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:

Attention-Deficit Hyperactive Disorder

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

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Working Paper

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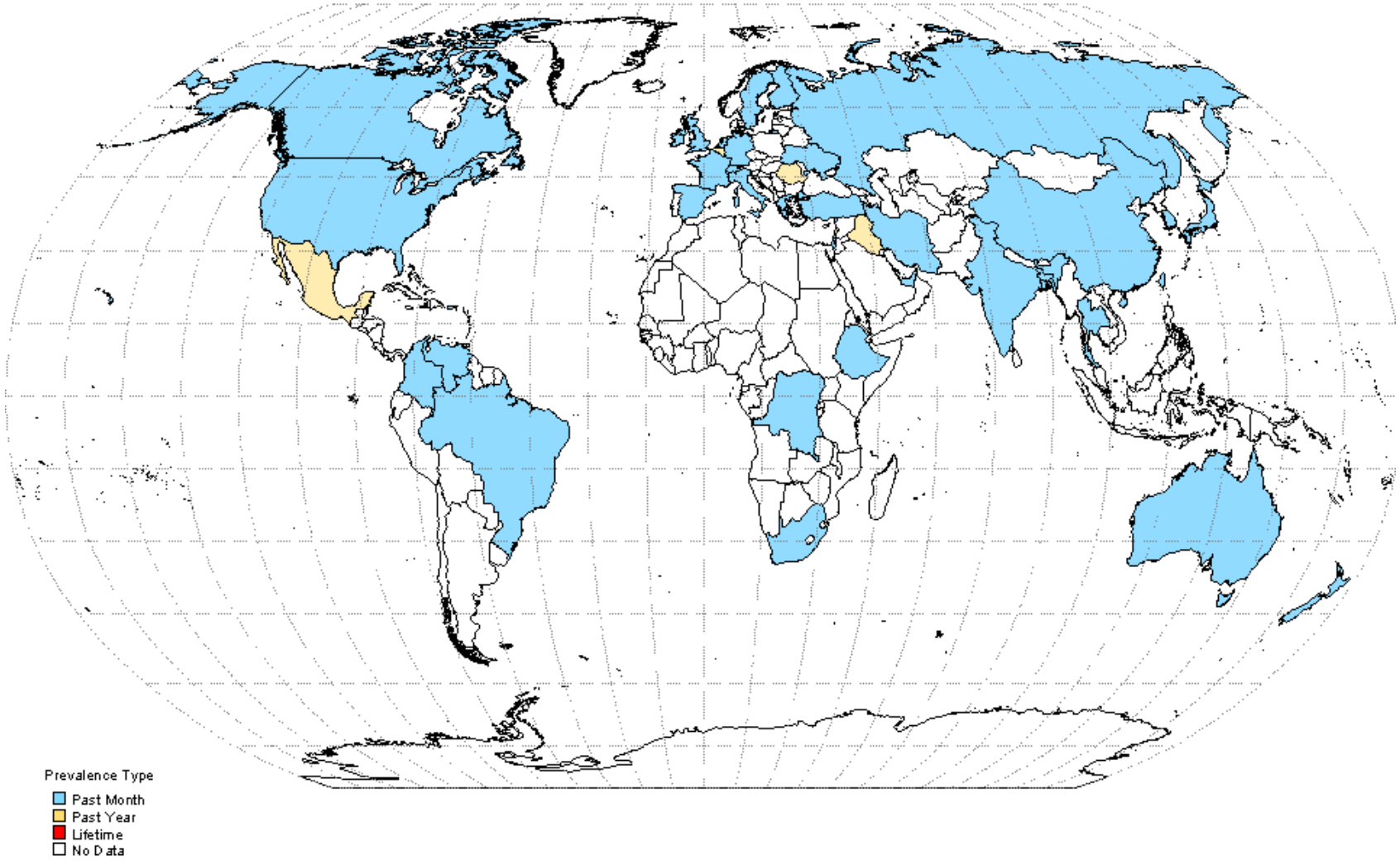
Glossary

ADHD	Attention-Deficit Hyperactivity Disorder
ARR	Annualised remission rate
CD	Conduct Disorder
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
ODD	Oppositional Defiant Disorder
PMP	Past month prevalence
PYP	Past year prevalence
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: Attention-Deficit Hyperactivity Disorder

Figure 1. Past month, past year and lifetime prevalence estimate coverage for attention-deficit hyperactivity disorder, including WMHS data.



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 (ADHD) and conduct disorder.

This document focuses on the ADHD preliminary dataset.

1.1 Data sources

The majority of the data for preliminary prevalence estimates for ADHD were provided by Dr Guilherme Polanczyk from the systematic review and meta-analysis conducted by Drs Polanczyk, de Lima, Horta, Biederman and Rohde [2]. We have also included additional data extracted from a small number of papers identified and cited in the update "Epidemiologic Considerations in Attention Deficit Hyperactivity Disorder: A Review and Update" [3], as well as data from the World Mental Health Survey (WMHS)[4].

The search strategy is detailed in the paper by Polanczyk et al, but in brief it involved four steps in the identification of data:

1. a computer search of databases for relevant studies;
2. a review of text books on the subject;
3. a review of reference lists of retrieved papers; and
4. contacts with experts in the field.

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

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.

2.1 Inclusion of Data Sources (including Peer-review papers)

Peer-review literature versus grey literature

A preliminary search for epidemiologic data for mental disorders identified a range of sources, including grey literature (government reports, unpublished findings, dissertations), peer-review publications and non-government organisation (NGO) data collection. The first stage of the data search, conducted by Polanczyk and colleagues, was on peer-reviewed literature. Grey literature sources will be reviewed in the second stage of the project as data sources to address the gaps in the preliminary dataset.

Justification: A large body of data, of sufficient quality to meet the group's criteria, is available through the peer-review literature to provide a preliminary dataset for the first round of estimates. It is anticipated that the circulation of these preliminary findings to experts in the field will yield a range of very useful suggestions for other data sources, including grey literature, to address the gaps in the data. In this way it is anticipated that maximum coverage will be achieved.

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 estimates would include 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 being reported.

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 two years.

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. the 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

The systematic review of peer-reviewed literature for the prevalence of ADHD only included studies if they reported point estimates. The WMHS data, added to the

prevalence data collected by Polanczyk and colleagues to form the preliminary prevalence dataset for ADHD, comprises lifetime and past year prevalence.

Cohort

If there was more than one stage of evaluation, Dr Polanczyk has reported the number of subjects at each stage. Otherwise, cohort size is the size of the complete sample.

Time period (Epoch)

The dataset extracted for the review by Polanczyk and colleagues reported prevalence data for the period starting from January 1978, but did not include epoch range. This will be added to the GBD preliminary dataset for ADHD early in 2009.

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. Similarly, where a good quality systematic review or meta-analysis was identified, the data reported was included and clearly identified as coming from a secondary data source.

3.0 Data sources for childhood behavioural disorders

3.1 Prevalence data

Table 1 presents data from the systematic review and meta-analysis conducted by Polanczyk, de Lima, Horta, Biederman and Rohde[2], as well additional papers cited in "Epidemiologic Considerations in Attention Deficit Hyperactivity Disorder: A Review and Update"[3] and data from the WMHS[4]. Citations for data sources are given in columns 2 to 4. All data sources can be obtained from the reference list at the end of this report. The last two columns in both tables indicate whether ANY sex- and age-specific estimates were reported for that country.

Note: For some PYPs the period is less than 12 months.

Table 1. Summary of data available by country for prevalence of ADHD, including the WMHS data.

Region /Country	ADHD – Past month prevalence (PMP)	ADHD – Past year prevalence (PYP)	ADHD – Lifetime prevalence (LP	Age-specific Estimates	Sex-specific Estimates
Asia Pacific, High Income					
Brunei	–	–	–	–	–
Japan	[4], [5]	–	–	N	Y
Republic of Korea (South Korea)	[6]	–	–	N	N
Singapore	–	–	–	–	–
Asia, Central					
Armenia	–	–	–	–	–
Azerbaijan	–	–	–	–	–
Georgia	–	–	–	–	–
Kazakhstan	–	–	–	–	–
Kyrgyzstan	–	–	–	–	–
Mongolia	–	–	–	–	–
Tajikistan	–	–	–	–	–
Turkmenistan	–	–	–	–	–
Uzbekistan	–	–	–	–	–

Region /Country	ADHD – Past month prevalence (PMP)	ADHD – Past year prevalence (PYP)	ADHD – Lifetime prevalence (LP	Age-specific Estimates	Sex-specific Estimates
Asia, East					
China	[7]	[8]	[8]	Y	Y
Hong Kong	[9,10]	–	–	N	Y
Democratic People's Republic of Korea (North Korea)	–	–	–	–	–
Taiwan	[11,12]	–	–	N	Y
Asia, South					
Afghanistan	–	–	–	–	–
Bangladesh	[13]	–	–	N	N
Bhutan	–	–	–	–	–
India	[14-17]	[8]	[8]	Y	Y
Nepal	–	–	–	–	–
Pakistan	–	–	–	–	–
Asia, Southeast					
Cambodia	–	–	–	–	–
Indonesia	–	–	–	–	–
Lao People's Democratic Republic	–	–	–	–	–
Malaysia	–	–	–	–	–
Maldives	–	–	–	–	–
Mauritius	–	–	–	–	–
Mayotte	–	–	–	–	–
Myanmar	–	–	–	–	–
Philippines	–	–	–	–	–
Reunion Island	–	–	–	–	–
Seychelles	–	–	–	–	–
Sri Lanka	–	–	–	–	–
Thailand	[18, 19]	–	–	N	Y
Timore Leste	–	–	–	–	–
Viet Nam	–	–	–	–	–
Australasia					
Australia	[20-23]	–	–	N	Y
New Zealand	[24, 25]	–	–	N	N
Caribbean					
Anguilla	–	–	–	–	–
Antigua and Barbuda	–	–	–	–	–
Aruba	–	–	–	–	–

Region /Country	ADHD – Past month prevalence (PMP)	ADHD – Past year prevalence (PYP)	ADHD – Lifetime prevalence (LP	Age-specific Estimates	Sex-specific Estimates
Bahamas	–	–	–	–	–
Barbados	–	–	–	–	–
Belize	–	–	–	–	–
Bermuda	–	–	–	–	–
British Virgin Islands	–	–	–	–	–
Cayman Islands	–	–	–	–	–
Cuba	–	–	–	–	–
Dominica	–	–	–	–	–
Dominican Republic	–	–	–	–	–
French Guiana	–	–	–	–	–
Grenada	–	–	–	–	–
Guadaloupe	–	–	–	–	–
Guyana	–	–	–	–	–
Haiti	–	–	–	–	–
Jamaica	–	–	–	–	–
Martinique	–	–	–	–	–
Montserrat	–	–	–	–	–
Netherlands Antilles	–	–	–	–	–
Puerto Rico	[26-28]	–	–	N	N
Saint Kitts and Nevis	–	–	–	–	–
St. Lucia	–	–	–	–	–
St. Vincent	–	–	–	–	–
Suriname	–	–	–	–	–
Trinidad and Tobago	–	–	–	–	–
Turks and Caicos Islands	–	–	–	–	–
Europe, Central					
Albania	–	–	–	–	–
Bosnia and Herzegovina	–	–	–	–	–
Bulgaria	–	–	–	–	–
Croatia	–	–	–	–	–
Czech Republic	–	–	–	–	–
Hungary	–	–	–	–	–
Kosovo	–	–	–	–	–
Poland	–	–	–	–	–
Romania	–	[8]	[8]	Y	Y
Serbia and Montenegro	–	–	–	–	–
Slovakia	–	–	–	–	–

Region /Country	ADHD – Past month prevalence (PMP)	ADHD – Past year prevalence (PYP)	ADHD – 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	[29]	–	–	N	N
Ukraine	[30]	–	–	N	Y
Europe, Western					
Andorra	–	–	–	–	–
Austria	–	–	–	–	–
Belgium	–	[8]	[8]	Y	Y
Channel Islands	–	–	–	–	–
Cyprus	–	–	–	–	–
Denmark	–	–	–	–	–
Faeroe Islands	–	–	–	–	–
Finland	[31, 32]	–	–	N	Y
France	[33]	[8]	[8]	Y	Y
Germany	[34-38]	[8]	[8]	Y	Y
Gibraltar	–	–	–	–	–
Greece	[39]	–	–	N	Y
Greenland	–	–	–	–	–
Holy See	–	–	–	–	–
Iceland	–	–	–	–	–
Ireland	[40]	–	–	N	N
Isle of Man	–	–	–	–	–
Israel	[41]	–	–	N	Y
Italy	[42-44]	[8]	[8]	Y	Y
Liechtenstein	–	–	–	–	–
Luxembourg	–	–	–	–	–
Malta	–	–	–	–	–
Monaco	–	–	–	–	–
Netherlands	[45-47]	[8]	[8]	Y	Y

Region /Country	ADHD – Past month prevalence (PMP)	ADHD – Past year prevalence (PYP)	ADHD – Lifetime prevalence (LP	Age-specific Estimates	Sex-specific Estimates
Norway	–	–	–	–	–
Portugal	–	–	–	–	–
Saint Pierre et Miquelon	–	–	–	–	–
San Marino	–	–	–	–	–
Spain	[48-50]	[8]	[8]	Y	Y
Sweden	[51-53]	–	–	N	Y
Switzerland	[54]	–	–	N	Y
United Kingdom	[55-61]	–	–	N	Y
Latin America, Andean					
Bolivia	–	–	–	–	–
Ecuador	–	–	–	–	–
Peru	–	–	–	–	–
Latin America, Central					
Colombia	[62,[63]	[8]	[8]	Y	Y
Costa Rica	–	–	–	–	–
El Salvador	–	–	–	–	–
Guatemala	–	–	–	–	–
Honduras	–	–	–	–	–
Mexico	–	[8]	[8]	Y	Y
Nicaragua	–	–	–	–	–
Panama	–	–	–	–	–
Venezuela	[64, 65]	–	–	N	Y
Latin America, Southern					
Argentina	–	–	–	–	–
Chile	–	–	–	–	–
Falkland Islands (Malvinas)	–	–	–	–	–
Uruguay	–	–	–	–	–
Latin America, Tropical					
Brazil	[66-71]	[8]	[8]	Y	Y
Paraguay	–	–	–	–	–
North Africa/Middle East					
Algeria	–	–	–	–	–
Bahrain	–	–	–	–	–
Egypt	–	–	–	–	–
Iran (Islamic Republic of)	[72]	–	–	N	Y
Iraq	–	[8]	[8]	Y	Y
Jordan	–	–	–	–	–

Region /Country	ADHD – Past month prevalence (PMP)	ADHD – Past year prevalence (PYP)	ADHD – Lifetime prevalence (LP	Age-specific Estimates	Sex-specific Estimates
Kuwait	–	–	–	–	–
Lebanon	–	[8]	[8]	Y	Y
Libyan Arab Jamahiriya	–	–	–	–	–
Morocco	–	–	–	–	–
Occupied Palestinian Territory	[73]	–	–	N	N
Oman	–	–	–	–	–
Qatar	–	–	–	–	–
Saudi Arabia	–	–	–	–	–
Syrian Arab Republic	–	–	–	–	–
Tunisia	–	–	–	–	–
Turkey	[74]	–	–	N	N
United Arab Emirates	[75, 76]	–	–	N	N
Western Sahara	–	–	–	–	–
Yemen	–	–	–	–	–
North America, High Income					
Canada	[77-82]	–	–	N	Y
United States of America	[83-105]	[8]	[8]	Y	Y
Oceania					
American Samoa	–	–	–	–	–
Cook Islands	–	–	–	–	–
Fiji	–	–	–	–	–
French Polynesia	–	–	–	–	–
Guam	–	–	–	–	–
Kiribati	–	–	–	–	–
Marshall Islands	–	–	–	–	–
Micronesia (Federated States of)	–	–	–	–	–
Nauru	–	–	–	–	–
New Caledonia	–	–	–	–	–
Niue	–	–	–	–	–
Northern Mariana Islands	–	–	–	–	–
Palau	–	–	–	–	–
Papua New Guinea	–	–	–	–	–
Pitcairn	–	–	–	–	–
Samoa	–	–	–	–	–
Solomon Islands	–	–	–	–	–

Region /Country	ADHD – Past month prevalence (PMP)	ADHD – Past year prevalence (PYP)	ADHD – Lifetime prevalence (LP	Age-specific Estimates	Sex-specific Estimates
Tokelau	–	–	–	–	–
Tonga	–	–	–	–	–
Tuvalu	–	–	–	–	–
Vanuatu	–	–	–	–	–
Wallis and Futuna Islands	–	–	–	–	–
Sub-Saharan Africa, Central					
Angola	–	–	–	–	–
Central African Republic	–	–	–	–	–
Congo	–	–	–	–	–
Congo (Democratic Republic of)	[106]	–	–	N	N
Equatorial Guinea	–	–	–	–	–
Gabon	–	–	–	–	–
Sub-Saharan Africa, East					
Burundi	–	–	–	–	–
Comoros	–	–	–	–	–
Djibouti	–	–	–	–	–
Eritrea	–	–	–	–	–
Ethiopia	[107]	–	–	N	Y
Kenya	–	–	–	–	–
Madagascar	–	–	–	–	–
Malawi	–	–	–	–	–
Mozambique	–	–	–	–	–
Rwanda	–	–	–	–	–
Somalia	–	–	–	–	–
Sudan	–	–	–	–	–
Tanzania (United Republic of)	–	–	–	–	–
Uganda	–	–	–	–	–
Zambia	–	–	–	–	–
Sub-Saharan Africa, Southern					
Botswana	–	–	–	–	–
Lesotho	–	–	–	–	–
Namibia	–	–	–	–	–
South Africa	[108, 109]	–	–	N	Y
Swaziland	–	–	–	–	–
Zimbabwe	–	–	–	–	–
Sub-Saharan Africa, West					

Region /Country	ADHD – Past month prevalence (PMP)	ADHD – Past year prevalence (PYP)	ADHD – Lifetime prevalence (LP	Age-specific Estimates	Sex-specific Estimates
Benin	–	–	–	–	–
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 ADHD were derived from general population cohort studies, and naturalistic longitudinal studies of outpatient samples or samples identified through case registers. Remission was defined as no longer meeting diagnostic criteria for ADHD. Studies that reported a follow-up of less than two years were excluded, as were those reporting on the same cohort.

Work is continuing on sourcing and extracting data for remission of ADHD. Preliminary estimates and calculations will be available in January 2009.

3.3 Mortality data

Estimates of excess mortality are sought for each disorder. Where a high quality meta-analysis of excess mortality has been carried out, the derived mortality measurement will be used, with clear documentation of the source of data and authors of the study.

The data is currently being collated and estimates will be available in January 2009.

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 will be applied (population-weighted if estimates are 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).

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 can 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. A search is underway for studies reporting multiple prevalence types (LP, PYP, PMP) for ADHD. These estimates will be used to calculate a ratio relative to the past month prevalence. 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.

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 [110] and Saha and colleagues [111].

ARR weighted (%)

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

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

Flowchart of systematic data search for Mental Disorders