179**: 1-3.
723 41. Patel V. Cultural factors and international epidemiology. *Br Med Bull* 2001; **57**: 33-45.
724 42. Santomauro DF, Melen S, Mitchison D, Vos T, Whiteford H, Ferrari AJ. The hidden burden of
725 eating disorders: an extension of estimates from the Global Burden of Disease Study 2019. *Lancet*
726 *Psychiatry* 2021; **8**(4): 320-8.
727 43. Plana-Ripoll O, Pedersen CB, Agerbo E, et al. A comprehensive analysis of mortality-related
728 health metrics associated with mental disorders: a nationwide, register-based cohort study. *Lancet*
729 2019; **394**(10211): 1827-35.
730 44. Walker ER, McGee RE, Druss BG. Mortality in mental disorders and global disease burden
731 implications: a systematic review and meta-analysis. *JAMA Psychiatry* 2015; **72**(4): 334-41.
732 45. Ferrari AJ, Norman RE, Freedman G, et al. The burden attributable to mental and substance use
733 disorders as risk factors for suicide: findings from the Global Burden of Disease Study 2010. *PloS one*
734 2014; **9**(4): e91936.
735 46. Moitra M, Santomauro D, Degenhardt L, et al. Estimating the risk of suicide associated with
736 mental disorders: A systematic review and meta-regression analysis. *J Psychiatr Res* 2021; **137**: 242-9.

737

Table 1: Global prevalent cases and age-standardised prevalence for each mental disorder in 1990 and 2019

	Prevalent cases in millions				Age-standardised prevalence per 100 000			
Disorder	**1990**	**(95% UI)**	**2019**	**(95% UI)**	**1990**	**(95% UI)**	**2019***	**(95% UI)**
Mental disorders (aggregate)								
Total	**654·8**	**(603·6–708·1)**	**970·1**	**(900·9–1044·4)**	**12579·3**	**(11634·4–13552·2)**	**12262·0**	**(11382·9–13213·3)**
Male	**317·8**	**(290·8–346·7)**	**462·2**	**(427·5–499·7)**	**12020·0**	**(11061·2–13042·4)**	**11727·3**	**(10835·7–12693·9)**
Female	**337·0**	**(310·1–363·8)**	**507·9**	**(471·2–547·4)**	**13100·4**	**(12114·8–14090·9)**	**12760·0**	**(11831·7–13763·1)**
Anxiety disorders								
Total	194·9	(165·1–231·2)	301·4	(252·6–356·0)	3791·6	(3194·0–4476·6)	3779·5	(3181·1–4473·3)
Male	73·4	(61·3–87.0)	113·9	(95·4–135·1)	2839·2	(2388·7–3332·9)	2859·8	(2397·0–3379·9)
Female	121·5	(102·0–144·7)	187·5	(157·7–221·6)	4732·2	(3983·0–5605·5)	4694·7	(3945·6–5576·9)
Depressive disorders								
Total	170·8	(152·7–190·4)	279·6	(251·6–310·3)	3486·2	(3140·8–3855·7)	3440·1	(3097·0–3817·6)
Male	65·6	(58·5–73·2)	109·2	(98·0–121·4)	2700·7	(2432·1–2987·4)	2713·3	(2438·3–3013·1)
Female	105·2	(94·3–117·3)	170·4	(153·6–188·7)	4262·5	(3844·6–4730·0)	4158·4	(3746·9–4616·3)
Other mental disorders								
Total	67·7	(52·7–86·5)	117·2	(90·8–148·7)	1434·7	(1116·4–1822·6)	1428·7	(1108·4–1816·1)
Male	39·9	(30·8–51·0)	68·3	(53·0–86·6)	1702·3	(1323·7–2155·4)	1690·1	(1311·0–2138·8)
Female	27·8	(21·4–35·4)	48·9	(37·8–61·8)	1173·9	(909·9–1485·8)	1173·1	(905·6–1484·9)
Idiopathic developmental intellectual disability								
Total	92·8	(58·3–128·6)	107·6	(65·8–150·4)	1641·9	(1028·1–2278·2)	1426·6	(873·6–1991·7)
Male	47·7	(29·4–66·7)	54·9	(32·8–77·6)	1657·2	(1017·0–2325·9)	1436·4	(860·4–2027·8)
Female	45·2	(29·2–61·6)	52·7	(33·1–72·8)	1625·3	(1048·2–2220·8)	1415·4	(891·3–1954·5)
Attention-deficit/hyperactivity disorder								
Total	72·4	(52·9–96·4)	84·7	(62·5–111·3)	1240·5	(909·6–1647·1)	1131·9	(831·7–1494·5)
Male	52·6	(38·6–70·7)	61·5	(45·4–80·9)	1768·3	(1304·2–2350·6)	1611·6	(1184·8–2134·1)
Female	19·8	(14·2–26·4)	23·2	(16·8–31·0)	693·4	(497·9–918·5)	631·0	(455·7–846·5)
Conduct disorder								
Total	32·7	(23·6–42·5)	40·1	(29·0–52·0)	537·9	(388·2–699·0)	559·0	(405·0–722·3)
Male	21·6	(16·1–27·7)	26·3	(19·6–33·4)	694·7	(517·7–891·4)	711·2	(530·5–904·0)
Female	11·1	(7·4–15·3)	13·8	(9·1–19·0)	374·0	(248·7–515·5)	397·3	(263·8–545·5)
Bipolar disorder								
Total	24·8	(20·6–29·4)	39·5	(33·0–46·8)	490·1	(411·0–576·5)	489·8	(407·5–580·6)
Male	11·6	(9·6–13·8)	18·8	(15·7–22·3)	459·4	(384·9–540·6)	466·9	(388·5–552·9)
Female	13·2	(10·9–15·5)	20·7	(17·3–24·6)	520·9	(435·1–613·3)	512·8	(425·6–609·0)
Autism spectrum disorders								

Total	20·3	(16·9–24·2)	28·3	(23·5–33·8)	372·8	(309·1–444·9)	369·4	(305·9–441·2)
Male	15·6	(13·0–18·6)	21·6	(18·0–25·8)	571·2	(473·8–679·6)	560·1	(465·2–667·3)
Female	4·7	(3·8–5·7)	6·7	(5·4–8·2)	173·4	(140·9–211·5)	176·3	(143·0–214·5)
Schizophrenia								
Total	14·2	(12·2–16·5)	23·6	(20·2–27·2)	289·9	(249·8–333·2)	287·4	(246·2–330·9)
Male	7·5	(6·4–8·7)	12·4	(10·6–14·3)	304·5	(262·6–350·0)	302·7	(259·7–348·4)
Female	6·7	(5·8–7·7)	11·2	(9·6–12·9)	274·9	(236·9–315·5)	272·0	(232·7–313·7)
Eating disorders								
Total	8·5	(6·4–10·9)	13·6	(10·2–17·5)	150·5	(113·1–192·1)	174·0	(130·1–222·1)
Male	2·8	(2·0–3·7)	4·7	(3·3–6·2)	96·7	(69·1–128·0)	117·9	(84·6–156·1)
Female	5·7	(4·3–7·2)	9·0	(6·8–11·3)	205·8	(156·2–258·6)	231·5	(175·1–291·4)

Note: * Disorders ordered from highest to lowest based on total age-standardised rates in 2019. Total estimate represents the sum of both sexes. UI=uncertainty interval.

Table 2: Age-standardised prevalence by mental disorder and region in 2019

Location	Schizophrenia	Depressive disorders	Anxiety disorders	Bipolar disorder	Eating disorders	Autism spectrum disorders	Attention-deficit/hyperactivity disorder	Conduct disorder	Idiopathic developmental intellectual disability	Other mental disorders
Central Europe, eastern Europe, and central Asia	282·1 (236·0–331·1)	3081·4 (2747·1–3442·3)	2993·3 (2501·3–3562·5)	526·7 (430·6–630·9)	150·2 (111·1–193·9)	385·5 (317·8–462·4)	1072·8 (764·2–1453·7)	604·7 (440·8–780·4)	606·4 (286·3–930·5)	1401·5 (1076·5–1783·5)
Central Asia	274·7 (220·3–333·4)	3186·5 (2807·9–3644·1)	2221·6 (1751·5–2773·5)	513·6 (401·5–647·5)	126·5 (93·1–163·6)	374·8 (308·0–450·9)	1059·1 (758·1–1421·8)	584·8 (420·8–764·5)	861·5 (475·4–1258·4)	1454·7 (1127·4–1861·2)
Central Europe	292·0 (241·1–345·2)	2601·0 (2309·7–2956·2)	3276·1 (2685·6–3986·5)	556·7 (449·1–675·6)	173·0 (127·0–222·8)	373·6 (308·4–446·9)	1072·0 (764·8–1442·1)	598·1 (435·7–774·8)	460·0 (188·1–732·9)	1427·2 (1097·6–1821·7)
Eastern Europe	279·3 (238·2–323·2)	3316·4 (2964·2–3683·9)	3188·5 (2727·1–3719·6)	516·2 (434·7–603·7)	151·1 (112·4–195·3)	397·3 (328·3–476·0)	1084·2 (774·0–1496·1)	621·8 (458·7–802·8)	533·9 (225·4–844·9)	1358·5 (1038·2–1723·1)
High income	333·0 (286·4–382·8)	3659·9 (3307·4–4062·6)	5058·3 (4242·7–6047·4)	773·5 (660·3–887·4)	444·7 (340·2–554·1)	599·7 (502·2–709·4)	1693·1 (1235·0–2269·9)	588·9 (429·5–763·0)	404·1 (136·6–690·0)	1642·0 (1277·1–2080·5)
Australasia	388·5 (357·3–422·1)	4284·3 (3764·6–4908·9)	6031·9 (4885·4–7447·5)	1182·1 (993·7–1373·2)	969·2 (796·6–1149·7)	436·1 (363·8–521·2)	3248·8 (2476·1–4108·9)	617·0 (484·1–785·3)	318·4 (100·3–548·7)	1858·8 (1535·2–2216·7)
High income Asia Pacific	301·5 (253·8–352·5)	2084·3 (1885·6–2313·1)	2616·4 (2184·4–3108·2)	601·0 (496·6–706·0)	379·2 (288·7–481·0)	634·3 (528·8–756·7)	1453·2 (1052·4–1958·7)	558·6 (405·5–730·5)	180·2 (27·2–357·2)	1516·2 (1172·5–1933·5)
High income North America	418·9 (363·8–479·2)	4270·3 (3867·9–4743·3)	5559·9 (4693·5–6582·6)	621·2 (579·5–663·6)	424·7 (316·0–540·5)	640·0 (537·7–756·4)	2096·8 (1505·1–2838·7)	549·4 (386·7–720·7)	435·0 (136·7–745·1)	1792·5 (1372·9–2247·9)
Southern Latin America	313·4 (251·9–380·9)	2777·3 (2492·5–3111·5)	5125·8 (4459·8–5885·1)	1024·5 (794·6–1273·0)	340·4 (253·8–434·8)	482·5 (400·8–579·0)	1289·0 (934·1–1738·4)	573·0 (416·6–741·2)	524·2 (198·9–847·0)	1590·1 (1226·8–2047·4)
Western Europe	272·6 (229·9–318·0)	3851·3 (3448·1–4296·6)	5626·6 (4632·7–6814·1)	901·8 (735·7–1069·3)	470·3 (363·3–586·6)	581·3 (488·2–686·4)	1363·5 (992·1–1824·1)	639·6 (468·4–822·6)	448·8 (168·7–746·0)	1556·7 (1202·2–1993·6)

Latin America and Caribbean	277·8 (234·0–325·5)	3417·1 (3079·4–3791·4)	5502·3 (4625·9–6588·7)	963·7 (794·2–1138·9)	231·4 (170·9–298·0)	350·4 (288·8–419·7)	1813·3 (1327·6–2443·9)	573·8 (416·0–745·6)	381·2 (144·8–626·3)	1398·2 (1072·1–1777·0)
Andean Latin America	276·2 (221·3–334·9)	2725·6 (2380·0–3105·2)	5497·3 (4467·8–6893·1)	910·5 (700·6–1142·2)	281·6 (201·2–378·0)	342·1 (282·4–410·5)	2116·8 (1537·0–2831·8)	571·8 (410·8–742·3)	419·5 (166·0–669·4)	1461·4 (1132·7–1868·4)
Central Latin America	279·6 (234·1–328·8)	3198·5 (2865·7–3562·3)	3930·7 (3253·4–4782·6)	854·0 (703·0–1015·8)	224·9 (165·7–292·3)	350·9 (288·8–419·5)	1403·7 (1033·9–1903·0)	575·9 (421·2–746·1)	351·4 (125·8–584·8)	1405·1 (1078·9–1791·6)
Tropical Latin America	277·7 (237·7–320·2)	3799·4 (3464·3–4168·9)	7378·6 (6296·1–8605·9)	1111·1 (933·7–1288·1)	231·9 (173·2–296·5)	353·9 (292·0–425·3)	1945·0 (1418·3–2672·7)	574·9 (414·7–751·3)	357·2 (126·1–596·2)	1360·5 (1039·5–1723·8)
Caribbean	271·4 (218·7–329·3)	3673·6 (3212·5–4178·7)	4400·7 (3522·5–5499·8)	908·2 (695·0–1141·6)	193·9 (141·5–252·4)	343·8 (283·7–413·6)	3064·4 (2247·0–4115·1)	559·3 (405·6–723·1)	602·9 (284·1–929·8)	1459·5 (1131·2–1866·5)
North Africa and Middle East	248·2 (203·9–294·9)	4348·9 (3807·3–4971·1)	5135·7 (4164·9–6267·2)	758·8 (595·7–939·1)	216·9 (159·7–280·2)	304·4 (251·2–366·1)	1245·1 (909·8–1667·4)	591·9 (433·4–762·5)	1850·5 (1157·7–2571·2)	1462·8 (1128·4–1867·2)
South Asia	283·5 (242·5–328·7)	3794·7 (3416·0–4199·7)	3045·5 (2594·5–3547·2)	361·4 (303·7–423·5)	126·7 (92·9–163·9)	290·0 (238·4–349·2)	609·4 (431·3–832·3)	538·2 (383·9–711·9)	3555·1 (2434·9–4716·8)	1378·6 (1054·5–1748·1)
Southeast Asia, east Asia, and Oceania	305·9 (265·8–349·2)	2723·9 (2451·5–3022·4)	3292·9 (2801·9–3821·7)	226·9 (189·5–267·8)	111·2 (82·1–143·7)	348·1 (287·9–417·2)	1622·4 (1212·9–2135·6)	511·4 (367·3–666·5)	577·5 (288·8–875·4)	1383·7 (1059·1–1752·9)
East Asia	309·2 (272·8–348·0)	2720·1 (2449·9–3004·9)	3180·7 (2712·3–3663·7)	182·0 (153·6–211·1)	112·7 (83·6–145·3)	367·8 (304·4–441·9)	2038·0 (1531·9–2662·2)	465·0 (326·9–609·6)	399·1 (163·6–639·3)	1371·0 (1048·4–1737·9)
Southeast Asia	298·5 (249·6–353·1)	2610·6 (2302·9–2958·4)	3633·2 (3024·1–4315·0)	331·4 (272·5–399·6)	109·6 (81·4–141·3)	312·5 (257·7–374·4)	1000·5 (723·4–1365·7)	571·7 (417·2–745·2)	886·1 (491·8–1289·8)	1405·6 (1080·0–1791·7)
Oceania	273·9 (220·9–333·9)	3044·8 (2622·9–3541·7)	4006·8 (3182·9–4990·4)	265·1 (206·8–333·3)	84·5 (61·2–109·3)	289·0 (235·5–349·0)	1131·3 (802·6–1567·5)	535·1 (374·8–698·5)	1213·3 (745·5–1695·1)	1471·1 (1139·9–1879·3)
Sub-Saharan Africa	214·2 (178·2–254·3)	4540·4 (4038·1–5112·4)	3462·6 (2839·1–4184·2)	566·4 (458·1–690·1)	106·7 (78·3–137·7)	373·5 (307·4–447·6)	583·8 (414·2–797·0)	592·7 (430·2–763·1)	806·1 (398·8–1237·4)	1415·7 (1088·2–1808·5)
Central sub-Saharan Africa	208·5 (166·2–253·9)	5536·9 (4801·3–6307·6)	3864·0 (3089·6–4826·5)	554·3 (432·0–696·3)	93·7 (68·8–120·7)	370·8 (303·3–446·9)	569·6 (403·3–776·8)	588·6 (432·7–757·8)	1052·6 (572·8–1570·3)	1456·9 (1129·1–1864·0)

Eastern sub-Saharan Africa	210·8 (174·3–250·2)	4849·2 (4317·2–5416·8)	3716·3 (3050·0–4530·6)	595·6 (480·3–722·6)	92·6 (68·1–119·6)	378·4 (311·7–454·4)	572·4 (404·0–779·4)	597·0 (436·2–766·8)	997·0 (537·0–1504·4)	1419·2 (1091·7–1813·0)
Southern sub-Saharan Africa	220·9 (187·5–256·8)	4166·3 (3736·3–4612·3)	3658·0 (3100·4–4307·8)	553·2 (459·0–654·1)	151·2 (111·9–196·6)	371·6 (304·9–447·7)	575·3 (404·0–789·5)	617·9 (456·6–801·4)	443·4 (176·1–722·3)	1379·9 (1057·1–1747·4)
Western sub-Saharan Africa	217·1 (181·1–256·5)	4075·4 (3633·0–4556·1)	3066·5 (2532·6–3683·3)	546·6 (445·2–661·4)	114·4 (84·0–148·0)	370·6 (305·5–443·3)	599·6 (421·8–832·2)	586·7 (423·0–763·5)	626·0 (282·1–1001·2)	1408·6 (1081·2–1797·9)
Global	**287·4 (246·2–330·9)**	**3440·1 (3097·0–3817·6)**	**3779·5 (3181·1–4473·3)**	**489·8 (407·5–580·6)**	**174·0 (130·1–222·1)**	**369·4 (305·9–441·2)**	**1131·9 (831·7–1494·5)**	**559·0 (405·0–722·3)**	**1426·6 (873·6–1991·7)**	**1428·7 (1108·4–1816·1)**

Note: Age-standardised estimates presented for the globe and by GBD super-region (in grey) as well as by GBD region; 95% uncertainty intervals presented in brackets.

Figure 1: Global DALYs by mental disorder, sex, and age in 2019

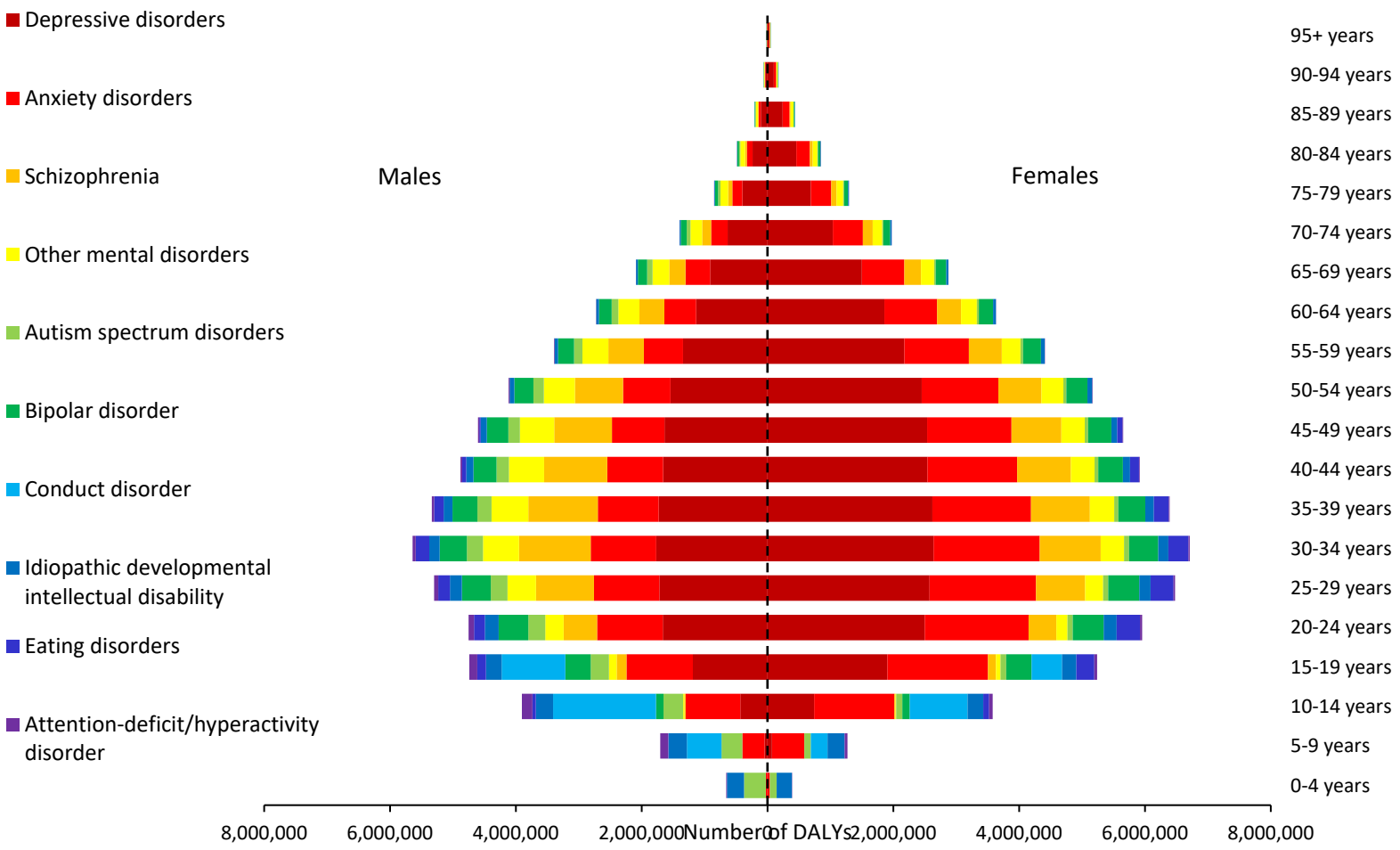


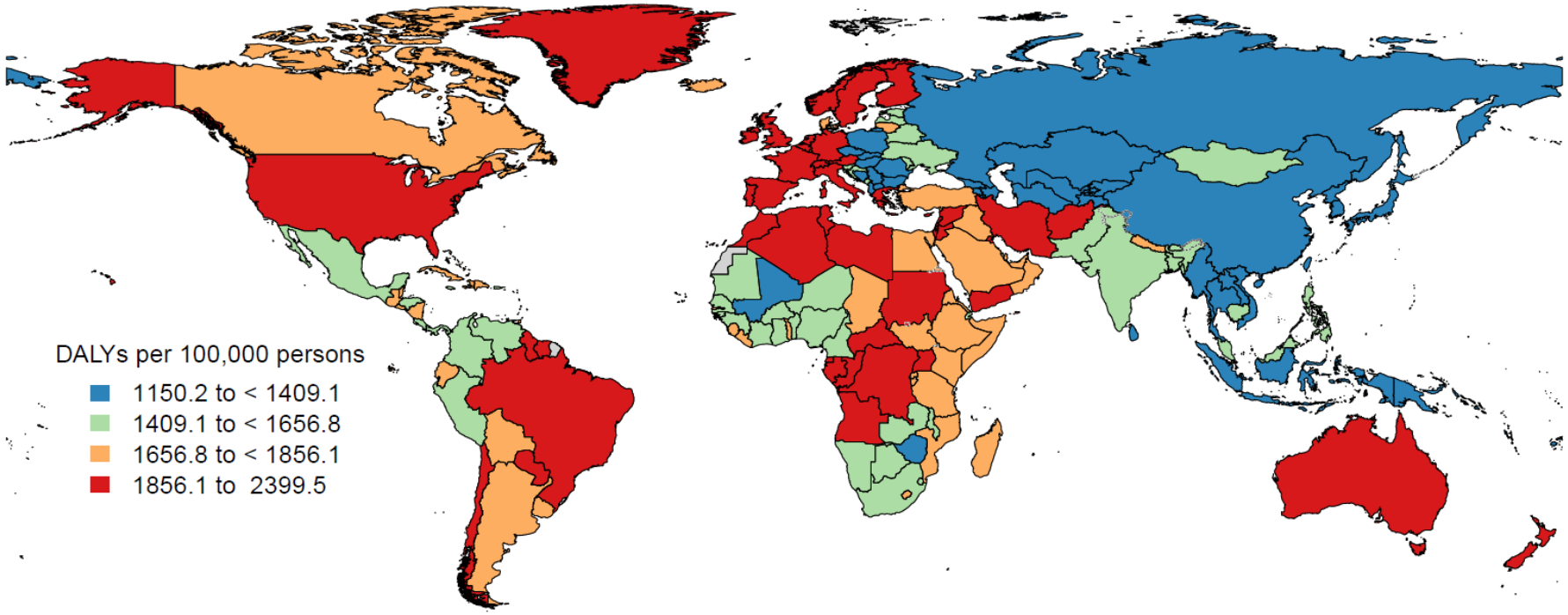
Table 3: Rankings of YLD and DALY rates for mental disorders by all ages and five age groups, both sexes combined, 2019

YLDs					
All ages	***0-14 years***	***15-24 years***	***25-49 years***	***50-69 years***	***70+ years***
2 Depressive disorders	5 Conduct disorder	2 Depressive disorders	3 Depressive disorders	5 Depressive disorders	11 Depressive disorders
8 Anxiety disorders	8 Anxiety disorders	4 Anxiety disorders	6 Anxiety disorders	16 Anxiety disorders	19 Anxiety disorders
20 Schizophrenia	18 ID intellectual disability	12 Bipolar disorder	9 Schizophrenia	19 Schizophrenia	27 Other mental disorders
27 Other mental disorders	23 Autism spectrum disorders	13 Conduct disorder	19 Other mental disorders	22 Other mental disorders	36 Schizophrenia
28 Bipolar disorder	24 Depressive disorders	22 Schizophrenia	20 Bipolar disorder	27 Bipolar disorder	45 Bipolar disorder
38 Conduct disorder	39 ADHD	28 Eating disorders	36 Eating disorders	52 Autism spectrum disorders	63 Autism spectrum disorders
43 ID intellectual disability	54 Bipolar disorder	30 ID intellectual disability	42 Autism spectrum disorders	64 ID intellectual disability	87 ID intellectual disability
46 Autism spectrum disorders	65 Eating disorders	32 Autism spectrum disorders	44 ID intellectual disability	133 ADHD	152 ADHD
55 Eating disorders	92 Schizophrenia	36 Other mental disorders	86 ADHD	N/A Eating disorders	N/A Eating disorders
84 ADHD	94 Other mental disorders	60 ADHD	N/A Conduct disorder	N/A Conduct disorder	N/A Conduct disorder
DALYs					
All ages	***0-14 years***	***15-24 years***	***25-49 years***	***50-69 years***	***70+ years***
13 Depressive disorders	22 Conduct disorder	4 Depressive disorders	6 Depressive disorders	13 Depressive disorders	28 Depressive disorders
24 Anxiety disorders	25 Anxiety disorders	7 Anxiety disorders	15 Anxiety disorders	33 Anxiety disorders	43 Anxiety disorders
42 Schizophrenia	49 ID intellectual disability	32 Bipolar disorder	22 Schizophrenia	41 Schizophrenia	66 Other mental disorders
64 Other mental disorders	56 Autism spectrum disorders	34 Conduct disorder	36 Other mental disorders	55 Other mental disorders	82 Schizophrenia
67 Bipolar disorder	57 Depressive disorders	42 Schizophrenia	39 Bipolar disorder	62 Bipolar disorder	94 Bipolar disorder
84 Conduct disorder	84 ADHD	51 Eating disorders	65 Eating disorders	104 Autism spectrum disorders	120 Autism spectrum disorders
90 ID intellectual disability	98 Bipolar disorder	54 ID intellectual disability	73 Autism spectrum disorders	122 ID intellectual disability	132 ID intellectual disability
92 Autism spectrum disorders	105 Eating disorders	56 Autism spectrum disorders	77 ID intellectual disability	154 ADHD	159 ADHD
110 Eating disorders	125 Schizophrenia	59 Other mental disorders	135 ADHD	N/A Eating disorders	N/A Eating disorders
145 ADHD	127 Other mental disorders	87 ADHD	N/A Conduct disorder	N/A Conduct disorder	N/A Conduct disorder

Note: This table shows YLD and DALY rankings for each mental disorder. Mental disorders are ranked out of all Level 3 causes within the GBD study. Disorders are ordered from highest to lowest ranking for the overall age group (ie, all ages). Each colour represents a mental disorder and the colour gradient increases with increasing proportion of burden explained for all ages. Cells marked 'N/A' (in grey) show disorders for

which burden was not estimated within this age group. ID=idiopathic developmental. ADHD=attention-deficit/hyperactivity disorder. DALYs=disability-adjusted life-years. YLDs=years lived with disability.

Figure 2: Age-standardised DALY rates per 100 000 for mental disorders by quartile in 2019



Note: Age-standardised rates grouped into quartiles