Mental Health

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In this entry we present the latest estimates of mental health disorder prevalence, disease burden rates, and mortality impacts across a number of disorders. We address substance use disorders (alcohol and drug use disorders) in separate entries on Substance Use and Alcohol Consumption.

Most of the estimates presented in this entry are produced by the *Institute for Health Metrics and Evaluation* and reported in their flagship *Global Burden of Disease* study.

Mental health and substance use disorders are still significantly under-reported. This is true across all countries, but particularly at lower incomes where data is scarcer, and there is less attention and treatment for mental health disorders.

Mental health disorders are complex and can take many forms. The underlying sources of the data presented in this entry apply specific definitions (which we describe in each relevant section), typically in accordance with WHO's *International Classification of Diseases* (ICD-10). This broad definition incorporates many forms, including depression, anxiety, bipolar, eating disorders and schizophrenia.

Mental health disorders remain widely under-reported — in our section on Data Quality & Definitions we discuss the challenges of dealing with this data. Figures presented in this entry should be taken as **estimates** of mental health disorder prevalence — they do not strictly reflect diagnosis data (which would provide the global perspective on diagnosis, rather than actual prevalence differences), but are imputed from a combination of medical, epidemiological data, surveys and meta-regression modelling where raw data is unavailable. Further information can be found here.

In many cases, we may therefore consider reported estimates to be an under-estimation of true prevalence and disease burden. It is also important to keep in mind that the uncertainty of the data on mental health is generally high so we should be cautious about interpreting changes over time and differences between countries. Even taking into account that mental health disorders are likely underreported, the data presented in this entry demonstrate that mental health disorders are common and have a high prevalence. Improving awareness, recognition, support and treatment for this range of disorders should therefore be an essential focus for global health.

The table below provides a brief summary of the data which follows on mental health and substance use disorders. Clicking on a given disorder will take you to the relevant section for further data and information.

Disorder	Share of global population with disorder (2016) [difference across countries]	Number of people with the disorder (2016)	Share of males:females with disorder (2016)
Any mental or substance use disorder	15.5% [13-22%]	1.1 billion	16% males 15% females
Depression	4% [2-6%]	268 million	3% males 4.5% females
Anxiety disorders	4% [2.5-6.5%]	275 million	3% males 4.7% females

Disorder	Share of global population with disorder (2016) [difference across countries]	Number of people with the disorder (2016)	Share of males:females with disorder (2016)
Bipolar disorder	0.6% [0.4-1.5%]	40 million	0.55% males 0.65% females
Eating disorders (clinical anorexia & bulimia)	0.14% [0.05-0.55%]	10.5 million	0.07% males 0.2% females
Schizophrenia	0.3% [0.2-0.45%]	21 million	0.29% males 0.28% females
Alcohol use disorder	1.4% [0.5-5%]	100 million	1.9% males 0.8% females
Drug use disorder (excluding alcohol)	0.9% [0.4-3.3%]	62 million	1.1% males 0.5% females

Empirical View

Prevalence of mental health and substance use disorders

The predominant focus of this entry is the prevalence and impacts of mental health disorders (with Substance Use and Alcohol Use disorders covered in individual entries). However, it is useful as introduction to understand the total prevalence and disease burden which results from the broad IHME and WHO category of 'mental health and substance use disorders'. This category comprises a range of disorders including depression, anxiety, bipolar, eating disorders, schizophrenia, intellectual developmental disability, and alcohol and drug use disorders.

In the chart below we see that globally, mental and substance use disorders are very common: around 1-in-6 people (15-20 percent) have one or more mental or substance use disorders.

It's estimated that over 1.1 billion people worldwide had a mental or substance use disorder in 2016. The largest number of people had an anxiety disorder, estimated at around 4 percent of the population.


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The scatterplot below compares the prevalence of these disorders between males and females. Taken together we see that in most countries this group of disorders is more common for men than for women. However, as is shown later in this entry and in our entries on Substance Use and Alcohol, this varies significantly by disorder type: on average, depression, anxiety, eating disorders, and bipolar disorder is more prevalent in women. Gender differences in schizophrenia prevalence are mixed across countries, but it is typically more common in men. Alcohol and drug use disorders are more common in men.

Deaths from mental health and substance use disorders

The direct death toll from mental health and substance use disorders is typically low. In this entry, the only direct death estimates result from eating disorders, which occur through malnutrition and related health complications. Direct deaths can also result from alcohol and substance use disorders; these are covered in our entry on Substance Use.

However, mental health disorders are also attributed to significant number of indirect deaths through suicide and self-harm. Suicide deaths are strongly linked — although not always attributed to — mental health disorders. We discuss the evidence of this link between mental health and suicide in detail later in this entry.

In high-income countries, meta-analyses suggest that up to 90 percent of suicide deaths result from underlying mental and substance use disorders. However, in middle to lower-income countries there is evidence that this figure is notably lower. A study by Ferrari et al. (2015) attempted to determine the share disease burden from suicide which could be attributed to mental health or substance use disorders.[1]

Based on review across a number of meta-analysis studies the authors estimated that only 68 percent of suicides across China, Taiwan and India were attributed to mental health and substance use disorders. Here, studies suggest a large number of suicides result from the 'dysphoric affect' and 'impulsivity' (which are not defined as a mental and substance use disorder). It is important to understand the differing nature of self-harm methods between countries; in these countries a high

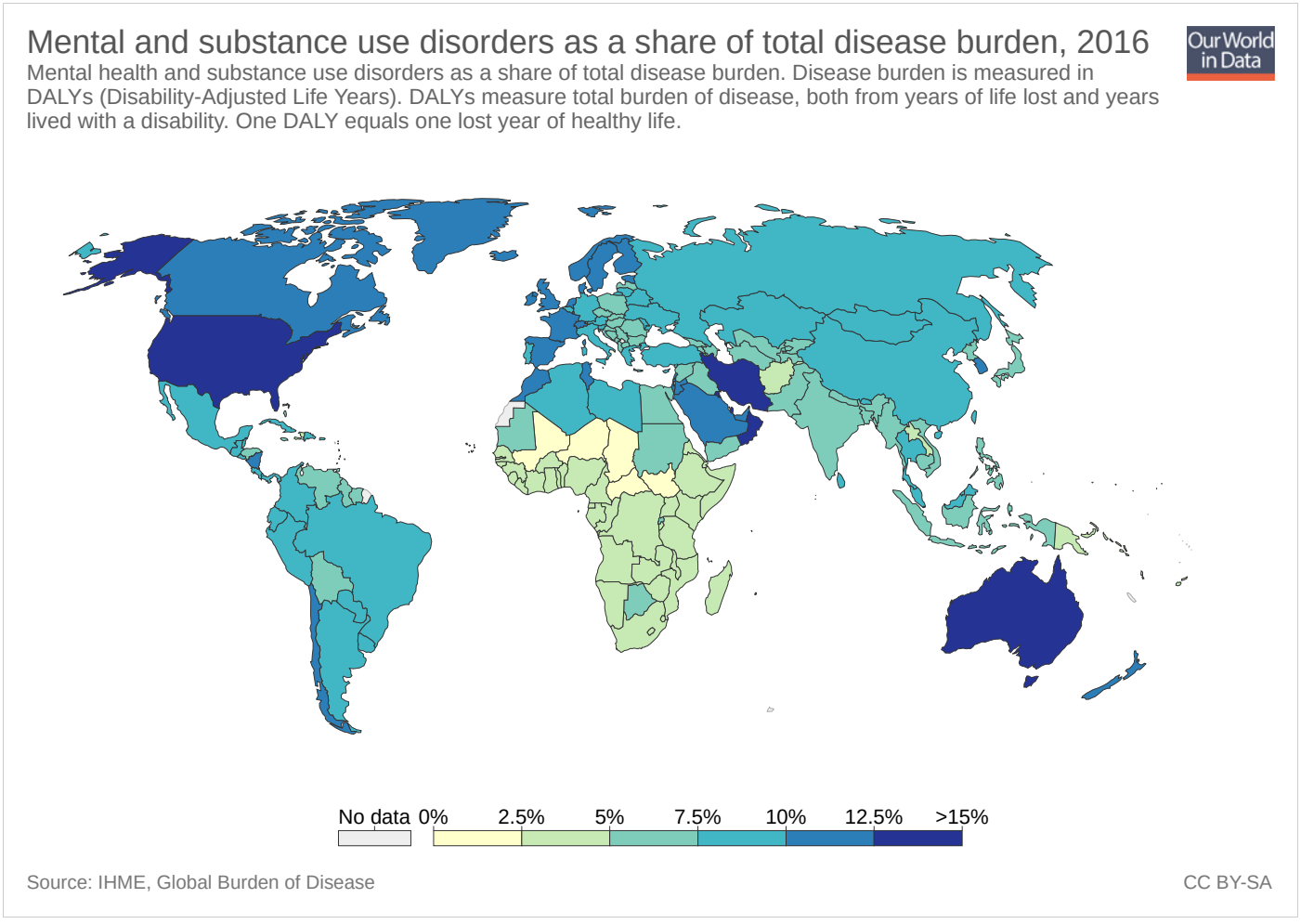
percentage of self-harming behaviours are carried out through more lethal methods such as poisoning (often through pesticides) and self-immolation. This means many self-harming behaviours can prove fatal, even if there was no clear intent to die.

As a result, direct attribution of suicide deaths to mental health disorders is difficult. Nonetheless, it's estimated that a large share of suicide deaths link back to mental health. Studies suggest that for an individual with depression the risk of suicide is around 20 times higher than an individual without.

Disease burden of mental health and substance use disorders

Health impacts are often measured in terms of total numbers of deaths, but a focus on mortality means that the burden of mental health disorders can be underestimated[2]

Measuring the health impact by mortality alone fails to capture the impact that mental health disorders have on an individual's wellbeing. The 'disease burden' – measured in Disability-Adjusted Life Years (DALYs) – considers not only the mortality associated with a disorder, but also years lived with disability or health burden. The map below shows DALYs as a share of total disease burden; mental and substance use disorders account for around 7 percent of global disease burden in 2016, but this reaches up to 13-14 percent in several countries. These disorders have the highest contribution to overall health burden in Australia and United States.



Depression

Definition of depression

Depressive disorders occur with varying severity. The WHO's International Classification of Diseases (ICD-10) define this set of disorders ranging from mild to moderate to severe. The IHME adopt such definitions by disaggregating to mild, persistent depression (dysthymia) and major depressive disorder (severe).

All forms of depressive disorder experience some of the following symptoms:

- (a) reduced concentration and attention;
- (b) reduced self-esteem and self-confidence;
- (c) ideas of guilt and unworthiness (even in a mild type of episode);
- (d) bleak and pessimistic views of the future;
- (e) ideas or acts of self-harm or suicide;
- (f) disturbed sleep
- (g) diminished appetite.

Mild persistent depression (dysthymia) tends to have the following diagnostic guidelines:

> *"Depressed mood, loss of interest and enjoyment, and increased fatiguability are usually regarded as the most typical symptoms of depression, and at least two of these, plus at least two of the other symptoms described on page 119 (for F32.-) should usually be present for a definite diagnosis. None of the symptoms should be present to an intense degree. Minimum duration of the whole episode is about 2 weeks. An individual with a mild depressive episode is usually distressed by the symptoms and has some difficulty in continuing with ordinary work and social activities, but will probably not cease to function completely."*

Severe depressive disorder tends to have the following diagnostic guidelines:

> *"In a severe depressive episode, the sufferer usually shows considerable distress or agitation, unless retardation is a marked feature. Loss of self-esteem or feelings of uselessness or guilt are likely to be prominent, and suicide is a distinct danger in particularly severe cases. It is presumed here that the somatic syndrome will almost always be present in a severe depressive episode. During a severe depressive episode it is very unlikely that the sufferer will be able to continue with social, work, or domestic activities, except to a very limited extent."*

The series of charts below present the latest global estimates of the prevalence and disease burden of depressive disorders. Depressive disorders, as defined by the underlying source, cover a spectrum of severity ranging from mild persistent depression (dysthymia) to major (severe) depressive disorder. The data presented below includes all forms of depression across this spectrum.

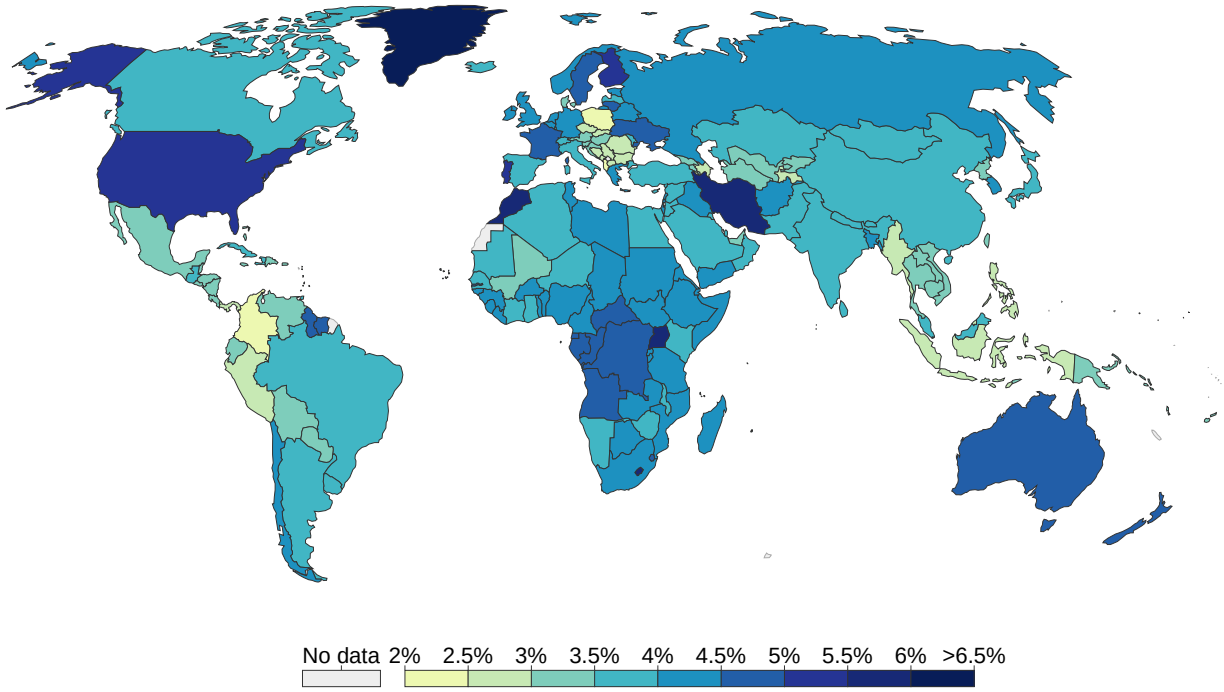
Prevalence of depressive disorders

The share of population with depression ranges mostly between 2% and 6% around the world today. Globally, older individuals (in the 70 years and older age bracket) have a higher risk of depression relative to other age groups.

In 2016, an estimated 268 million people in the world experienced depression. A breakdown of the number of people with depression by world region can be seen here and a country by country view on a world map is here.

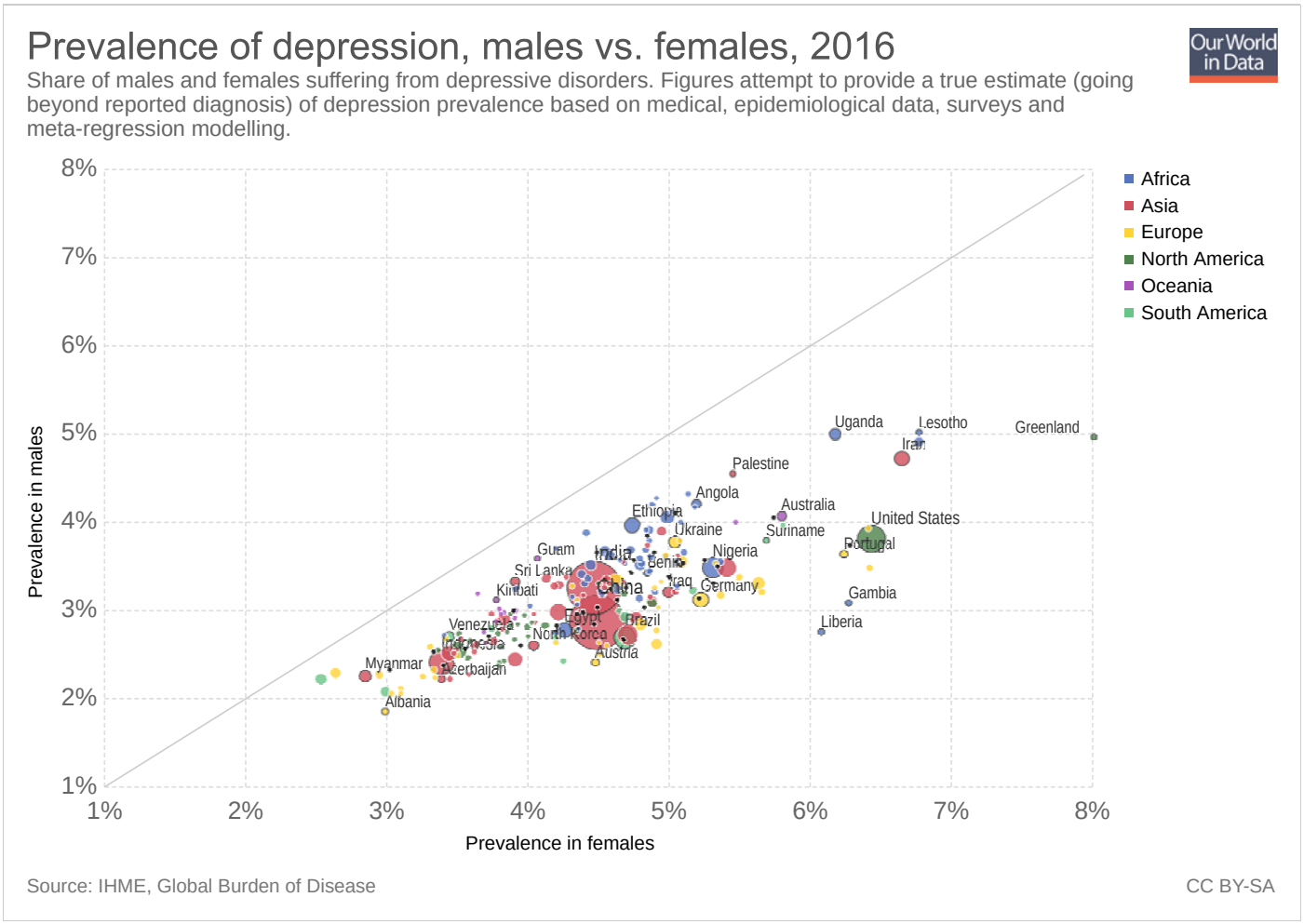
Share of the population with depression, 2016

Prevalence of depressive disorders in a given population. This is measured as the age-standardized prevalence, which assumes a constant age structure to compare between countries and through time. Figures attempt to provide a true estimate (going beyond reported diagnosis) of depression prevalence based on medical, epidemiological data, surveys and meta-regression modelling.



Source: IHME, Global Burden of Disease

In all countries the median estimate for the prevalence of depression is higher for women than for men.



DALYs from depression

The chart found here shows the health burden of depression as measured in Disability Adjusted Life Years (DALYs) per 100,000. A time-series perspective on DALYs by age is here.

Anxiety disorders

Definition of anxiety disorders

Anxiety disorders arise in a number of forms including phobic, social, obsessive compulsive (OCD), post-traumatic disorder (PTSD), or generalized anxiety disorders.

The symptoms and diagnostic criteria for each subset of anxiety disorders are unique. However, collectively the WHO's International Classification of Diseases (ICD-10) note frequent symptoms of:

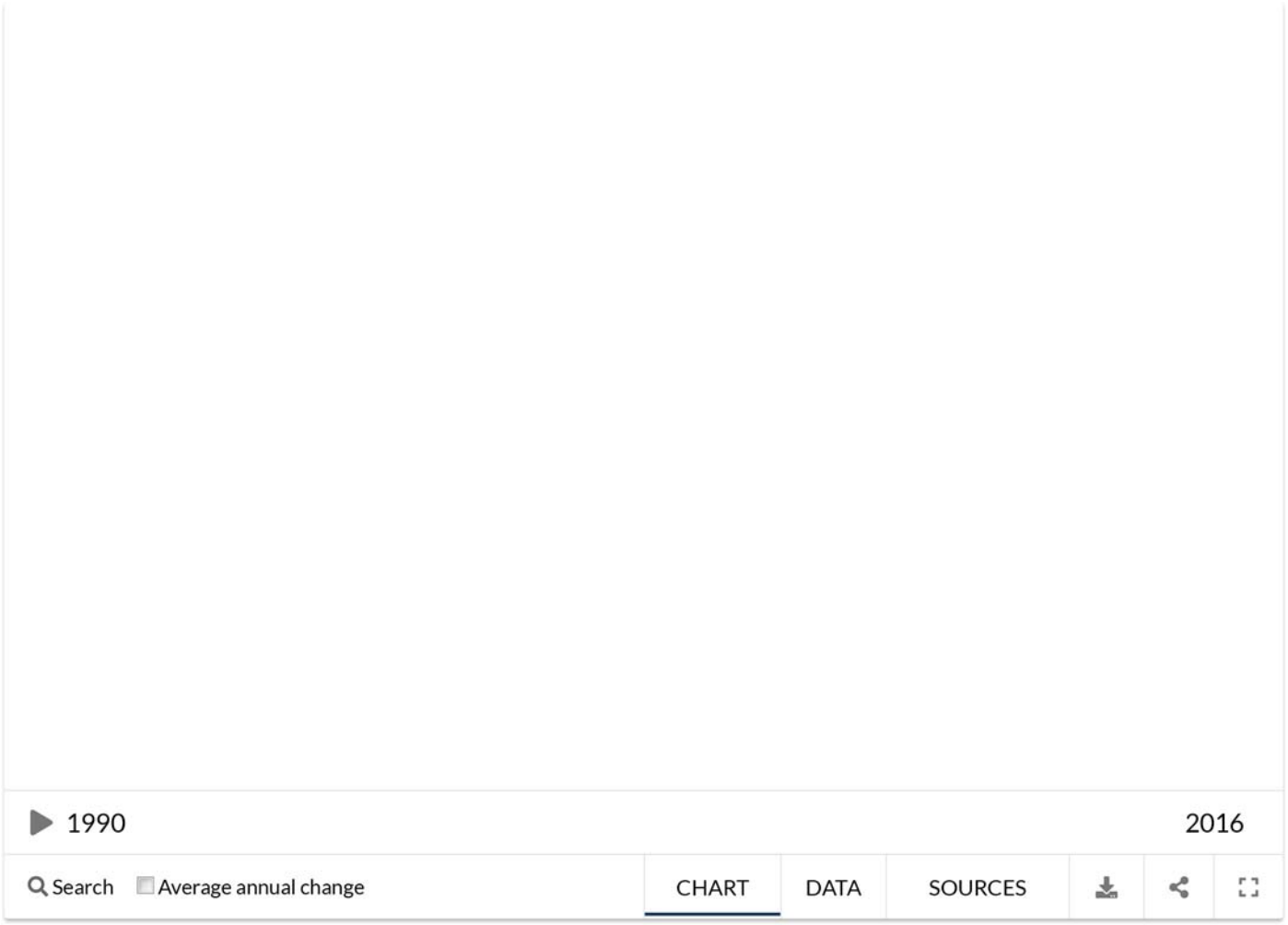
> *"(a) apprehension (worries about future misfortunes, feeling "on edge", difficulty in concentrating, etc.);*
>
> *(b) motor tension (restless fidgeting, tension headaches, trembling, inability to relax);*
>
> *(c) autonomic overactivity (lightheadedness, sweating, tachycardia or tachypnoea, epigastric discomfort, dizziness, dry mouth, etc.)."*

The series of charts below present global data on the prevalence and disease burden which results from this range of anxiety disorders.

Prevalence of anxiety disorders

The prevalence of anxiety disorders across the world varies from 2.5 to 6.5 percent by country. Globally an estimated 275 million people experienced an anxiety disorder in 2016, making it the most prevalent mental health or neurodevelopmental disorder. Around 62 percent (170 million) were female, relative to 105 million males.

In all countries women are more likely to experience anxiety disorders than men. Prevalence trends by age can be found here.



DALYs from anxiety disorders

The chart found here shows the health burden of depression as measured in Disability Adjusted Life Years (DALYs) per 100,000. A time-series perspective on DALYs by age is here.

Bipolar disorder

Definition of Bipolar disorder

Bipolar disorder (also termed bipolar affective disorder) is defined by the WHO's International Classification of Diseases (ICD-10) as follows:

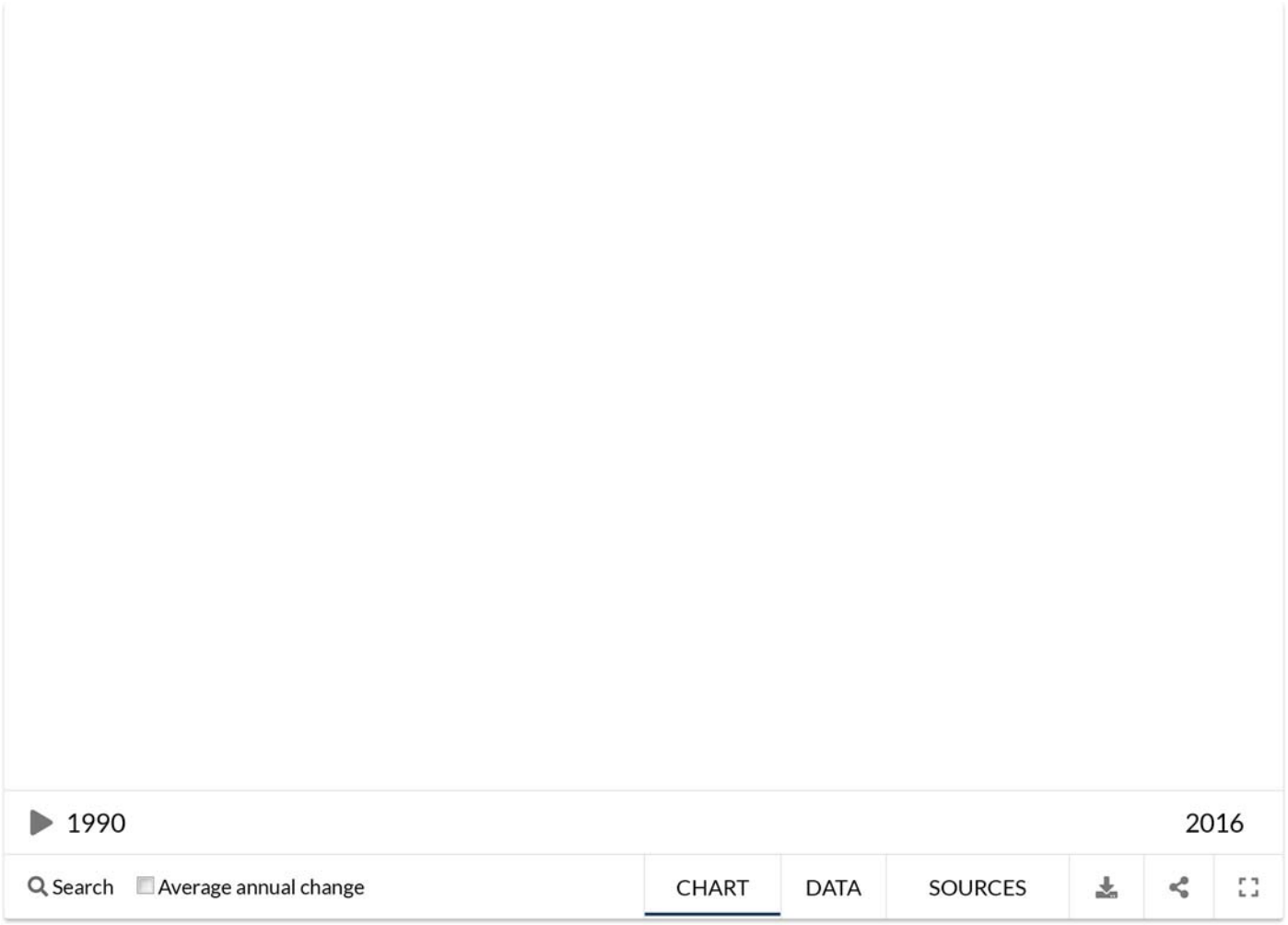
> *"This disorder is characterized by repeated (i.e. at least two) episodes in which the patient's mood and activity levels are significantly disturbed, this disturbance consisting on some occasions of an elevation of mood and increased energy and activity (mania or hypomania), and on others of a lowering of mood and decreased energy and activity (depression). Characteristically, recovery is usually complete between episodes, and the incidence in the two sexes is more nearly equal than in other mood disorders. As patients who suffer only from repeated episodes of mania are comparatively rare, and resemble (in their family history, premorbid personality, age of onset, and long-term prognosis) those who also have at least occasional episodes of depression, such patients are classified as bipolar."*

The charts below present global data on the prevalence and disease burden of bipolar disorder.

Prevalence of bipolar disorder

The prevalence of bipolar disorder across the world varies from 0.4 to 1.5 percent by country. Globally, an estimated 40 million people in the world had bipolar disorder in 2016, with 55 and 45 percent being female and male, respectively.

In almost all countries women are more likely to experience bipolar disorder than men. Prevalence of bipolar disorder by age can be found here.



DALYs from bipolar disorder

The chart found here shows the health burden of depression as measured in Disability Adjusted Life Years (DALYs) per 100,000. A time-series perspective on DALYs by age is here.

Eating disorders

Eating disorders are defined as psychiatric conditions defined by patterns of disordered eating. This therefore incorporates a spectrum of disordered eating behaviours. The underlying sources presented here present data only for the disorders of anorexia and bulimia nervosa (as defined below). It is however recognised that a large share of eating disorders fall outwith the definition of either anorexia or bulimia nervosa (these are often termed 'eating disorders not otherwise specified'; EDNOS) — some estimates report at least 60 percent of eating disorders do not meet the standard criteria.[3]

It is therefore expected that the data presented below significantly underestimates the true prevalence of eating disorders, since it concerns only clinically-diagnosed anorexia and bulimia nervosa.

Anorexia nervosa

"Anorexia nervosa is a disorder exemplified by deliberate weight loss, and associated with undernutrition of varying severity.

For a definite diagnosis, the ICD note that all the following are required:

(a) Body weight is maintained at least 15% below that expected (either lost or never achieved), or Quetelet's body-mass

index4 is 17.5 or less. 4 Quetelet's body-mass index = weight (kg) to be used for age 16 or more - 139 - Prepubertal patients may show failure to make the expected weight gain during the period of growth;

(b) The weight loss is self-induced by avoidance of "fattening foods". One or more of the following may also be present: self-induced vomiting; self-induced purging; excessive exercise; use of appetite suppressants and/or diuretics;

(c) There is body-image distortion in the form of a specific psychopathology whereby a dread of fatness persists as an intrusive, overvalued idea and the patient imposes a low weight threshold on himself or herself;

(d) A widespread endocrine disorder involving the hypothalamic - pituitary - gonadal axis is manifest in women as amenorrhoea and in men as a loss of sexual interest and potency. (An apparent exception is the persistence of vaginal bleeds in anorexic women who are receiving replacement hormonal therapy, most commonly taken as a contraceptive pill.) There may also be elevated levels of growth hormone, raised levels of cortisol, changes in the peripheral metabolism of the thyroid hormone, and abnormalities of insulin secretion;

(e) If onset is prepubertal, the sequence of pubertal events is delayed or even arrested (growth ceases; in girls the breasts do not develop and there is a primary amenorrhoea; in boys the genitals remain juvenile). With recovery, puberty is often completed normally, but the menarche is late."

Bulimia nervosa

"Bulimia nervosa is an illness defined by repeated behaviours of overeating, preoccupation with control of body weight, and the adoption of extreme measures to mitigate the impacts of overeating.

For a definite diagnosis, the ICD note that all the following are required:

(a) There is a persistent preoccupation with eating, and an irresistible craving for food; the patient succumbs to episodes of overeating in which large amounts of food are consumed in short periods of time.

(b) The patient attempts to counteract the "fattening" effects of food by one or more of the following: self-induced vomiting; purgative abuse, alternating periods of starvation; use of drugs such as appetite suppressants, thyroid preparations or diuretics. When bulimia occurs in diabetic patients they may choose to neglect their insulin treatment.

(c) The psychopathology consists of a morbid dread of fatness and the patient sets herself or himself a sharply defined weight threshold, well below the premorbid weight that constitutes the optimum or healthy weight in the opinion of the physician. There is often, but not always, a history of an earlier episode of anorexia nervosa, the interval between the two disorders ranging from a few months to several years. This earlier episode may have been fully expressed, or may have assumed a minor cryptic form with a moderate loss of weight and/or a transient phase of amenorrhoea."

Prevalence of eating disorders

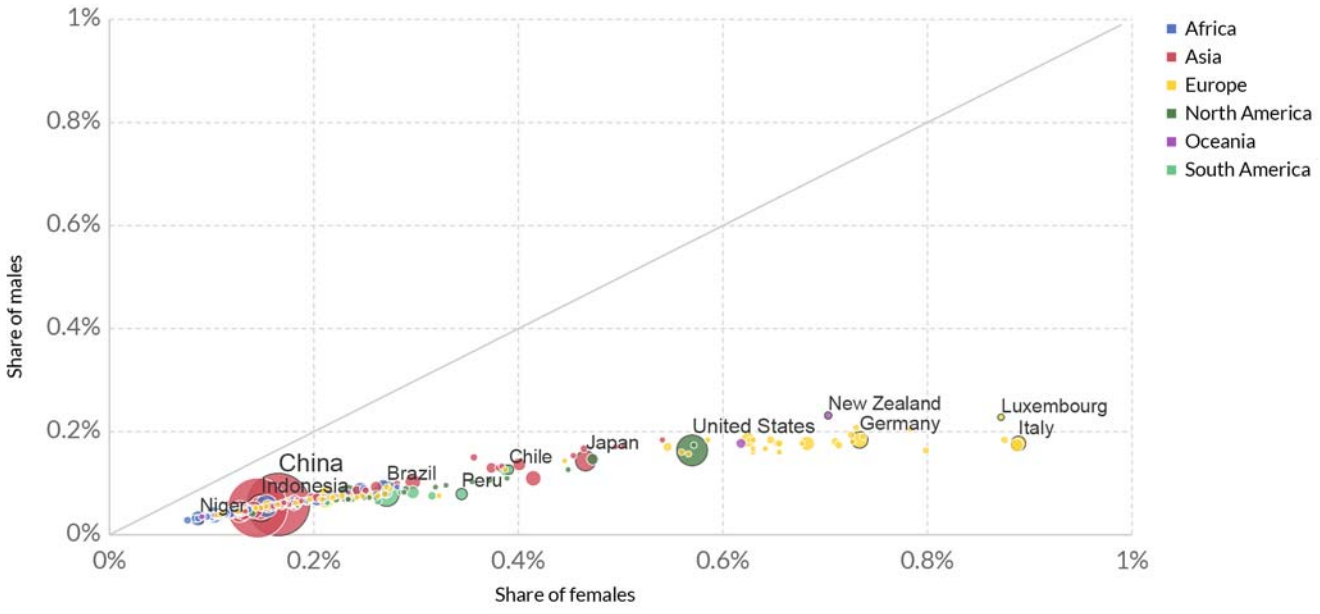
The prevalence of eating disorders (anorexia and bulimia nervosa) ranges from 0.05 to 0.55 percent by country. Globally an estimated 10.5 million had clinical anorexia and bulimia nervosa in 2016. Bulimia was more common: around 75 percent had bulimia nervosa.

In every country women are more likely to experience an eating disorder than men. Eating disorders tend to be more common in young adults aged between 15 and 34 years old. Trends in prevalence by age can be found here.

▶ 1990 2016 CHART MAP DATA SOURCES

Prevalence of eating disorders in males vs. females, 2016

Share of population suffering from an eating disorder, in males versus females. Data includes only eating disorders clinically defined as anorexia or bulimia nervosa. Figures attempt to provide a true estimate (going beyond reported diagnosis) of eating disorder prevalence based on medical, epidemiological data, surveys and meta-regression modelling.



Source: IHME, Global Burden of Disease CC BY

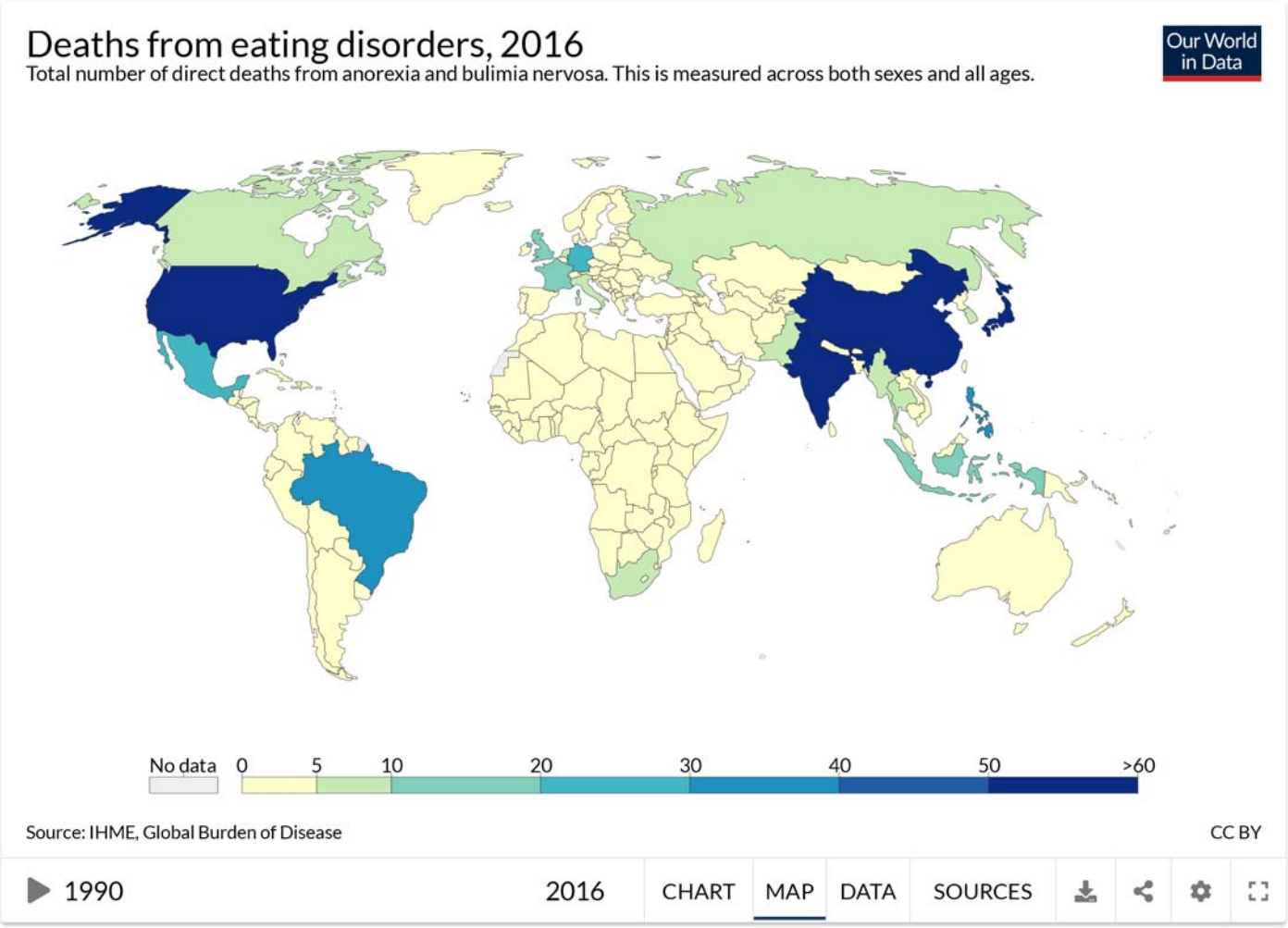
▶ 1990 2016

Search Average annual change CHART DATA SOURCES

Deaths from eating disorders

Direct deaths can result from eating disorders through malnutrition and related health complications. The chart below shows the estimated number of direct deaths from anorexia and bulimia nervosa. Evidence suggests that having an eating disorder can increase the relative risk of suicide; suicide deaths in this case are not included here.

Trends in death rates from eating disorders can be found here.



DALYs from eating disorders

The chart found here shows the health burden of eating disorders as measured in Disability Adjusted Life Years (DALYs) per 100,000. A time-series perspective on DALYs by age is here.

Schizophrenia

Schizophrenia is defined by the IHME based on the definition within the WHO's International Classification of Diseases (ICD-10) as:

"The normal requirement for a diagnosis of schizophrenia is that a minimum of one very clear symptom (and usually two or more if less clear-cut) belonging to any one of the groups listed as (a) to (d) below, or symptoms from at least two of the groups referred to as (e) to (h), should have been clearly present for most of the time during a period of 1 month or more:

- (a) thought echo, thought insertion or withdrawal, and thought broadcasting;
- (b) delusions of control, influence, or passivity, clearly referred to body or limb movements or specific thoughts,

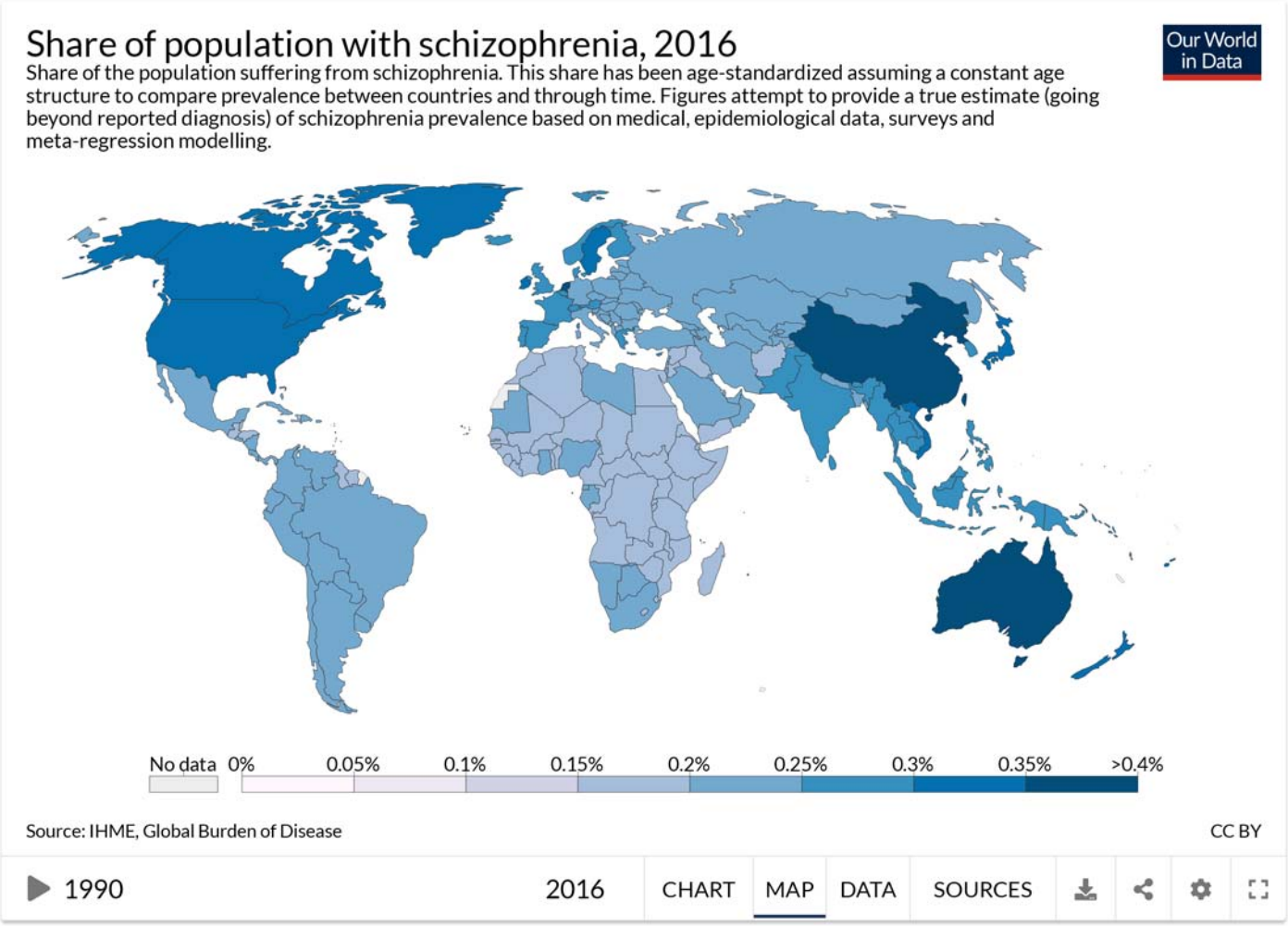
actions, or sensations; delusional perception;

- (c) hallucinatory voices giving a running commentary on the patient's behaviour, or discussing the patient among themselves, or other types of hallucinatory voices coming from some part of the body;
- (d) persistent delusions of other kinds that are culturally inappropriate and completely impossible, such as religious or political identity, or superhuman powers and - 79 - abilities (e.g. being able to control the weather, or being in communication with aliens from another world);
- (e) persistent hallucinations in any modality, when accompanied either by fleeting or half-formed delusions without clear affective content, or by persistent over-valued ideas, or when occurring every day for weeks or months on end;
- (f) breaks or interpolations in the train of thought, resulting in incoherence or irrelevant speech, or neologisms;
- (g) catatonic behaviour, such as excitement, posturing, or waxy flexibility, negativism, mutism, and stupor;
- (h) "negative" symptoms such as marked apathy, paucity of speech, and blunting or incongruity of emotional responses, usually resulting in social withdrawal and lowering of social performance; it must be clear that these are not due to depression or to neuroleptic medication;
- (i) a significant and consistent change in the overall quality of some aspects of personal behaviour, manifest as loss of interest, aimlessness, idleness, a self-absorbed attitude, and social withdrawal."

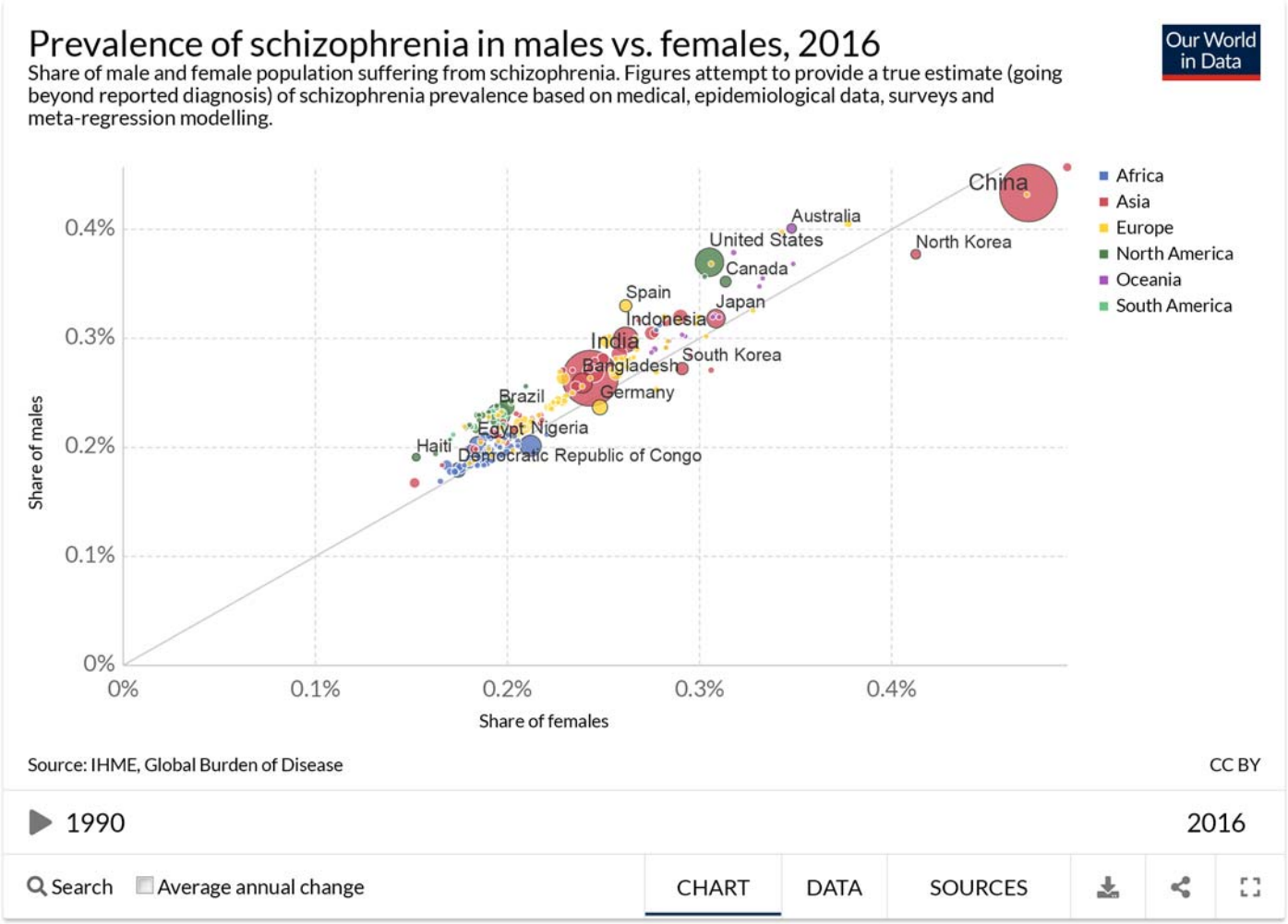
The following charts present global-level data on the prevalence of schizophrenia.

Prevalence of schizophrenia

The prevalence of schizophrenia typically ranges from 0.2 to 0.45 percent across countries. It's estimated that 21 million people in world had schizophrenia in 2016; the number of men and women with schizophrenia was approximately the same (around 10.5 million each).



In many countries (but not all) the prevalence of schizophrenia is slightly higher in men than women. Prevalence by age can be found here.



DALYs from schizophrenia

The chart found here shows the health burden of schizophrenia as measured in Disability Adjusted Life Years (DALYs) per 100,000. A time-series perspective on DALYs by age is here.

Correlates, Determinants & Consequences

Risk factors for mental health

The determinants, onset and severity of mental health disorders are complex - they can rarely be attributed to a single factor. Identifying potential risk factors form an important element of health research, potential prevention and in some cases, appropriate treatment; nonetheless, many risk factors remain only correlates of observed patterns in mental health. They therefore need to be interpreted carefully.

The World Health Organization synthesize the potential contributors to mental health and wellbeing into three categories:[4]

- individual attributes and behaviours: these can be particular genetic factors or personality traits;
- social and economic circumstances;
- environmental factors.

In the table below we see the WHO's breakdown of potential adverse and protective factors for mental health within these three categories. These factors often interact, compound or negate one another and should therefore not be considered as individual traits or exposures. For example, particular individual traits may make a given person more vulnerable to mental health disorders with the onset of a particular economic or social scenario — the instance of one does not necessarily result in a mental health disorder, but combined there is a significantly higher vulnerability.

Level	Adverse Factors	Protective Factors
Individual attributes	Low self-esteem	Self-esteem, confidence
	Cognitive/emotional immaturity	Ability to solve problems & manage stress or adversity
	Difficulties in communicating	Communication skills
	Medical illness, substance use	Physical health, fitness
Social circumstances	Loneliness, bereavement	Social support of family & friends
	Neglect, family conflict	Good parenting/family interaction
	Exposure to violence/abuse	Physical security & safety
	Low income & poverty	Economic security
	Difficulties or failure at school	Scholastic achievement
	Work stress, unemployment	Satisfaction & success at work
Environmental factors	Poor access to basic services	Equality of access to basic services
	Injustice & discrimination	Social justice, tolerance, integration
	Social & gender inequalities	Social & gender equality
	Exposure to war or disaster	Physical security & safety

Risk factors through the life-course

The risk factors and influencers on mental health vary significantly for an individual as they move through the life-course. The following are acknowledged risk factors for a given stage of life.[5]

– Pre-conception and pre-natal period

A given individual's mental health and wellbeing can be influenced by factors present prior to conception or birth. Pregnancies which are unwanted or in adolescence can increase the likelihood of detrimental behaviours of the mother during pregnancy, and the environmental or family conditions of childhood.[6] During pregnancy, detrimental behaviours including tobacco, alcohol and drug use can increase the likelihood of later mental health disorders for children; malnutrition, low-birth weight and micronutrient deficiency (for example, iodine deficiency) can also influence later mental health vulnerabilities.[7,8,9]

– Infancy and early childhood

There is a large base of evidence which shows that emotional attachment in early childhood has a considerable impact on later vulnerability to mental health and wellbeing.[10,11] As a result, particular risk factors include separation from the primary caregiver, in some cases post-natal depression in mothers (which can result in sub-optimal attachment), and parents for whom communication and social interaction is challenging. Child maltreatment and neglect has been found to have a

significant impact on vulnerabilities to mental wellbeing.[12,13] Malnutrition, poor access to basic services and disease and parasites are also important contributors.

– Childhood

Childhood conditions form a critical component of health and wellbeing later in life. Negative experiences, either at home or outside of the home (for example, bullying in school) can have lifelong impacts on the development of core cognitive and emotional skills. Poor socioeconomic conditions also have a significant effect on vulnerability to mental health disorders; in a study in Sweden, the authors found that children raised in families of poor socioeconomic backgrounds had an increased risk of psychosis.[14] Poor economic resources, shown through poor housing conditions for example, can be seen by children as shameful or degrading and affect aspects of childhood learning, communication and interaction with peers.

Children with a parent who has a mental illness or substance use disorder have a higher risk of psychiatric problems themselves.[15,16,17] This effect between generations can occur as a result of genetic, biological, psychological and social risk factors.

– Adolescence

Adolescence is typically the stage of life where mental health disorders tend to become more apparent. The risk factors and contributors to wellbeing in childhood apply equally to those in adolescence. In addition, several other contributing factors appear. It is in the years of adolescence that the use of substances including alcohol and drugs first appear.

Substance use is particularly hazardous and harmful for adolescents because individuals are still developing both mentally and physically. Peer pressure, and media influences also become more prominent over these years. Exposure to substance use is not only an important risk factor for other mental health disorders, but also linked to poorer educational outcomes, more risky sexual behaviour and increased exposure to violence and conflict.

– Adulthood

Experiences and emotional capabilities developed through childhood and adolescence are important factors in the effect that particular events and scenarios in adulthood have on mental health outcomes.

The WHO highlight that critical to wellbeing in adulthood is the allocation and balance between work and leisure time. Exposure to high stress and anxiety is strongly influenced by the share of time working, caring for others, or time spent in an insecure economic environment. Individuals with poor socioeconomic security, and in particular unemployment, are also at higher risk to mental health disorders.

These factors, balanced with the amount of time spent on 'consumption' activities, including leisure time and supportive family and friends, often determine the propensity for poor mental health and wellbeing. Community structures can have a significant positive impact on these outcomes — individuals who have poor access to such communities, either through social exclusion, neighbourhood violence/crime, or lack of respite care have a higher risk of mental health disorders.

Physical health also has an important impact on mental wellbeing; an individual's 'physical capital' can influence their sense of esteem and social inclusion. Individuals with chronic illness or disability are at higher risk of poor mental health; this is particularly true for conditions with high rates of stigmatisation, such as HIV/AIDS.

– Older age

Individuals of older age are of notably high risk of poorer mental health and wellbeing. This typically results from notable changes in life conditions (such as a cease in employment which affects both the feeling of contribution and economic freedom), higher social exclusion, and loneliness. This is particularly true when an older individual begins to lose close family and friends. Bereavement in general is an important predictor of mental health disorders such as depression.

A decline in physical health can have major impacts on life capabilities by affecting an individual's mobility and freedom. Older individuals are also at higher risk of abuse or neglect from carers and in some cases, family members.

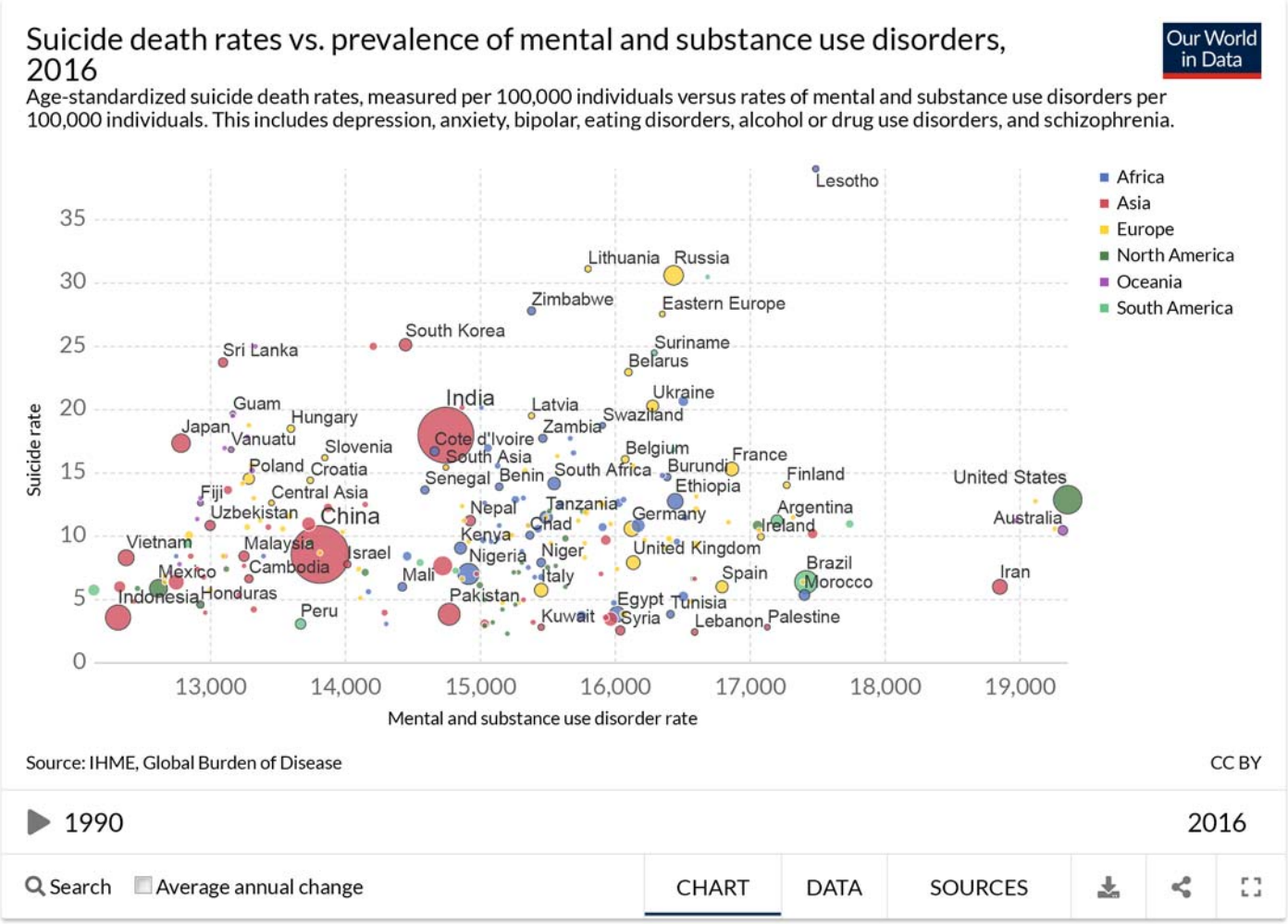
Link between mental health and suicide

The link between mental health and substance use disorders and suicide is well-documented.[18] It is however true that not all suicides - or suicide attempts - are attributed to underlying mental health or substance use disorders; as shown in the chart below, there is not a direct relationship between mental health prevalence and suicide rates.[19]

We cover suicide statistics more broadly in our full entry on Suicide, however here we attempt to distil the key findings on the links between mental health and substance use and suicide. Although mental health and substance use disorders is within the top-five causes of disease burden globally (as measured by Disability-Adjusted Life Years; DALYs), accounting for approximately 7 percent of the burden, several authors have highlighted that such figures — since they do not include suicide DALYs — underestimate the true cost of mental health disorders.[20] Providing a more accurate estimate of total mental health burden therefore requires some understanding of the connection between these disorders and suicide.

Meta-analyses of psychological autopsy studies of suicide across high-income countries suggest that up to 90 percent of suicides occur as a result of an underlying mental health or substance use disorder.[21, 22, 23] While available data and studies are more scarce across lower-to-middle income countries, evidence across countries including China, Taiwan and India suggest that this proportion is significantly lower elsewhere.[24, 25, 26, 27] These studies suggest a large number of suicides resultant from the 'dysphoric affect' and 'impulsivity' (which are not defined as a mental and substance use disorder). In such cases, understanding the nature of self-harm methods between countries is important; in these countries a high percentage of self-harming behaviours are carried out through more lethal methods such as poisoning (often through pesticides) and self-immolation. This means that in a high number of cases self-harming behaviours can prove fatal, even if there was not a clear intent to die.

A study by Ferrari et al. (2015) attempted to determine the share disease burden from suicide which could be attributed to mental health or substance use disorders.[28] Based on review across a number of meta-analysis studies the authors estimated that 68 percent of suicides across China, Taiwan and India were attributed to mental health and substance use disorders; across other countries this share was approximately 85 percent. In their estimates of total attributable disease burden, the authors concluded that mental health and substance use disorders were responsible for 62 percent of total DALYs from suicide.



Mental health as a risk factor for suicide

Although the total prevalence of mental health and substance use disorders does not show a direct relationship to suicide rates (as shown in the chart above), there are notable links between specific types of mental health disorders and suicide. In their meta-study of the mental health-suicide relationship, Ferrari et al. (2015) assess the pooled relative risk of suicide across a range of mental health and substance use disorders.[29] This represents the increased risk of suicide for those with a particular mental health or substance use disorder.

The figures below represent estimates of the increased risk of suicide for an individual with one of the following disorders. An individual with depression, for example, is 20 times more likely to die from suicide than someone without; some with anxiety disorder around 3 times; schizophrenia around 13 times; bipolar disorder 6 times; and anorexia 8 times as likely.

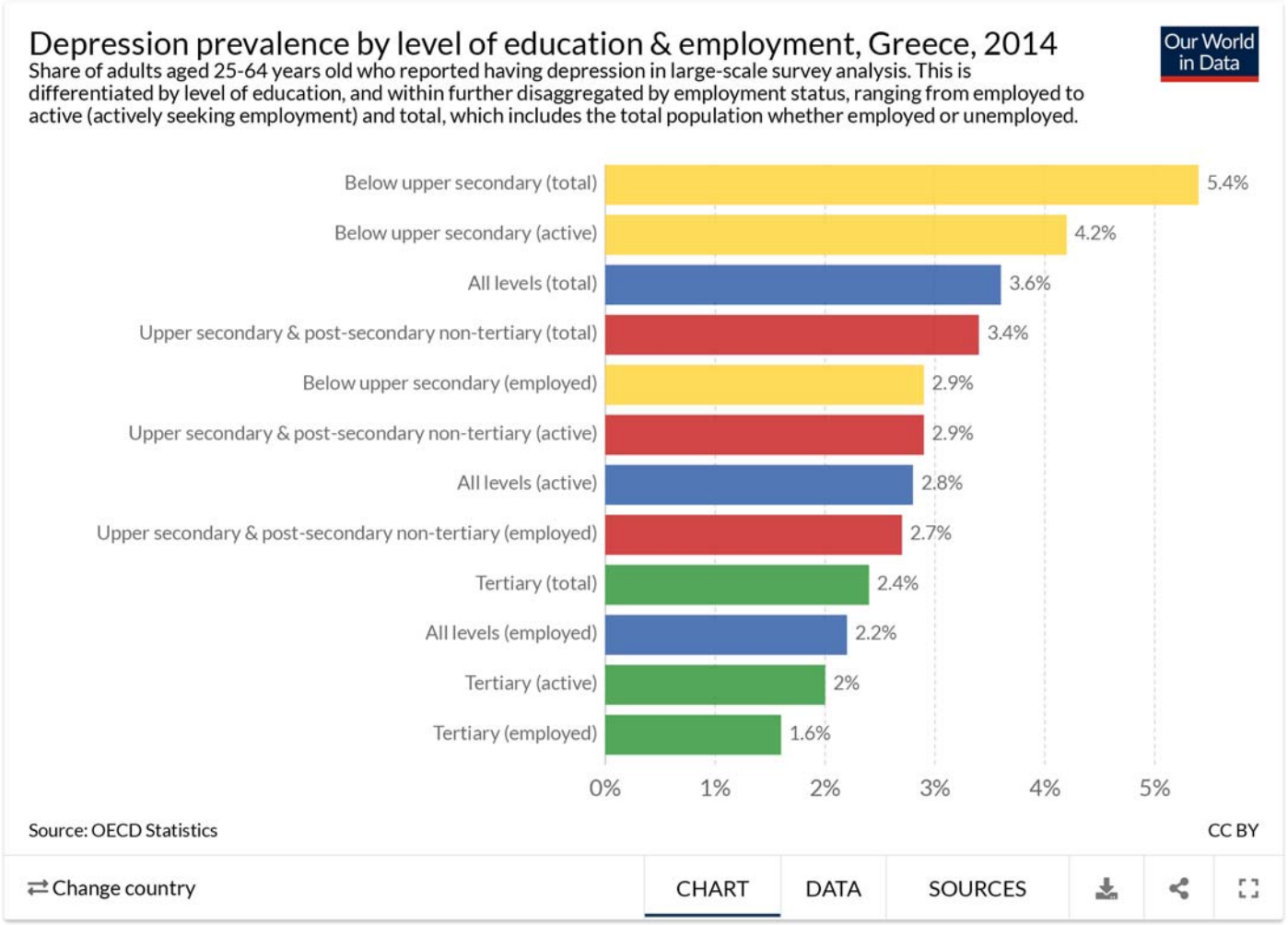
Disorder	Pooled relative risk (95% UI)
Major depressive disorder	19.9 (9.5-41.7)
Anxiety disorder	2.7 (1.7-4.3)
Schizophrenia	12.6 (11.0-14.5)
Bipolar disorder	5.7 (2.6-12.4)
Anorexia nervosa	7.6 (2.2-25.6)
Alcohol dependence	9.8 (9.0-10.7)
Opioid dependence	6.9 (4.5-10.5)
Psychostimultant dependence	8.2 (3.9-16.9)

Depression by education level & employment status

The statistics presented in the entry above focus on aggregate estimates of prevalence across total populations. In the chart below we present data on depression prevalence across a number of OECD countries, disaggregated by education level and employment status.[30] This data is based on self-reported prevalence of depression as requested by surveys. There are multiple reasons why this data may differ from IHME statistics presented above: it is based only on adults aged 25-64 years old, and focuses on self-reported depression only. The lack of differentiation in these surveys between mental health disorders, such as depression, anxiety disorders, and bipolar disorder mean that self-reported depression data may include individuals with these other disorders.

Categories below have been coloured based on education level, with further categorisation based on whether groups are employed, actively seeking employment, and the total of employed, active and unemployed. Across most countries (which you can explore using the "change country" option in the chart below) we tend to see the lowest prevalence in depression amongst those with tertiary (postsecondary) education; and highest prevalence in those who did not reach upper secondary education.

It is also notable that the large differences in education level close or disappear when we look only at the sub-group of those employed. Overall, the prevalence of depression appears to be lower in individuals in employment relative to those actively seeking employment, or the total population which also includes the unemployed.



Life satisfaction and mental health

Is the prevalence of mental health disorders reflected in self-reported life satisfaction or happiness? Overall, evidence suggests that there is a negative correlation between prevalence of particular mental health disorders (depression and anxiety have been the most widely assessed) and self-reported life satisfaction. This suggests that life satisfaction and happiness tends to be lower in individuals experiencing particular mental health disorders.

We discuss the link and evidence for this relationship in our entry on Happiness and Life Satisfaction.

Mental health as a risk factor for substance abuse

Mental health is known to be an important risk factor for the development of substance use disorders (either in the form of alcohol or illicit drug dependencies). The increased risk of a substance use disorder varies by mental health disorder type:

- for alcohol dependency the risk is highest in individuals with intermittent explosive disorder, dysthymia, ODD, bipolar disorder and social phobia. This is discussed in our entry on Alcohol Consumption.
- for illicit drug dependency the risk is highest for individuals with intermittent explosive disorder, ADHD, and bipolar disorder. This is discussed in our entry on Substance Use.

Mental health treatment

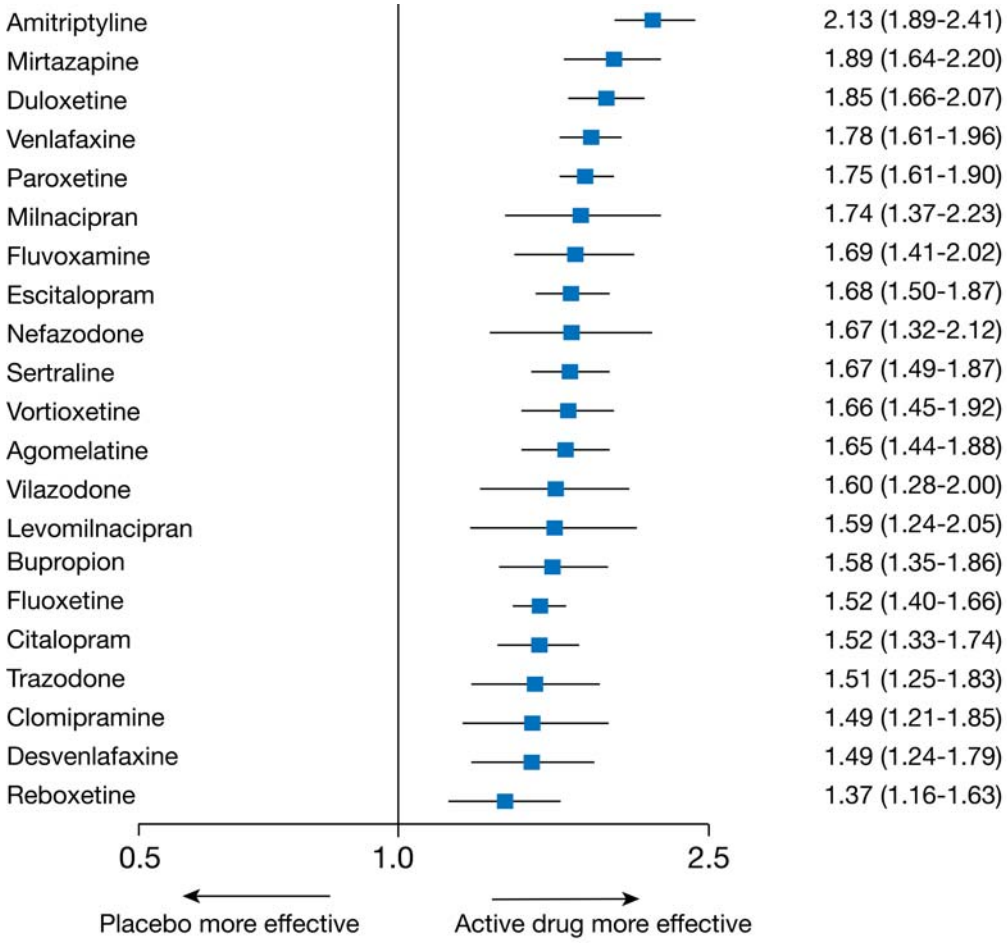
Do antidepressants work?

There are a number of options for mental health treatment and recovery — choice of treatment and its effectiveness will be specific to a number of factors including the mental health disorder, its severity, previous treatment and the individual. There is not a single 'best approach' to treatment.

One option for treatment of depression is the prescription of antidepressant drugs. But are antidepressant drugs effective in reducing the severity of depression? In the chart below we present the results of the latest and largest meta-analysis on antidepressant drug efficacy to date, as published by Cipriani et al. (2018) in *The Lancet*.[31]

This meta-analysis assessed the effectiveness of 21 antidepressant drugs relative to a placebo across 522 trials comprising 116,477 participants. Effectiveness, given as the response rate, was measured by the total number of patients who had a reduction of ≥50% of the total score on a standardised observer-rating scale for depression. The odds-ratio measures the likelihood of a positive response from the antidepressant relative to the placebo (where a value of 2.0 indicates the antidepressant was twice as likely as the placebo).

As shown, all 21 antidepressant drugs were more effective than the placebo in reducing the severity of depression in adults. They did, however, vary in effectiveness. However, this meta-analysis also reported variance in levels of 'acceptability', which measures the the proportion of patients who withdrew for any reason (such as side-effects from the antidepressant drug). The use and choice of antidepressants will therefore be specific to the individual dependent on a range of factors and their response to treatment.



Source: Cipriani et al. (2018). Comparative efficacy and acceptability of 21 antidepressant drugs for the acute treatment of adults with major depressive disorder.
The data visualization is available at OurWorldinData.org. There you will find more on this topic. Licensed under CC-BY-SA by the authors Hannah Ritchie & Max Roser.

Data Quality, Definitions and Measurement

How is prevalence defined and measured?

The widespread issue of underreporting means accurate and representative data on the prevalence of disorders is difficult to define. If relying on mental health diagnoses alone, this underestimation would be severe. Prevalence figures would be likely to reflect healthcare spending (which allows for more focus on mental health disorders) rather than giving a representative perspective on differences between countries; high-income countries would likely show significantly higher prevalence as a result of more diagnoses.

The data presented in this entry by the Institute of Health Metrics & Evaluation (IHME) is therefore based on a combination of sources, including medical and national records, epidemiological data, in addition to survey data. Where raw data for a particular country is scarce, epidemiological data and meta-regression models must be used based on available data from neighbouring countries. Data quality issues are described below.

The data presented here therefore offers an *estimate* (rather than official diagnosis) of mental health prevalence based on

medical, epidemiological data, surveys and meta-regression modelling.

Data availability on mental health

The majority of data presented in this entry is based on estimates from the IHME's Global Burden of Disease (GBD). This is currently one of the only sources which produces global level estimates across most countries on the prevalence and disease burden of mental health and substance use disorders.

Nonetheless, the GBD acknowledges the clear data gaps which exist on mental health prevalence across the world. Despite being the 5th largest disease burden at a global level (and with within the top three across many countries), detailed data is often lacking. This is particularly true of lower-income countries. The Global Burden of Disease note that the range of epidemiological studies they draw upon for global and national estimates are unequally distributed across disorders, age groups, countries and epidemiological parameters.[32] Using these studies to provide full coverage of these disorders is challenging.

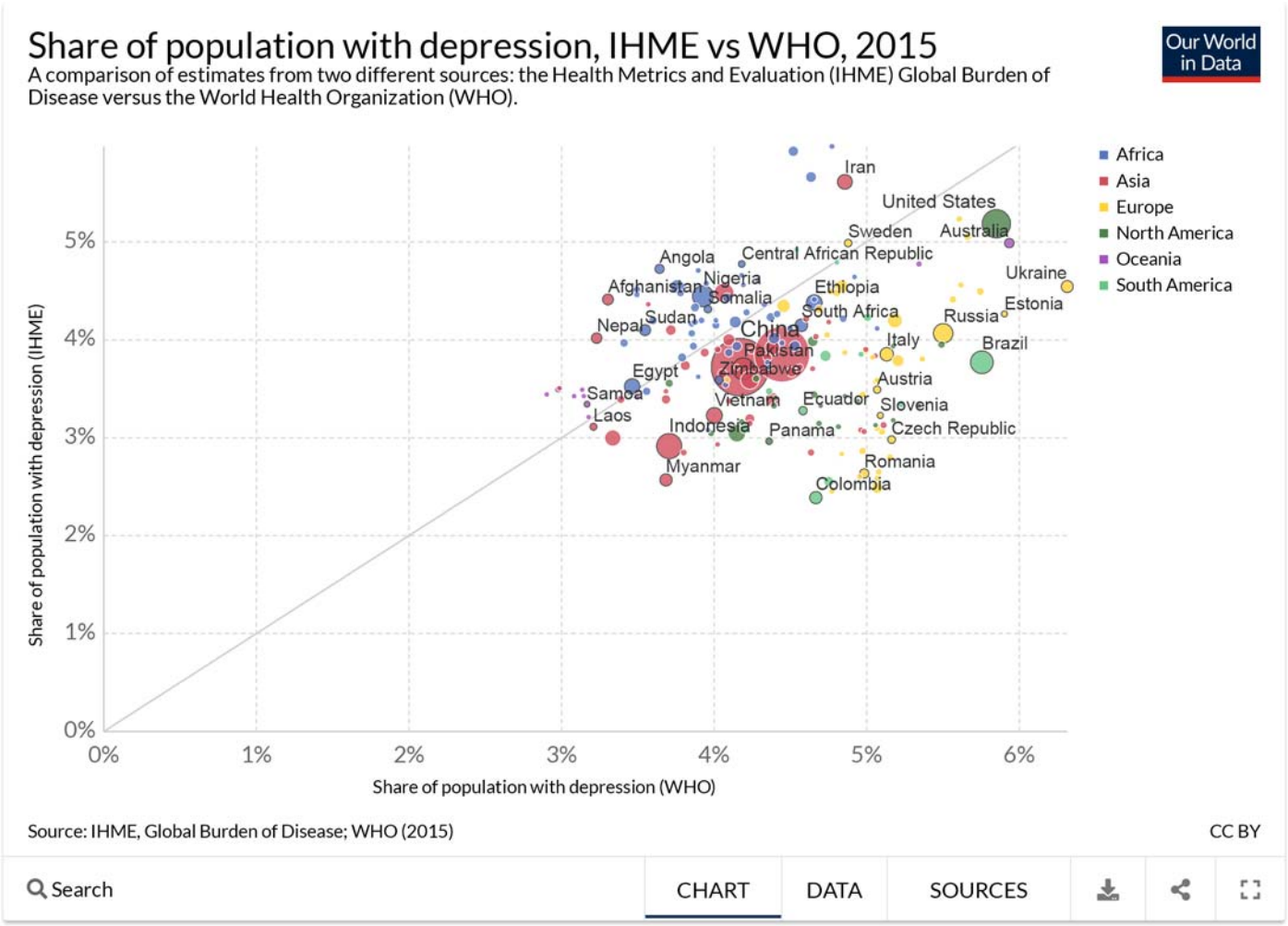
To overcome these methodological challenges the authors note:

> *To deal with this issue and be able to include data derived using various study methodologies and designs, GBD 2013 makes use of DisMod-MR, version 2.0, a Bayesian meta-regression tool. The software makes it possible to pool all of the epidemiological data available for a given disorder into a weighted average, while simultaneously adjusting for known sources of variability in estimates reported across studies. If raw data are not available for a given country, the software produces an imputed estimate for each epidemiological parameter based on data available from surrounding countries. This allowed GBD to include estimates for 188 countries.*

Comparison of IHME estimates to other sources

In this entry we have focused on data trends published by the Institute of Health Metrics (IHME) Global Burden of Disease study. This is currently the only source which provides estimates for all countries over time, and across the full range of mental health and substance use disorders. The World Health Organization (WHO) publish estimates on depression only; the comparison of depression prevalence from IHME versus WHO is shown in the scatter plot below.

A range of national sources also publish estimated prevalence of depression. In many cases, the 'boundaries', or category differentiation in mental health disorders is different from IHME estimates. They are often therefore not directly comparable. For example, the Center for Diseases Control (CDC) in the United States provides information and estimates on combined depression and anxiety disorders, treating anxiety as a *subset* of depression.



Data Sources

Institute of Health Metrics and Evaluation (IHME), Global Burden of Disease (GBD)

- **Data**: Deaths, DALYs and prevalence of mental health and substance use disorders, by age and sex
- **Geographical coverage:** Global by country and region
- **Time span:** 1990 - 2016
- **Available at:** http://ghdx.healthdata.org/gbd-results-tool

World Health Organization (WHO) International Classification of Diseases (ICD)

World Health Organization. (1992). *The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines* (Vol. 1). World Health Organization.

- **Data**: Definitions and classifications of mental and substance use disorders
- **Available at:** ICD-10 Classification of Mental and Behavioural Disorders

World Health Organization (WHO) Global Health Observatory (GHO)

- **Data**: Prevalence of depression
- **Geographical coverage:** Global by country
- **Time span:** 2015
- **Available at:** WHO Global Health Observatory (GHO)

Further resources & guidance

Suicide.org

- **Information**: Suicide prevention, awareness and support in addition to support on a range of mental health disorders
- **Available at:** http://suicide.org/

Online Support Groups

- **Information**: Free online support groups for individuals with a range of mental health, substance use and neurodevelopmental disorders (among other health conditions)
- **Available at:** https://online.supportgroups.com/

Center for Diseases Control and Prevention (CDC)

- **Information**: Guidance and support on depression and anxiety.
- **Available at:** https://www.cdc.gov/tobacco/campaign/tips/diseases/depression-anxiety.html

Center for Diseases Control and Prevention (CDC)

- **Information**: Factsheets on mental health
- **Available at:** https://www.cdc.gov/nchs/fastats/mental-health.htm

Centre for Global Mental Health

- **Information**: Research, education and project on closing inequities in mental health treatment
- **Available at:** https://www.centreforglobalmentalhealth.org/

Movement for Global Mental Health (MGMH)

- **Information**: Global network of individuals and organisations aiming to provide global coverage of mental health services
- **Available at:** http://www.globalmentalhealth.org//

References

1. Ferrari et al. (2015). The Burden Attributable to Mental and Substance Use Disorders as Risk Factors for Suicide: Findings from the Global Burden of Disease Study 2010. *PLOS ONE*. Available online.
2. Prince, M., Patel, V., Saxena, S., Maj, M., Maselko, J., Phillips, M. R., & Rahman, A. (2007). No health without mental health. *The Lancet*, *370*(9590), 859-877. Available online.
3. Brooks, S. J., Rask-Andersen, M., Benedict, C., & Schiöth, H. B. (2012). A debate on current eating disorder diagnoses in light of neurobiological findings: is it time for a spectrum model?. *BMC psychiatry*, *12*(1), 76. Available online.
4. Risks to mental health: an overview of vulnerabilities and risk factors (2012). World Health Organization. Available online.
5. Risks to mental health: an overview of vulnerabilities and risk factors (2012). World Health Organization. Available online.
6. Kieling, C., Baker-Henningham, H., Belfer, M., Conti, G., Ertem, I., Omigbodun, O., ... & Rahman, A. (2011). Child and adolescent mental health worldwide: evidence for action. *The Lancet*, *378*(9801), 1515-1525. Available online.
7. Herrman, H., Saxena, S., Moodie, R., & World Health Organization. (2005). Promoting mental health: concepts, emerging evidence, practice: a report of the World Health Organization, Department of Mental Health and Substance Abuse in collaboration with the Victorian Health Promotion Foundation and the University of Melbourne. Available online.
8. Grantham-McGregor, S., Cheung, Y. B., Cueto, S., Glewwe, P., Richter, L., Strupp, B., & International Child Development Steering Group. (2007). Developmental potential in the first 5 years for children in developing countries. *The Lancet*, *369*(9555), 60-70. Available online.
9. Prince M, Patel V, Saxena S, Maj M, Maselko J, Phillips MR, Rahman A (2007). No health without mental health. *The Lancet*, 370: 859-877. Available online.
10. Walker S, Wachs TD, Meeks Gardner J, Lozoff B, Wasserman GA, Pollitt E, Careter JA and the International Child Development Steering Group (2007). Child development: risk factors for adverse outcomes in developing countries. *The Lancet*, 369: 145-157. Available online.
11. Walker S, Wachs TD, Grantham-McGregor S, Black M, Nelson C, Huffman C et al (2011). Inequality in early childhood: risk and protective factors for early child development. *The Lancet*, 378: 1325-1338. Available online.
12. Walker S, Wachs TD, Meeks Gardner J, Lozoff B, Wasserman GA, Pollitt E, Careter JA and the International Child Development Steering Group (2007). Child development: risk factors for adverse outcomes in developing countries. *The Lancet*, 369: 145-157. Available online.

13. Walker S, Wachs TD, Grantham-McGregor S, Black M, Nelson C, Huffman C et al (2011). Inequality in early childhood: risk and protective factors for early child development. *The Lancet*, 378: 1325-1338. Available online.

14. Wicks, S., Hjern, A., & Dalman, C. (2010). Social risk or genetic liability for psychosis? A study of children born in Sweden and reared by adoptive parents. *American Journal of Psychiatry*, *167*(10), 1240-1246. Available online.

15. WHO (2004). Prevention of mental disorders: Effective interventions and policy options. World Health Organization; Geneva, Switzerland. Available online.

16. Hetherington R, Baistow K, Katz I, Trowell J (2001). The welfare of children with mentally ill parents: Learning from inter-country comparisons. Wiley and Sons; Chichester, UK. Available online.

17. Matteblat F, Remschmidt H (2008). The children of mentally ill parents. Deutsches Arzteblatt International, 105: 413-418. Available online.

18. Prince, M., Patel, V., Saxena, S., Maj, M., Maselko, J., Phillips, M. R., & Rahman, A. (2007). No health without mental health. *The Lancet*, *370*(9590), 859-877. Available online.

19. Ferrari et al. (2015). The Burden Attributable to Mental and Substance Use Disorders as Risk Factors for Suicide: Findings from the Global Burden of Disease Study 2010. *PLOS ONE*. Available online.

20. Prince, M., Patel, V., Saxena, S., Maj, M., Maselko, J., Phillips, M. R., & Rahman, A. (2007). No health without mental health. *The Lancet*, *370*(9590), 859-877. Available online.

21. Yoshimasu, K., Kiyohara, C., Miyashita, K. et al. Environmental Health and Preventative Medicine (2008) 13: 243. Available online.

22. Arsenault-Lapierre, G., Kim, C., & Turecki, G. (2004). Psychiatric diagnoses in 3275 suicides: a meta-analysis. *BMC psychiatry*, *4*(1), 37. Available online.

23. Cavanagh, J. T., Carson, A. J., Sharpe, M., & Lawrie, S. M. (2003). Psychological autopsy studies of suicide: a systematic review. *Psychological Medicine*, *33*(3), 395-405. Available online.

24. Phillips, M. R. (2010). Rethinking the role of mental illness in suicide. *American Journal of Psychiatry*. Available online.

25. Conner, K. R., Phillips, M. R., Meldrum, S., Knox, K. L., Zhang, Y., & Yang, G. (2005). Low-planned suicides in China. *Psychological Medicine*, *35*(8), 1197-1204. Available online.

26. Zhang, J., Xiao, S., & Zhou, L. (2010). Mental disorders and suicide among young rural Chinese: a case-control psychological autopsy study. *American Journal of Psychiatry*, *167*(7), 773-781. Available online.

27. Yang, G. H., Phililips, M. R., Zhou, M. G., Wang, L. J., Zhang, Y., & Xu, D. (2005). Understanding the unique characteristics of suicide in China: national psychological autopsy study. *Biomedical and Environmental Sciences*, *18*(6), 379. Available online.

28. Ferrari et al. (2015). The Burden Attributable to Mental and Substance Use Disorders as Risk Factors for Suicide: Findings from the Global Burden of Disease Study 2010. *PLOS ONE*. Available online.

29. Ferrari et al. (2015). The Burden Attributable to Mental and Substance Use Disorders as Risk Factors for Suicide: Findings from the Global Burden of Disease Study 2010. *PLOS ONE*. Available online.

30. OECD Indicators (2017). Education at a Glance 2017. Available at: http://www.oecd.org/education/education-at-a-glance-19991487.htm.

31. Cipriani, A., Furukawa, T. A., Salanti, G., Chaimani, A., Atkinson, L. Z., Ogawa, Y., ... & Egger, M. (2018). Comparative efficacy and acceptability of 21 antidepressant drugs for the acute treatment of adults with major depressive disorder: a systematic review and network meta-analysis. *The Lancet*, *391*(10128), 1357-1366. Available online.

32. Whiteford, H., Ferrari, A., & Degenhardt, L. (2016). Global burden of disease studies: implications for mental and substance use disorders. *Health Affairs*, *35*(6), 1114-1120. Available online.

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