

# Global burden of bipolar disorder in the year 2000

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## 1. Introduction

Bipolar disorder is characterised by recurrent periods of depression and elevated mood consisting of increased energy and activity during which people may have sleep loss, extreme talkativeness and engage in irresponsible behaviour e.g. overspending. There are usually considerable problems in undertaking usual activities and in interpersonal relationships. Bipolar disorder is a chronic disease with periods of remission and relapse. Bipolar disorder was estimated to be the 7<sup>th</sup> leading cause of non-fatal burden in the world in 1990, accounting for 3% of total YLD, around the same percentage as chronic obstructive lung conditions (1). In the Version 1 estimates for the Global Burden of Disease 2000 study, published in the World Health Report 2001 (2), bipolar disorder remains in the top ten causes of YLDs at global level, accounting for 2.5% of total global YLDs. This draft paper summarises the data and methods used to produce the Version 1 estimates of bipolar disorder burden for the year 2000. It will be replaced by a more complete and final paper within a few months, when the Version 2 estimates are finalised.

## 2. Case and sequelae definitions

The case definition for bipolar disorder is based on the ICD-10 criteria. The case definition and sequelae used for bipolar disorder are given in Table 1 below.

**Table 1. Case and sequelae definitions for bipolar disorder**

Cause category	GBD 2000 Code	ICD 9 codes	ICD 10 codes
Bipolar disorder	U083		F 31

Sequela	Definition	Alternate definitions that are useable
Untreated	ICD 10 bipolar disorder	DSM IV
Treated	Treated bipolar disorder	

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### 3. Disease model

The disease model for bipolar disorders was based on evidence from the literature which describes them as chronic diseases with periods of remission and relapse. This differs from the approach adopted in the GBD 1990 study in which short durations of around 1.4 years for bipolar disorder were assumed. Table 2 summarizes the disease model for bipolar disorder. Evidence on average age at onset is summarized in Table 3.

**Table 2. Disease model assumptions**

Definitions	No changes in case definition. Changes in the disease model that take in account the chronic course of this condition with a low remission rate.
Incidence/Prevalence	Incidence rates from prevalence, RR and RRm with Dismod II
Remission	0.035
Case fatality	-
Other assumptions	RRm= 2
Data	See details in table

**Table 3. Age at onset**

Reference	Sites	Mean age at onset
Weissman et al. 1996 (2)	USA	18.1
	Edmonton, Canada	17.1
	Puerto Rico	27.2
	Germany (age range 26-64)	29.0
	Taiwan	22.5
	Korea	23.0
	New Zealand	18.2

Cause specific mortality rates were estimated as follows:

In maintenance treatment: suicide rate 1.3 per 1000 patient years

No maintenance therapy: suicide rate 5.5 per 1000 patient years (3).

Table 4 compares the GBD 2000 disease model with the 1990 model. Note the very large differences in incidence and duration resulting from the change in modelling from episodes to chronic conditions. Available prevalence data are described further below.

**Table 4. Comparison between GBD 1990 and GBD 2000**

	GBD 1990	GBD 2000
Duration	Average duration = 1.4 years	Chronic with a low remission rate; 23 years
Prevalence	0.3%	0.49%

Age of onset	33	23
Incidence	254 per 100 000	22 per 100 000
Disability weights	treated: 0.383 untreated: 0.583	treated: 0.14 untreated: 0.4

## 4. Disability weights and health state descriptions

Disability weights for bipolar disorder are given below.

**Table 5. Disability weights**

Sequela/stage/severity level	Disability weight	Health state description
Bipolar disorder untreated	<b>0.4</b>	Recurrent periods of (1) depression and (2) elevated mood consisting of increased energy and activity during which people may have sleep loss, extreme talkativeness and engage in irresponsible behaviour e.g. overspending. Considerable problems in work and in interpersonal relationships.
Bipolar disorder treated	<b>0.14</b>	No clear abnormal behaviour, but may show changes in mood and some lowered work performance. Needs to take medicines regularly.

## 5. Epidemiological data

Table 6 summarizes the available sources of population prevalence data on bipolar disorder. Table 7 summarizes the assumptions and data sources for prevalence estimates for each of the 17 epidemiological subregions used in the GBD 2000.

**Table 6. Prevalence data sources - summary**

Country	Site	Prevalence	Age range	Gender prevalence %		
				Male	Female	
Netherlands (4)	Netherlands 1996	DSMIIIR	All ages			
				Life time	1.5	2.1
				12 month	1.1	1.1
				One month	0.4	0.8
Germany (5)	Munich	DIS lifetime	25-64	0.0	0.5	
Iceland (6)	Iceland	DIS lifetime	Cohort born 1931	0.2	0.2	
Israel (7)	Israel	SADS-D lifetime	24-33	0.2	0.7	
Canada (8)	Edmonton	DIS lifetime	> 18	0.7	0.4	
USA (2)	ECA 5 sites	DIS lifetime	> 18	0.8	1.0	
USA (9)	NCA	CIDI lifetime	15-54	1.6	1.7	

Puerto Rico (10)	Puerto Rico	DIS lifetime	18-64	0.7	0.4
Taiwan (11)	Taipei	DIS lifetime	> 18	1.6	1.6
Hong Kong (12)	Hong Kong 1993	CIDI lifetime	18-64	0.2	0.2
Korea (13)	Seoul 1990	DIS lifetime	18-65	0.6	0.3
New Zealand (14)	Christchurch 1989	DIS lifetime	18-64	0.7	0.4

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**Table 7. Prevalence assumptions for GBD 2000 epidemiological subregions**

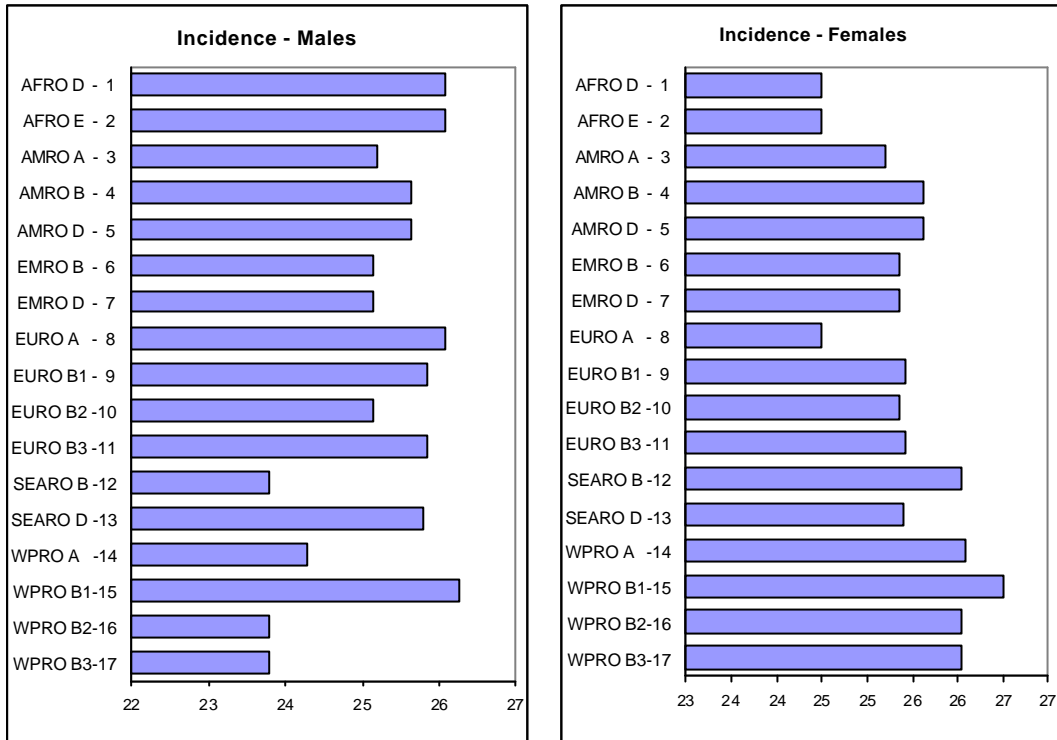
AFRO D	= AFRO E	EURO B1	= EURO A
AFRO E	Data from Ethiopia	EURO B2	= EURO A
AMRO A	Data from US and Canada	EURO C	= EURO A
AMRO B	Data from Puerto Rico	SEARO B	= SEARO D
AMRO D	= AMRO B	SEARO D	Data from Nepal and India
EMRO B	Data from Lebanon	WPRO A	Data from Australia and New Zealand
EMRO D	= EMRO B	WPRO B1	Data from Taiwan, Hong Kong, Korea
EURO A	Data from UK, Netherlands, Iceland, Israel, Germany, Italy, Spain, France, Czech Republic	WPRO B2	= SEARO D
		WPRO B3	= SEARO D

## 6. Incidence, prevalence and mortality estimates for 2000

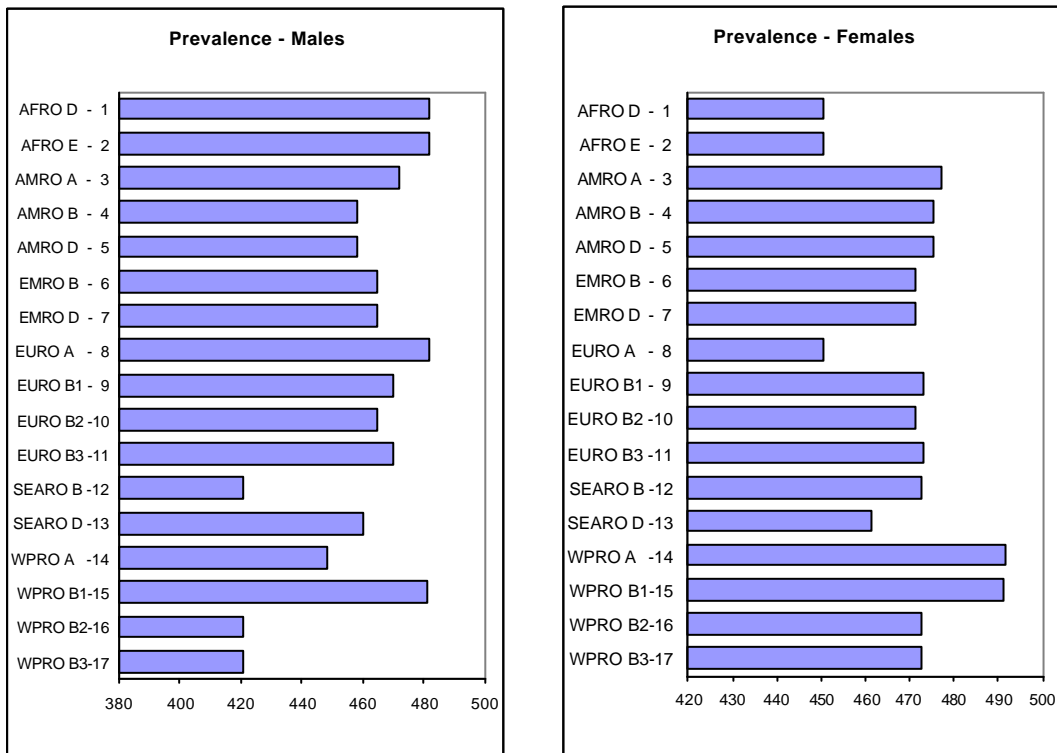
**Table 8. Bipolar disorder: age-standardized incidence, prevalence and mortality rate estimates for WHO epidemiological subregions, 2000.**

Subregion	Age-std. Incidence/100,000		Age-std. prevalence/100,000		Age-std. mortality/100,000	
	Males	Females	Males	Females	Males	Females
AFRO D	26.1	24.5	481.7	450.3	0.0	0.0
AFRO E	26.1	24.5	481.7	450.3	0.0	0.0
AMRO A	25.2	25.2	471.8	477.4	0.0	0.0
AMRO B	25.6	25.6	458.5	475.3	0.0	0.0
AMRO D	25.6	25.6	458.5	475.3	0.0	0.0
EMRO B	25.1	25.4	464.9	471.3	0.0	0.0
EMRO D	25.1	25.4	464.9	471.3	0.0	0.0
EURO A	26.1	24.5	481.7	450.3	0.0	0.0
EURO B1	25.8	25.4	470.5	473.1	0.0	0.0
EURO B2	25.1	25.4	464.9	471.3	0.0	0.0
EURO C	25.8	25.4	470.5	473.1	0.0	0.0
SEARO B	23.8	26.1	421.0	472.6	0.0	0.0
SEARO D	25.8	25.4	460.3	461.1	0.2	0.5
WPRO A	24.3	26.1	448.9	491.6	0.0	0.0
WPRO B1	26.3	26.5	480.9	491.0	0.0	0.0
WPRO B2	23.8	26.1	421.0	472.6	0.2	0.2
WPRO B3	23.8	26.1	421.0	472.6	0.0	0.0
World	25.7	25.5	466.6	472.1	0.1	0.1

- Age-standardized to World Standard Population (16).



**Figure 1. Bipolar disorder: age-standardized incidence rate estimates, WHO epidemiological subregions, by sex, 2000.**



**Figure 2.**

**Bipolar disorder: age-standardized prevalence rate estimates, WHO epidemiological subregions, by sex, 2000.**

## 7. Global burden of bipolar disorder in 2000

General methods used for the estimation of the global burden of disease are given elsewhere (15). The tables and graphs below summarise the estimated global burden of bipolar disorder for the GBD 2000 and compare them with the bipolar disorder estimates from the GBD 1990 (17).

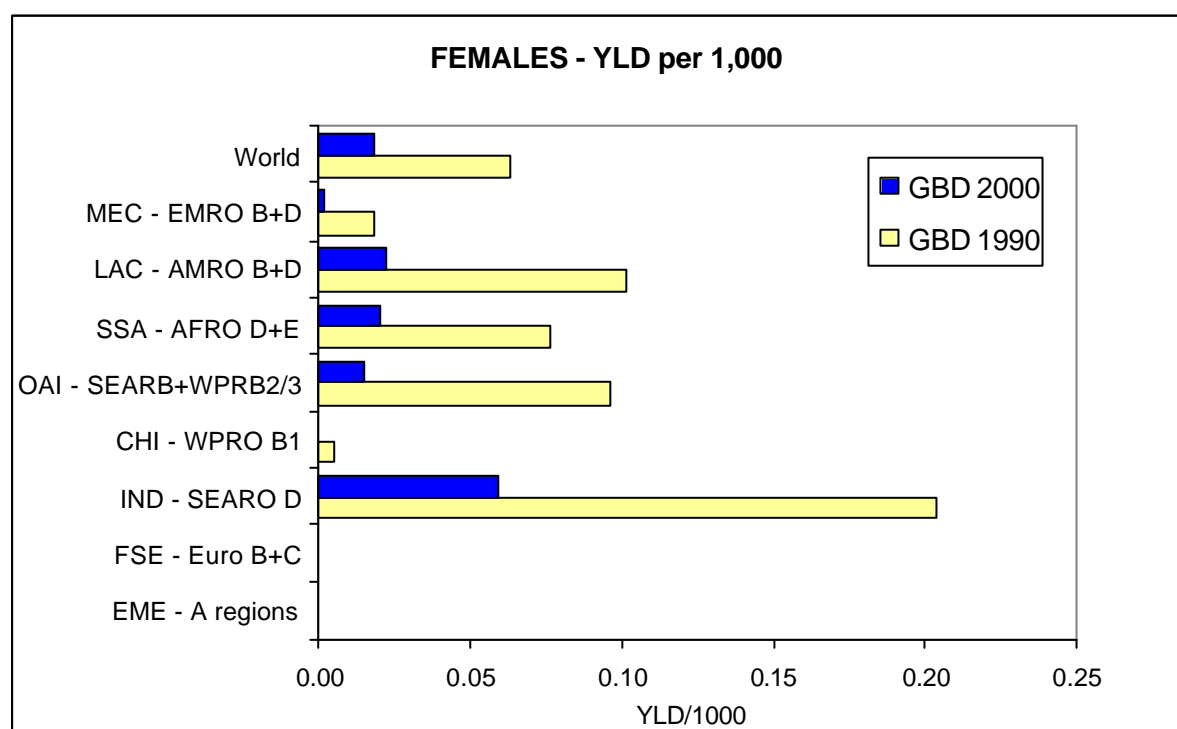
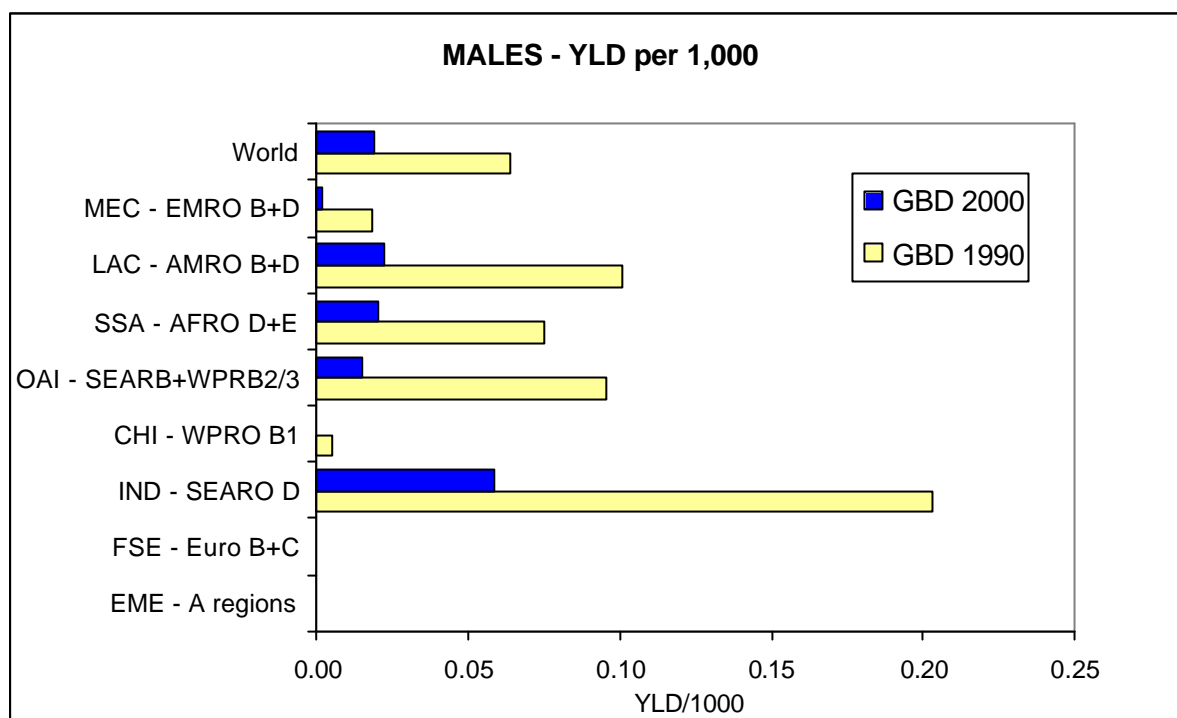
**Table 9. Global total YLD, YLL and DALY estimates, 1990 and 2000.**

	<i>Males</i>	<i>Females</i>	<i>Persons</i>
<b>YLD('000)</b>			
<i>GBD1990</i>	7,203	6,938	14,141
<i>GBD2000</i>	6,883	6,726	13,610
<b>YLL('000)</b>			
<i>GBD1990</i>	51	65	116
<i>GBD2000</i>	14	21	36
<b>DALY('000)</b>			
<i>GBD1990</i>	7,254	7,003	14,257
<i>GBD2000</i>	6,898	6,747	13,645

**Table 10. Bipolar disorder: YLD, YLL and DALY estimates for WHO epidemiological subregions, 2000.**

<b>Subregion</b>	<b>YLD/100,000</b>		<b>YLD</b>	<b>YLL</b>	<b>DALY</b>
	<b>Males</b>	<b>Females</b>	<b>('000)</b>	<b>('000)</b>	<b>('000)</b>
AFRO D	261	245	<b>845</b>	-	<b>845</b>
AFRO E	261	244	<b>852</b>	-	<b>852</b>
AMRO A	157	153	<b>480</b>	1	<b>481</b>
AMRO B	234	240	<b>1,048</b>	1	<b>1,049</b>
AMRO D	237	246	<b>172</b>	0	<b>172</b>
EMRO B	249	259	<b>354</b>	-	<b>354</b>
EMRO D	247	244	<b>339</b>	-	<b>339</b>
EURO A	159	143	<b>619</b>	2	<b>621</b>
EURO B1	211	203	<b>344</b>	0	<b>344</b>
EURO B2	242	237	<b>122</b>	-	<b>122</b>
EURO C	195	173	<b>450</b>	-	<b>450</b>
SEARO B	223	252	<b>937</b>	1	<b>938</b>
SEARO D	237	232	<b>3,164</b>	27	<b>3,191</b>
WPRO A	156	158	<b>235</b>	0	<b>235</b>
WPRO B1	239	245	<b>3,288</b>	2	<b>3,290</b>
WPRO B2	231	254	<b>345</b>	2	<b>347</b>

WPRO B3	219	252	16	-	16
World	226	224	13,610	36	13,645



**Figure 3. Total YLD rates, by sex, broad regions, 1990 and 2000.**



## 8. Uncertainty analysis

General methods for uncertainty analysis of estimates for the Global Burden of Disease 2000 are outlined elsewhere (18). Uncertainty analysis for bipolar disorder estimates has not yet been completed.

## 9. Conclusions

These are version 2 estimates for the GBD 2000. Apart from the uncertainty analysis, updating estimates to reflect revisions of mortality estimates and any new or revised epidemiological data or evidence, it is not intended to undertake any major addition revision of these estimates.

We welcome comments and criticisms of these draft estimates, and information on additional sources of data and evidence. Please contact Colin Mathers (EBD/GPE) on email [mathersc@who.ch](mailto:mathersc@who.ch)

## Acknowledgements

Many people have contributed to the data collections and analyses providing inputs to the Global Burden of Disease 2000 project. We wish to particularly acknowledge the contributions of staff in various WHO programs, and expert groups outside WHO, who have provided advice, collaborated in the reviews of epidemiological data and in the estimation of the burden of depression. These include Bedirhan Ustun (EIP/GPE), Somnath Chatterji (EIP/GPE) and the staff of the Mental Health & Substance Dependence Division in the Management of Non-Communicable Diseases and Mental Health Cluster (MNH).

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