Global Burden of Disease

Mental Disorders and Illicit Drug Use Expert Group

Summary of data collected and decision rules used in making regional and global estimates:

Schizophrenia

Amanda Baxter, Adele Somerville, An Pham, Allison Ventura, Roman Scheurer, Bianca Calabria, Jen McLaren, Anna Roberts, Louisa Degenhardt and Harvey Whiteford *for the Mental Disorders and Illicit Drug Use Expert Group*

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Working Paper

Acknowledgments:

The Mental Disorders and Illicit Drug Use Expert Group comprise: Prof Harvey Whiteford (Co-Chair), Prof Louisa Degenhardt (Co-Chair), Prof Oye Gureje, Prof Wayne Hall, Dr Cille Kennedy, Prof Ron Kessler, Prof John McGrath, Dr Maria Medina-Mora, Dr Guilherme Polanczyk, Prof Martin Prince, and Dr Shekhar Saxena.

We gratefully acknowledge the contribution of Drs Saha, McGrath and colleagues who produced the body of work upon which this dataset is largely based.

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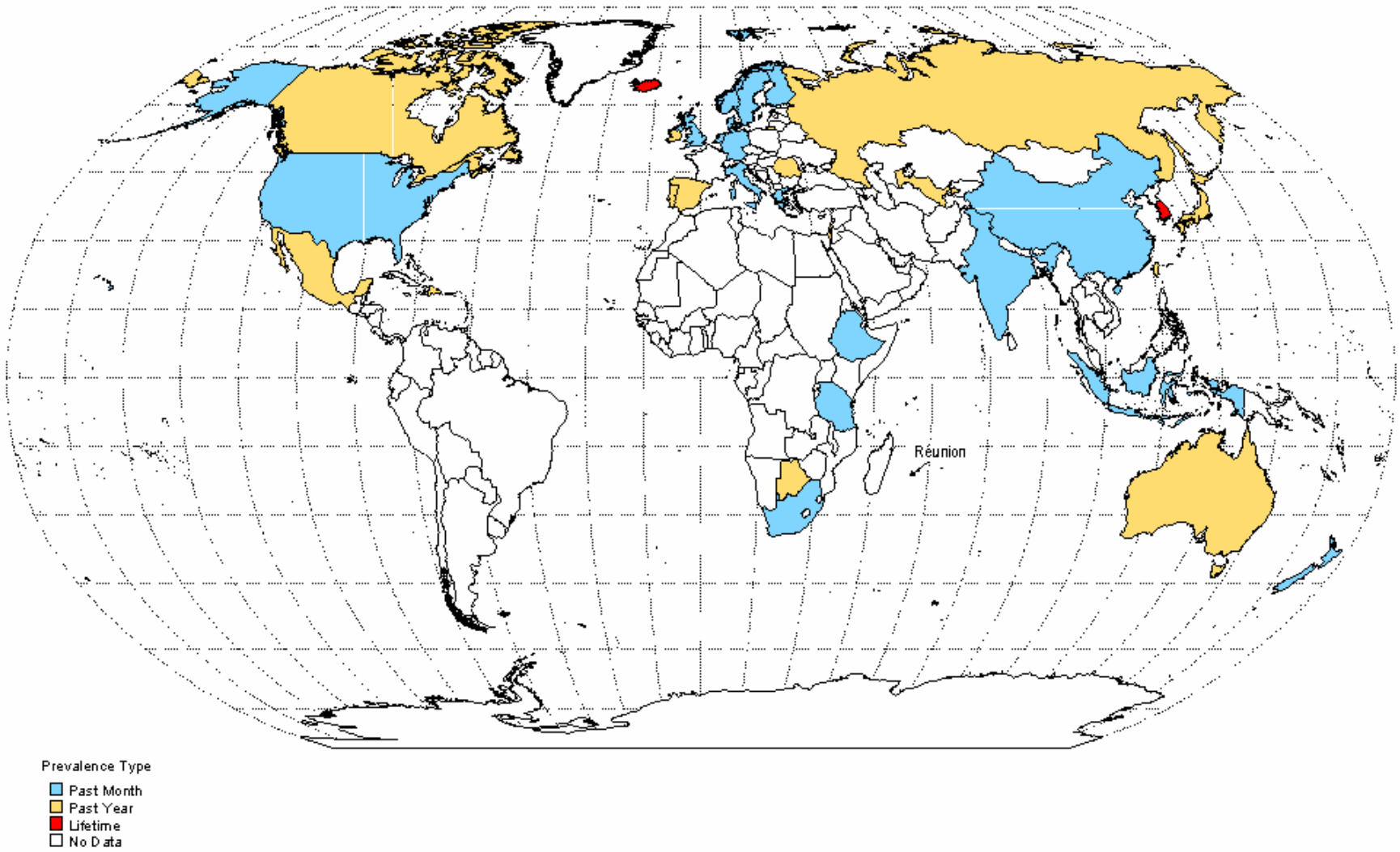
Glossary

ARR	Annualised remission rate
CIDI	Composite International Diagnostic Interview
DALY	Disability-adjusted life year
DSM	Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association)
GBD	Global Burden of Disease Project
ICD	International Classification of Diseases (World Health Organisation)
LP	Lifetime prevalence
PMP	Past month prevalence
PYP	Past year prevalence
SDS	Sheehan Disability Scale
WHO	World Health Organisation
WMHS	World Mental Health Survey
YLD	Years of life lived with disability
YLL	Years of life lost

Preliminary data coverage identified for: Schizophrenia

Figure 1. Past month, past year and lifetime prevalence estimate coverage for schizophrenia



1.0 Data summary and decision rules overview

The new Global Burden of Disease study commenced in 2007 and is the first major effort since the original 1996 GBD study to produce systematic and comprehensive estimates of the burden of diseases and injuries. It will also update the comparative estimates of the burden of risk factors. While the original 1996 GBD study produced 1990 estimates for 107 diseases and injuries and ten risk factors for eight world regions, the new study will produce 1990 and 2005 estimates for 150 diseases and injuries and more than 40 risk factors for 21 regions of the world.

Important changes will be made to the scope and nature of the estimates for mental disorders and illicit drug use. More disorders are being considered because of significant advances in epidemiological research. The original study contained estimates for unipolar depression, bipolar disorder, panic disorder, obsessive compulsive disorder, post traumatic stress disorder and illicit drug use. The new estimates will include the mental disorders covered in the original study plus eating disorders (both anorexia and bulimia), dysthymia (as well as major depression), generalised anxiety disorder, agoraphobia, social phobia, specific phobia, separation anxiety disorder, pervasive developmental disorders (autism and Asperger's disorder), attention-deficit/hyperactivity disorder and conduct disorders.

> In the 2005 update, schizophrenia is defined as cases meeting ICD-10 diagnostic criteria (F20.0-F20.3, F20.5-F20.9, F22-F29). This includes subtypes: paranoid schizophrenia, disorganised schizophrenia, catatonic schizophrenia, undifferentiated schizophrenia and residual schizophrenia. Excluded are: substance-induced psychotic disorder, mood disorder with psychotic features and psychotic disorder due to a medical condition.

Disability-adjusted life years (DALYs) will be calculated for schizophrenia comprising two health states: acute and residual state. These will be summed to give overall burden of disease for schizophrenia.

1.1 Data sources

The data largely derives from a body of work undertaken by Saha and McGrath. Publications resulting from this work include a review of the literature for prevalence data [2], mortality [3] and modelling of disease course, including results of a review of remission data [4]. The data and findings reported within these publications will form the basis of the dataset for the 2005 GBD study.

Results from a systematic review on the prevalence of schizophrenia were published by Saha and colleagues in 2005 [2]. A follow-up search was conducted in 2008 to ascertain whether any further articles had been published with prevalence estimates for schizophrenia. The prevalence data presented in the preliminary dataset comprise a subset of the data sourced and extracted by Dr Saha, and three additional studies published since the initial review. Quality Scores, similar but not identical to that used by the Mental Disorders and Illicit Drug Use Expert group, were calculated by Saha and colleagues and are included in the dataset. Quality Scores will be calculated according to original methodology for the additional studies sourced in the follow-up review in 2008.

Methodology for the systematic review by Saha and colleagues are available in the peer-reviewed literature [2]. Methodologies for the 2008 review are documented and detailed on the expert group's website: www.gbd.unsw.edu.au. The follow-up review followed a similar methodology in order to maintain consistency.

The stages of the systematic reviews

:**1. Search of peer-reviewed literature.** The search strategy is consistent with the methodology recommended by the Meta-analysis of Observational Studies in Epidemiology (MOOSE) Group[1] Three electronic databases were included in the search (Medline, PsychInfo and Embase) with searches limited to human subjects Search strings are available for review in the article by Saha and colleagues[2] and at http://www.gbd.unsw.edu.au/gbdweb.nsf/page/Methodology.

2. Identifying articles from peer-review literature that met inclusion criteria. An extensive list of articles was detected by the search string. Each of the several thousand articles was briefly reviewed for inclusion criteria:

- Must include the specific disorder under review
- Must present primary data
- Must be an epidemiologic study (pharmacological treatment samples and case studies excluded)
- Samples must be representative of the general population

3. Obtaining full-text copies of articles. The references of articles identified from the systematic review were compiled in Endnote. PDFs were sourced from on-line open access journals and through The Park, Centre for Mental Health, Library and the University of Queensland Library.

4. Data extraction. A three level Access database was designed to accommodate the data from the mental disorders systematic search. A random sample of articles were double-checked for accuracy and consistency of data extraction and entry. In-built quality assurance was a feature of the Access database through the use of drop-down boxes and coding protocols.

A Quality Index Score was developed based on a range of variables extracted from each identified source of data so that representativeness of studies can be quantified and used for comparison.

In this document we present an initial summary of the prevalence data identified for schizophrenia.

We present the decision rules relating to :

- inclusion criteria for data sources,
- methodology of data extraction, and
- reporting of study characteristics and epidemiologic parameters.

Also presented here are some preliminary decision rules for :

- manipulating data,
- imputing missing data,
- pooling data within countries,
- pooling data for some parameters (for example remission and mortality), and
- our approach to production of regional prevalence estimates for mental disorders as a whole.

Further work is currently underway to identify peer-reviewed and grey literature sources that may assist with missing age-, sex- and country-specific estimates. The process of applying the rules outlined below has begun, with the first steps presented in this document.

2.0 Principles for inclusion of data sources and reporting of data.

Presented here are general rules for the inclusion of articles and data identified through the peer-review literature and through expert review. We also present the general protocol and rules for reporting of data. Methodology is largely consistent between the original literature review by Saha and colleagues, and the recent follow-up review. Dr Saha's review was a wide-ranging comprehensive work hence a subset of data, meeting GBD criteria, were extracted from the original dataset. The rules for inclusion are listed below.

2.1 Inclusion of Data Sources

Data sources were included if :

- The estimate was representative of the general population. Special groups (for example migrant samples, race-specific samples) were excluded as GBD prevalence estimates are required at population level.
- Estimates are representative of samples from 1980 and onward

Representativeness

Where a large body of data is available for a country (e.g. for the US, Western Europe, Great Britain, New Zealand and Australia), only the nationally representative studies will be included.

Justification: Excluding studies that have small samples that are likely NOT representative of the national population will be a more time-efficient process. Studies with unrepresentative samples are unlikely to be used for this GBD Project.

Diagnostic Criteria

A broad rule was adopted for all mental disorders that initial data collection for prevalence, incidence and remission would be limited to data sources reporting rates based on DSM and ICD diagnostic criteria only. Papers that report use of a survey that could not demonstrate validity against either DSM or ICD criteria were excluded. If the validity of a survey is uncertain, the opinion of an expert in the field will be sought.

Justification: Inclusion of estimates based on alternative definitions may skew the final estimates for some countries, as narrower or broader definitions would result in lower or higher estimates.

Definition of Remission

For the Global Burden of Disease project, remission from a mental disorder is defined as no longer fulfilling the diagnostic criteria for this disorder. Partial remission is therefore considered as being no longer a "case". Follow-up period for the sample must be a minimum of one year.

Remission estimates were obtained from observational studies. Studies that reported samples from randomised controlled trials or treatment other than "as usual" will be excluded as not being representative of the average case. Remission among cases of mental disorders *in treatment* (that is, treatment "as usual") will not be considered separately from out-of-treatment cases as so little data is available from community (non-treated) samples.

If several papers have been published for the same study (i.e same cohort) at different time points, only the paper reporting the longest follow-up period will be included in the dataset.

2.2 Data Extraction and Reporting

Prevalence rate.

If prevalence type was unspecified, the diagnostic tool was sought in order to determine whether prevalence was point, past month, 12-month, lifetime or another period. If the diagnostic tool was unable to be accessed or unclear, prevalence was taken as point. An exception to this rule was for samples ascertained through case registries. As these were diagnosed with the disorder AT SOME PERIOD in their lives, but possibly some time ago, prevalence was taken as lifetime. As this was most frequently the case for disorders with low remission in studies that used birth cohorts (e.g. autism), it is assumed that this will not make a significant difference to the rate.

Time period (Epoch)

Where epoch (the year to which the estimate refers) is NOT reported within a paper, a note will be made of the fact and epoch recorded as the year two years prior to publication.

Justification: The GBD Project requires the year of estimate in order to establish a time trend for calculation of burden. However the research team are finding that it is relatively common for authors to not report details such as epoch, response rate, etc. Rather than leave a gap in the data where epoch is not reported, an overall decision was taken to estimate the epoch as two years prior to publication, on the basis that it will generally take at least two years to clean data, carry out analysis and publish results.

Age Range

Where an age range is not reported in the paper, 'dummy' variables of 0 (minimum) and 99 (maximum) are inserted. If the sample is reported as 'adult' the age range was recorded as 18-99.

Remission and Mortality - Secondary Data Sources

In all cases, the primary source of data was used for all surveys for data extraction purposes. However, due to time restrictions, when a study reported data from previous years this data was included with a note that it did not come from the primary data source.

3.0 Data sources for schizophrenia

3.1 Prevalence data

Table 1. presents the available data identified by Saha et al and articles published since from an extensive search of the peer review literature (see Saha, 2005 [2] and www.gbd.unsw.edu.au for methodology). All data sources can be obtained from the reference list at the end of this report. The last two columns indicate whether sex- and age- specific estimates were reported for that country.

Table 1. Summary of data available for prevalence of schizophrenia.

Region /Country	Past month prevalence (PMP)	Past year prevalence (PYP)	Lifetime prevalence (LP)	Age – specific estimates	Sex – specific estimates
Asia Pacific, High Income					
Brunei	-	-	-		
Japan	-	[5, 6] [7] [8] [9]	-	Y	Y
Republic of Korea (South Korea)	-	-	[10, 11]	Y	Y
Singapore	-	-	-		
Asia, Central					
Armenia	-	-	-		
Azerbaijan	-	-	-		
Georgia	-	-	-		
Kazakhstan	-	-	-		
Kyrgyzstan	-	-	-		
Mongolia	-	-	-		
Tajikistan	-	-	-		

Region /Country	Past month prevalence (PMP)	Past year prevalence (PYP)	Lifetime prevalence (LP)	Age – specific estimates	Sex – specific estimates
Turkmenistan	-	-	-		
Uzbekistan	-	[12]	-	N	N
Asia, East					
China	[13, 14] [15]	[13, 16]	[14, 17]	Y	Y
Hong Kong	-	-	-		
Democratic People's Republic of Korea (North Korea)	-	-	-		
Taiwan	-	[18]	[18]	N	Y
Asia, South					
Afghanistan	-	-	-		
Bangladesh	-	-	-		
Bhutan	-	-	-		
India	[19, 20]	[21, 22] [23] [24]	-	Y	Y
Nepal	-	-	-		
Pakistan	-	-	-		
Asia, Southeast					
Cambodia	-	-	-		
Indonesia	[25]	-	-	N	Y
Laos People's Democratic Republic	-	-	-		
Malaysia	-	-	-		
Maldives	-	-	-		
Mauritius	-	-	-		
Mayotte	-	-	-		
Myanmar	-	-	-		
Philippines	-	-	-		
Reunion Island	-	-	[26, 27]	Y	Y
Seychelles	-	-	-		
Sri Lanka	-	-	-		
Thailand	-	-	-		
Timore Leste					
Viet Nam	-	-	-		
Australiasia					
Australia	-	[28]	-	Y	Y
New Zealand	[29]	[29]	[29, 30]	Y	Y
Caribbean					
Anguilla	-	-	-		
Antigua and Barbuda	-	-	-		

Region /Country	Past month prevalence (PMP)	Past year prevalence (PYP)	Lifetime prevalence (LP)	Age – specific estimates	Sex – specific estimates
Aruba	-	-	-		
Bahamas	-	-	-		
Barbados	-	-	-		
Belize	-	-	-		
Bermuda	-	-	-		
British Virgin Islands	-	-	-		
Cayman Islands	-	-	-		
Cuba	-	-	-		
Dominica	-	[31]	-	N	N
Dominican Republic	-	-	-		
French Guiana	-	-	-		
Grenada	-	-	-		
Guadaloupe	-	-	-		
Guyana	-	-	-		
Haiti	-	-	-		
Jamaica	-	-	-		
Martinique	-	-	-		
Montserrat	-	-	-		
Netherlands Antilles	-	-	-		
Puerto Rico	-	[32]	[32, 33]	Y	Y
Saint Kitts and Nevis	-	-	-		
St. Lucia	-	-	-		
St. Vincent	-	-	-		
Suriname	-	-	-		
Trinidad and Tobago	-	[34]	-	N	N
Turks and Caicos Islands	-	-	-		
Europe, Central					
Albania	-	-	-		
Bosnia and Herzegovina	-	-	-		
Bulgaria	-	-	-		
Croatia	-	-	-		
Czech Republic	-	-	-		
Hungary	-	-	-		
Kosovo	-	-	-		
Poland	-	-	-		
Romania	-	[35]	-	N	Y
Serbia and Montenegro	-	-	-		
Slovakia	-	-	-		

Region /Country	Past month prevalence (PMP)	Past year prevalence (PYP)	Lifetime prevalence (LP)	Age – specific estimates	Sex – specific estimates
Slovenia	-	-	-		
The Former Yugoslav Republic of Macedonia	-	-	-		
Yugoslavia	-	-	-		
Europe, Eastern					
Belarus	-	-	-		
Estonia	-	-	-		
Latvia	-	-	-		
Lithuania	-	-	-		
Republic of Moldova	-	-	-		
Russian Federation	[36]	[37]	[38]	N	Y
Ukraine	-	-	-		
Europe, Western					
Andorra	-	-	-		
Austria	-	-	-		
Belgium	-	-	-		
Channel Islands	-	-	-		
Cyprus	-	-	-		
Denmark	[39]	[40, 41] [42] [43] [44]	-	Y	Y
Faeroe Islands	-	-	-		
Finland	[45]	-	[46]	N	Y
France	-	-	-		
Germany	[47]	-	-	Y	N
Gibraltar	-	-	-		
Greece	[48]	-	-	N	N
Greenland	-	-	-		
Holy See	-	-	-		
Iceland	-	-	[49]	Y	Y
Ireland	-	[50, 51] [52]	[53]	N	Y
Isle of Man	-	-	-		
Israel	-	[54]	-	Y	N
Italy	[55]	[55, 56] [57]	[55]	Y	Y
Liechtenstein	-	-	-		
Luxembourg	-	-	-		
Malta	-	-	-		
Monaco	-	-	-		

Region /Country	Past month prevalence (PMP)	Past year prevalence (PYP)	Lifetime prevalence (LP)	Age – specific estimates	Sex – specific estimates
Netherlands	[58, 59] [60]	[58]	[58]	N	Y
Norway	[61]	-	-	Y	Y
Portugal	-	[62]	-	N	N
Saint Pierre et Miquelon	-	-	-		
San Marino	-	-	-		
Spain	-	[63]	-	N	N
Sweden	[64]	[65, 66] [67]	-	N	Y
Switzerland	-	-	-		
United Kingdom	[68, 69] [70]	-	-	N	Y
Latin America, Andean					
Bolivia	-	-	-		
Ecuador	-	-	-		
Peru	-	-	-		
Latin America, Central					
Colombia	-	-	-		
Costa Rica	-	-	-		
El Salvador	-	-	-		
Guatemala	-	-	-		
Honduras	-	-	-		
Mexico	-	[71]	-	N	Y
Nicaragua	-	-	-		
Panama	-	-	-		
Venezuela	-	-	-		
Latin America, Southern					
Argentina	-	-	-		
Chile	-	-	-		
Falkland Islands (Malvinas)	-	-	-		
Uruguay	-	-	-		
Latin America, Tropical					
Brazil	-	-	-		
Paraguay	-	-	-		
North Africa/Middle East					
Algeria	-	-	-		
Bahrain	-	-	-		
Egypt	-	-	-		
Iran (Islamic Republic of)	-	-	-		

Region /Country	Past month prevalence (PMP)	Past year prevalence (PYP)	Lifetime prevalence (LP)	Age – specific estimates	Sex – specific estimates
Iraq	-	-	-		
Jordan	-	-	-		
Kuwait	-	-	-		
Lebanon	-	-	-		
Libyan Arab Jamahiriya	-	-	-		
Morocco	-	-	-		
Occupied Palestinian Territory	-	-	-		
Oman	-	-	-		
Qatar	-	-	-		
Saudi Arabia	-	-	-		
Syrian Arab Republic	-	-	-		
Tunisia	-	-	-		
Turkey	-	-	-		
United Arab Emirates	-	-	-		
Western Sahara	-	-	-		
Yemen	-	-	-		
North America, High Income					
Canada	-	[72, 73]	[74, 75] [76]	Y	Y
United States of America	[77, 78] [79] [80] [81]	[82, 83] [81] [84] [85]	[77, 86] [79] [81] [87]	Y	Y
Oceania					
American Samoa	-	-	-		
Cook Islands	-	-	-		
Fiji	-	-	-		
French Polynesia	-	-	-		
Guam	-	-	-		
Kiribati	-	-	-		
Marshall Islands	-	-	-		
Micronesia (Federated States of)	-	[88, 89]	-	N	Y
Nauru	-	-	-		
New Caledonia	-	-	-		
Niue	-	-	-		
Northern Mariana Islands	-	-	-		
Palau	-	-	-		
Papua New Guinea	-	-	-		
Pitcairn	-	-	-		
Samoa	-	-	-		

Region /Country	Past month prevalence (PMP)	Past year prevalence (PYP)	Lifetime prevalence (LP)	Age – specific estimates	Sex – specific estimates
Solomon Islands	-	-	-		
Tokelau	-	-	-		
Tonga	-	-	-		
Tuvalu	-	-	-		
Vanuatu	-	-	-		
Wallis and Futuna Islands	-	-	-		
Sub-Saharan Africa, Central					
Angola	-	-	-		
Central African Republic	-	-	-		
Congo	-	-	-		
Congo (Democratic Republic of)	-	-	-		
Equatorial Guinea	-	-	-		
Gabon	-	-	-		
Sub-Saharan Africa, East					
Burundi	-	-	-		
Comoros	-	-	-		
Djibouti	-	-	-		
Eritrea	-	-	-		
Ethiopia	[90, 91]	-	[90, 91]	N	Y
Kenya	-	-	-		
Madagascar	-	-	-		
Malawi	-	-	-		
Mozambique	-	-	-		
Rwanda	-	-	-		
Somalia	-	-	-		
Sudan	-	-	-		
Tanzania (United Republic of)	[92]	-	-	N	N
Uganda	-	-	-		
Zambia	-	-	-		
Sub-Saharan Africa, Southern					
Botswana	-	[93]	-	N	N
Lesotho	-	-	-		
Namibia	-	-	-		
South Africa	[94]	-	-	N	N
Swaziland	-	-	-		
Zimbabwe	-	-	-		
Sub-Saharan Africa, West					
Benin	-	-	-		

Region /Country	Past month prevalence (PMP)	Past year prevalence (PYP)	Lifetime prevalence (LP)	Age – specific estimates	Sex – specific estimates
Burkina Faso	-	-	-		
Cameroon	-	-	-		
Cape Verde	-	-	-		
Chad	-	-	-		
Cote d'Ivoire	-	-	-		
Gambia	-	-	-		
Ghana	-	-	-		
Guinea	-	-	-		
Guinea-Bissau	-	-	-		
Liberia	-	-	-		
Mali	-	-	-		
Mauritania	-	-	-		
Niger	-	-	-		
Nigeria	-	-	-		
Saint Helena	-	-	-		
Sao Tome and Principe	-	-	-		
Senegal	-	-	-		
Sierra Leone	-	-	-		
Togo	-	-	-		

3.2 Remission data

Data pertaining to remission of schizophrenia were derived from a paper by Saha and colleagues, 2008 [4] which is based on earlier unpublished review of the literature by Dr Lauronen. Saha and colleagues extracted data on "complete recovery" in studies that had a follow-up period of at least five years. Twelve remission studies were identified with a total sample size of 2699.

Table 2. Summary of remission data identified for schizophrenia

Source	Sample	Follow-up years	Remission (%)
Huber et al, 1975 [95]	502	22.1	22
Ciompi, 1980 [96]	289	36.9	27
Helgason, 1990 [97]	107	20	4
Modestin et al, 2008 [98]	145	20	13

Harding et al, 1987 [99]	269	32	33
Dube et al, 1984 [100]	101	13.5	41
Harrow et al, 2005 [101]	64	15	19
Harrison et al, 2001 [102]	644	15	16
Lauronen et al, 2005 [103]	59	5	3
Leon, 1989 [104]	84	10	43
Thara, 2004 [105]	61	20	8
Auslander and Jeste, 2004 [106]	374	5	8

3.3 Mortality data

A systematic review of the literature on excess mortality in schizophrenia has been carried out by Saha and colleagues[3]. This data will form the basis of mortality estimates for the 2005 GBD study.

4.0 Principles for data manipulation and imputation

4.1 Prevalence estimates - data manipulation and imputation

Missing past month prevalence estimates.

Many studies report the 'lifetime' risk of mental disorders but not past month prevalence. A decision was made to apply the observed proportions, derived from studies that reported prevalence of lifetime, 12-month and past month mental disorders, to countries that only reported lifetime or 12-month cases. Where possible, and based upon studies rated as being of sufficiently high quality, region-specific proportions of past year cases among lifetime cases were applied (population-weighted if estimates were available from more than one country).

Missing age-specific estimates

Many studies only report an estimate for one overall age range, whereas the GBD study requires more age-specific estimates. A decision was made to apply the observed age pattern from countries that reported age-specific prevalence to countries where that data is not available. Where possible, and based upon studies rated as being of sufficiently high quality, region-specific rate ratios will be applied.

Missing sex-specific estimates

Some studies do not report a male/female specific estimate. A decision was made to apply the observed sex ratios from countries that reported male and female estimates to countries that reported only an overall prevalence estimate. Where possible and based on studies rated as being of sufficiently high quality, region-specific sex ratios will be applied (population-weighted if estimates were available from more than one country).

No direct country-specific estimates of prevalence of any sort

Further attempts will be made to source prevalence data for countries for which no data has yet been found through searching all available sources (grey literature, contacting experts, national and NGO websites). Where no direct estimates of any sort are available, the weighted region-specific estimate, derived from studies in other countries within the region, will be applied (population-weighted if estimates were available from more than one country). In the case of depression and anxiety (which includes PTSD) countries with comparable characteristics (e.g. engaged in conflict, suffering recent natural disasters) within the same region or nearby regions will be used as the basis for a derived estimate.

No direct region-specific estimates of prevalence of any sort

Further attempts will be made to source any prevalence data for that region through all available routes (grey literature, contacting experts, national and NGO websites). Where no direct estimates of any sort are available, the region will be matched to other regions (based on population characteristics identified through sensitivity analysis), and the weighted region-specific estimate will be applied (population-weighted if estimates were available from more than one country).

Data for 1990 or 2005 are not available.

If no direct estimates are available for 1990 or 2005, but data is available for other years, attempts will be made to estimate any trend across time. If only one estimate is available and no direct estimates of trend could be made, data on trends from other countries within the same region will be used.

Multiple data sources are available for the same country and time period.

Where multiple studies have been reported for the same country in the same time period, those of low quality or not considered representative will be excluded after careful consideration, and the estimates from the remaining countries will be pooled and the median value calculated. Statistical advice will be sought on the calculation of confidence intervals around the derived median value.

Implausible estimates

Where estimates reported are thought to be implausible, based on expert opinion, possibly due to cultural differences within the survey instrument, case ascertainment or sample selection, researchers will use indirect sources to compile estimates of what the prevalence might look like if imputations are required. This can then be used as a baseline comparison for the reported estimates.

4.2 First steps of data manipulation and imputation

The first steps of data manipulation, using decision rules agreed upon by the Expert group, have begun. Each study reporting prevalence for schizophrenia, was reviewed to determine whether multiple prevalence types (LP, PYP, PMP) were reported. Where a study was identified as reporting a past month **and** past year/lifetime prevalence estimate, all prevalence types from that study were collected. These estimates, which were assumed to have been calculated from the same sample using the same methodology, were used to calculate a ratio relative to the past month prevalence. Table 2 presents the ratios calculated for lifetime to past year to past month prevalence. Where data was collected AND REPORTED as part of a large international collaborative study, these ratios are reported together for the easier comparison. The mean and median of the observed ratios are presented at the end of each list.

Further investigations will be carried out to determine if region-specific ratios can be calculated. The median of these ratios will be used to impute data from surveys that only report on past year or lifetime prevalence of anxiety disorders. Median rather than mean will be used to minimise the influence of extreme ratios. Sex specific ratios will be used for studies that report prevalence of anxiety disorders disaggregated by sex.

Table 3. Ratios of lifetime, past year and past month prevalence of schizophrenia.

	LP : PYP : PMP		
Data source	**Male**	**Female**	**Person**
Prevalence of cases identified in NE health districts of Italy (de Salvia, 1993) [55]	3.3 : 1.9 : 1	4.1 : 2.0 : 1	3.7 : 1.9 : 1
General adult population survey in New Zealand (Oakley-Browne, 1989)			3.0 : 2.0 : 1
Epidemiologic Catchment Area Study in the USA (Leaf, 1991) [81]	1.7 : 1.3 : 1	2.4 : 1.6 : 1	2.1 : 1.4 : 1
The NEMESIS Study in the Netherlands (Bijl, 1998) [58]	4.0 : 2.0 : 1	1.5 :1 .0 : 1	2.0 : 1.0 : 1
General population survey in Ethiopia (Kebede, 1999) [90]	2.0 : : 1	1.3 : : 1	1.3 : : 1
General population survey in Ethiopia (Awas, 1999) [91]	2.0 : : 1	1.2 : : 1	1.3 : : 1
Survey of an adult sample in China (Chen, 1998) [14]	1.4 : : 1	1.2 : : 1	1.2 : : 1
Mixed and borderline cases identified in the UK general population (Bamrah, 1991) [70]			: 1.2 : 1
General population survey in China (Ran, 2001)			: 1.4 : 1
Mean	2.4 : 1.7 : 1	1.9 : 1.5 : 1	2.1 : 1.4 : 1
Median	2.0 : 1.9 : 1	1.4 : 1.6 : 1	2.0 : 1.4 : 1

4.3 Remission estimates - data manipulation and imputation

Remission rates

Where several remission data sources are available across different follow-up periods, the annualised remission rates (ARR) will be calculated and pooled as per methodology described by Mathers and colleagues [107] and Saha and colleagues[4].

ARR weighted (%)

$d = \sum[a*\{(-\ln(1 - b))/c\}]/\sum a$

The pooled annualised remission rate will be used across all countries. While it is acknowledged that remission may differ in countries where treated prevalence differs, insufficient data (country-specific treated prevalence and difference in remission rate by country) are available to estimate country- or region-specific remission rates.

4.4 Mortality estimates - data manipulation and imputation

Mortality rates

The derived estimate for excess mortality will be used across all countries. While it is acknowledged that mortality may differ in countries where treated prevalence differs, insufficient data (country-specific treated prevalence and country-specific excess mortality estimates) are available to estimate country- or region-specific remission rates.

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Appendix A

Flowchart of systematic data search for Mental Disorders