

# Global burden of unipolar depressive disorders in the year 2000

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## 1. Introduction

Major depression was estimated to be the leading cause of non-fatal burden in the world in 1990, accounting for 10.7% of total YLD. Correspondingly, it was the 4<sup>th</sup> leading cause of total disease burden, accounting for 3.7% of total DALYs (1). In the Version 1 estimates for the Global Burden of Disease 2000 study, published in the World Health Report 2001 (2), unipolar depressive disorders remain the leading cause of YLDs, accounting for 11.9% of total global YLDs, and also remains the fourth leading cause of total disease burden, accounting for 4.4% of total DALYs. This draft paper summarises the data and methods used to produce the Version 1 estimates of depression 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.

According to the ICD-10-AM manual, depressive episodes and dysthymia are characterised as follows:

**Depressive episodes (F32).** In typical mild moderate or severe depressive episodes, the patient suffers from lowering of mood, reduction of energy, and decrease in activity. Capacity for enjoyment, interest and concentration is reduced and marked tiredness even after minimum effort is common. Sleep is usually disturbed and appetite diminished. Self-esteem and self confidence are almost always reduced and, even in mild form, some ideas of guilt or worthlessness are often present. The lowered mood varies little from day to day, is unresponsive to circumstances and may be accompanied by so called “somatic” symptoms such as loss of interest and pleasurable feelings, waking in the morning several hours before the usual time, depression worst in the morning, marked psychomotor retardation, agitation, loss of appetite, weight loss and loss of libido. Depending upon the number and severity of the symptoms, a depressive episode may be specified as mild, moderate or severe.

**Dysthymia (F34.1)** is a persistent mood (affective) disorder characterised by a chronic depression of mood, lasting at least several years, which is not sufficiently severe, or in which individual episodes are not sufficiently prolonged, to justify a diagnosis of severe, moderate or mild recurrent depressive disorder.

Major depressive disorder (MDD) is a chronic illness; 80% of people with an initial major depressive episode (MDE) will have at least one more in their life time (3). The median number of MDEs is around 4 per lifetime and 25% have 6 or more MDEs (4).

Keller (5) and Judd (6) suggest that dysthymia and MDD may be part of the same entity stating that it is very unusual for patients with dysthymia not to develop superimposed MDEs and that in people with MDD, the symptomatic course commonly and frequently changes between levels of severity.

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## 2. Case and sequelae definitions

The case definition and sequelae used for unipolar depressive disorders are given in Table 1 below.

**Table 1. Case and sequelae definitions for unipolar depressive disorders**

Cause category	GBD 2000 Code	ICD 9 codes	ICD 10 codes
II.E1 Unipolar depressive disorders	U082	296.2, 296.3, 296.9, 300.4, 311	F 32, F 33, F 34.1

Sequela	Definition	Alternate definitions that are useable
Depressive episode	The patient suffers from lowering of mood , reduction of energy, and decrease in activity. Capacity for enjoyment, interest and concentration is reduced and marked tiredness even after minimum effort is common. Sleep is usually disturbed and appetite diminished. Self-esteem and self confidence are almost always reduced and, even in mild form, some ideas of guilt or worthlessness are often present. The lowered mood varies little from day to day, is unresponsive to circumstances and may be accompanied by so called "somatic" symptoms such as loss of interest and pleasurable feelings, waking in the morning several hours before the usual time, depression worst in the morning, marked psychomotor retardation, agitation, loss of appetite, weight loss and loss of libido. Depending upon the number and severity of the symptoms, a depressive episode may be specified as mild, moderate or severe	Major depressive episode DSM IV and DSMIIIR
Dysthymia	Dysthymia is a persistent mood (affective) disorder characterised by a chronic depression of mood, lasting at least several years, which is not sufficiently severe, or in which individual episodes are not sufficiently prolonged, to justify a diagnosis of severe, moderate or mild recurrent depressive disorder.	

## 3. Disease model

Depressive episodes are modelled from point prevalence and 12-month prevalence data together with an assumed duration of 6 months. The 6 month duration is based on data provided from Eaton (Baltimore follow up study) and is consistent with classical descriptions from the pre-antidepressant era. The same duration was used in GBD 1990 and US Burden of Disease Study. Dysthymia (where no concurrent major depressive episode also present) is modelled as a long duration chronic disease with instantaneous remission rate of 0.15.

The disease model is summarized in Table 2.

**Table 2. Disease model assumptions**

Definitions	ICD 10 when available. For US DSMIIIR (NCS study)
Incidence/Prevalence	Incidence rates from prevalence and duration for depressive episode Incidence for Dysthymia from Dismod II
Remission	For Dysthymia 0.15
Severity distribution	Mild , moderate and severe (ICD 10) for depressive episode. Data from different sources.
Other assumptions	6 month duration (Data from Eaton, Baltimore follow up study). Consistent with classical descriptions from the pre-antidepressant era. Same duration used in GBD 1990 and US Burden of Disease Study.
Data	We completed a systematic review of all available published and non-published papers of meaningful population studies on depressive disorders so as to provide the most updated data set on the epidemiology of this condition. Criteria for inclusion: <ul style="list-style-type: none"> <li>• Population based studies (&gt;n=1000)</li> <li>• If data available: PREVALENCE (2 weeks, 1 month, 6 month, 12 month and lifetime prevalence). Data later converted into point prevalence when possible. INCIDENCE. AGE AND SEX DISTRIBUTION</li> <li>• Methodology of the study is explicit and the sampling method is random or national /regional representative.</li> </ul>

## 4. Disability weights and health state descriptions

Disability weights from the Netherlands study have been used pending revision of the GBD 2000 weights using data from the WHO Household Survey program (7).

**Table 3. Disability weights**

Sequela/stage/severity level	Disability weight	Health state description
Mild depressive episode	<b>0.140</b>	Depressed mood, lost of interest and enjoyment and increased fatigability. Distressed by the symptoms and has some difficulty in continuing with ordinary work and social actives, but do not cease to function completely
Moderate depressive episode	<b>0.350</b>	Moderate depression, marked by sadness, loss of pleasure in many activities, decreased energy and appetite and some difficulty thinking. As a consequence of this symptoms, he has considerably difficulty in continuing with social , work and domestic activities.
Severe depressive episode	<b>0.760</b>	Pervasive sadness, decreased energy and loss of pleasure. Often associated with being slowed down or agitated, crying spells, negative thoughts about oneself and one's world, a wish to die and poor sleep and appetite. He is unable to continue with social, work or domestic activities except to a very limited extent.

## 5. Prevalence data

We completed a systematic review of all available published and non-published papers of meaningful population studies on depressive disorders so as to provide the most updated data set on the epidemiology of this condition.

Criteria for inclusion:

- Population based studies (>n=1000)
- If data available: prevalence (2 weeks, 1 month, 6 month, 12 month and lifetime prevalence). Data later converted into point prevalence when possible.
- Incidence. Age and sex distribution
- The methodology of the study is explicit and the sampling method is random or national /regional representative.

Table 4 summarized the data sources and assumptions for prevalence estimates.

**Table 4. Data sources and assumptions - summary**

AFRO D	Data from AFRO E . Data consistent with Prevalence figures in PPGHC from Ibadan
AFRO E	AFRO E: Zimbabwe, Uganda, Lesotho and Ethiopia. Age and sex distribution from Ethiopia Rural Kabede 1999: Age distribution from the same source. Conservative estimates because it is a rural sample. Age and mild moderate and severe distribution from ICD 10 Depressive episodes in Egypt (Health Survey data 2001)
AMRO A	DATA from NCS used in the US Burden of Disease study. Severity distribution used in the US Burden of Disease Study provided by Catherine Michaud (Harvard University). Also available: data from Canada and several studies in US. 5 incidence studies
AMRO B	Data from Puerto Rico, Brazil (2), Mexico (2), Colombia and Chile (2). Severity distributions from Colombia (Health Survey data, 2001) and Mexico (personal communication from the authors)
AMRO D	Data from AMRO B. Epidemiological information available only from Peru using DSMIII criteria in 1984 reporting only lifetime prevalence estimates from an urban setting.
EMRO B	Prevalence figures of lifetime prevalence available from Lebanon. Point prevalence figures from EMRO D
EMRO D	Prev figures from Morocco and Health Survey in Egypt (Health Survey data, 2001). DW adjusted for the severity distribution in this site.
EURO A	Data from U.K (6). Holland (2), Ireland (2), Czech Republic, Spain (7), Norway (2), Germany, Finland (2), France, Greece, Italy (2) .Severity distribution available from Holland, UK, Ireland, Spain, Norway and Finland and Czech Republic (unpublished data provided by authors).
EURO B1	Data from Turkey (ICPE) and Georgia (Health Survey data 2001), Slovakia (Health Survey data 2001). Severity distribution from Georgia (Health Survey data 2001).
EURO B2	Data from EURO B1
EURO C	Data from Russian Federation (Rotstein personal communication) point prevalence ICD-10. Severity distribution not available from this site. We use EURO A
SEARO B	Data from Singapore and Philippines. Severity distribution from SEARO D
SEARO D	Data from India (rural) , India (Andra Pradesh, Health Survey dat, 2001 ), Pakistan (rural) and Nepal (rural). Severity distribution from Health Survey data in India
WPRO A	Data from Australia, New Zealand and Japan (>65y). Severity distribution from Australia (Australian Burden of Disease study)
WPRO B1	Data from China (2), Taiwan, Hong Kong and Korea. Severity distribution from Health Survey in China (2001)
WPRO B2	Data from Cambodia available on population in contact with health care services. For general population estimates data from Searo B has been use.
WPRO B3	Data from Searo B

## 6. Data on severity distributions

**Table 5. Data used to estimate severity distributions of unipolar depressive disorders**

Country	Study	Diagnostic criteria	Mild	Moderate	Severe
United Kingdom	Camberwell study	SCAN diagnosis (ICD 10)	68.5%	23.7%	7.69%
Holland	Nemesis study (personal communication from authors)	CIDI (ICD 10)	28.7%	36.9%	34.2%
Finland, Ireland, UK, Norway, Spain	ODIN study: 5 countries in Europe (urban and rural sites), 1 month prevalence, (Personal communication from authors)	SCAN diagnosis (ICD 10)	42%	40%	17%
Australia	Australian Burden of Disease study (Severity grading from extrapolation of SF-12 questions to the usual activities and anxiety/depression domains of Euroqol)	SF-12/Euroqol			
		Males	27%	50%	23%
		Females	30%	47%	23%
Australia	Australian National Survey of Mental Health and Wellbeing.	ICD-10 current comorbidity adjusted	17.8%	48.7%	33.6%
		ICD-10 current (one month)	14.6%	47.7%	37.7%
		ICD-10 12 month	16.5%	37.7%	33.9%
USA	US Burden of Disease study (using data from NCA)	DSM IV MDE			
		Male	85%	8%	7%
		Female	74%	15%	8%
Mexico		ICD-10	21.1%	48.1%	30.8%
China	WHO Health Survey 2001 (n=5873)	ICD-10	34.7%	44.6%	20.6%
Georgia	WHO Health Survey 2001 (n=2321)	ICD-10	26.8%	47.8%	25.2%
Egypt	WHO Health Survey 2001 (n=3693)	ICD-10	42.5%	44.8%	12.7%
Columbia	WHO Health Survey 2001 (n=10,000)	ICD-10	17.1%	56.2%	26.6%
Czech Republic	Unpublished data from the Mental health survey in the Czech Republic		25.7%	23.5%	51.4%

## 7. Depressive disorders in childhood

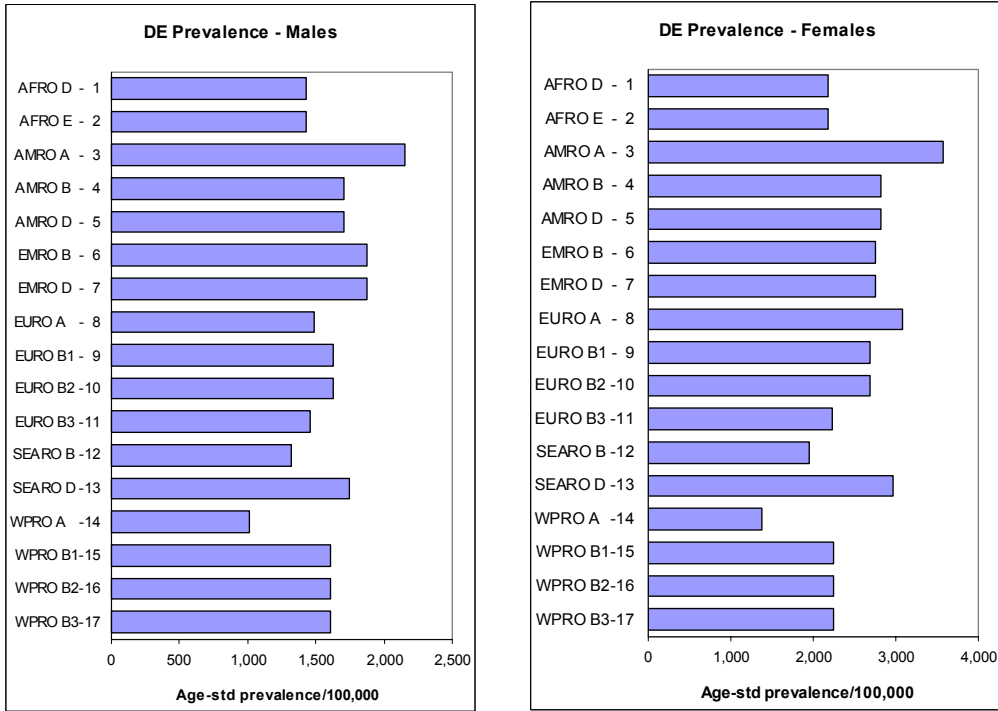
There is no information on the prevalence of depression in children in most mental health survey data sources. Mirza (56) quotes Angold and Costello (57): 0.3% in pre-school children and 1.8% in pre-pubertal children. Jorm (private communication) suggests M/F ratio of 1:1.

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

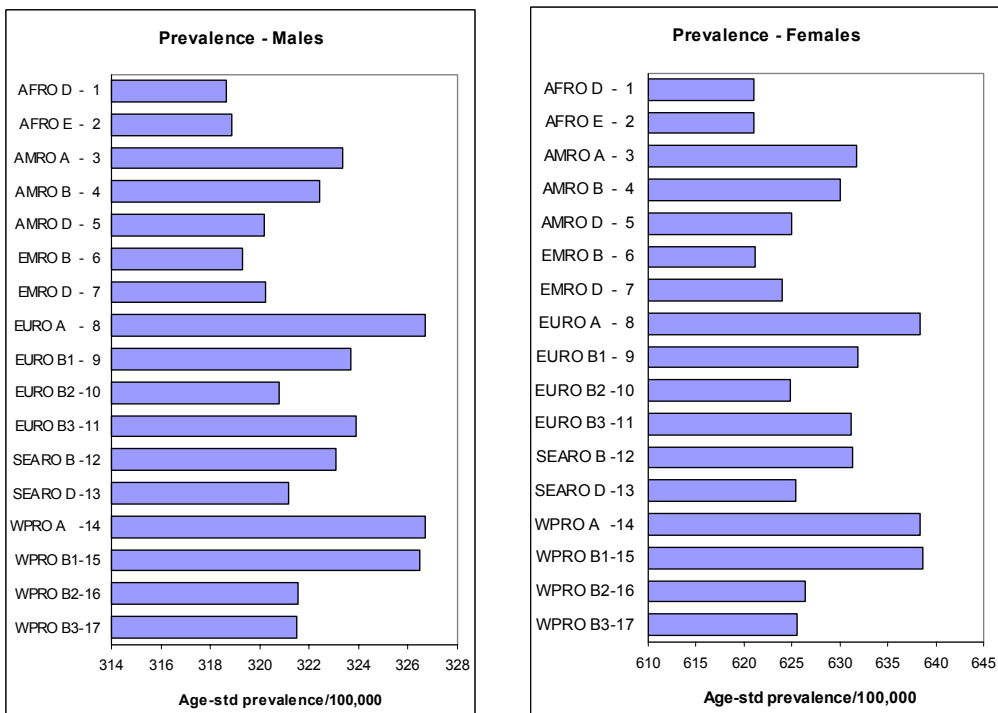
**Table 5. Age-standardized incidence and prevalence rate estimates for unipolar depressive disorders, WHO epidemiological subregions, 2000.**

Subregion	Major depressive episodes		Major depressive episodes		Dysthymia	
	Age-std. Incidence/100,000		Age-std. prevalence/100,000		Age-std. prevalence/100,000	
	Males	Females	Males	Females	Males	Females
AFRO D	2851	4345	1426	2173	318.6	621.1
AFRO E	2851	4345	1426	2173	318.9	621.0
AMRO A	4294	7160	2150	3577	323.4	631.7
AMRO B	3406	5647	1703	2824	322.4	630.1
AMRO D	3406	5647	1703	2824	320.2	625.0
EMRO B	3744	5382	1872	2748	319.3	621.1
EMRO D	3744	5496	1872	2748	320.2	624.0
EURO A	2610	4482	1489	3088	326.7	638.4
EURO B1	3286	5353	1631	2690	323.7	631.8
EURO B2	3286	5353	1631	2690	320.8	624.8
EURO C	2923	4470	1462	2235	323.9	631.2
SEARO B	2626	3401	1315	1947	323.1	631.3
SEARO D	3496	5923	1748	2962	321.2	625.4
WPRO A	2028	2762	1015	1381	326.7	638.4
WPRO B1	3260	4475	1606	2244	326.5	638.7
WPRO B2	3260	4475	1606	2244	321.6	626.4
WPRO B3	3260	4475	1606	2244	321.5	625.6
World	3199	4930	1607	2552	322.8	629.8

- Age-standardized to World Standard Population (60).



**Figure 2. Age-standardized prevalence rates for depressive episodes, WHO epidemiological subregions, by sex, 2000.**



**Figure 3. Age-standardized prevalence rates for dysthymia, WHO epidemiological subregions, by sex, 2000.**

## 9. Global burden of depressive disorders in 2000

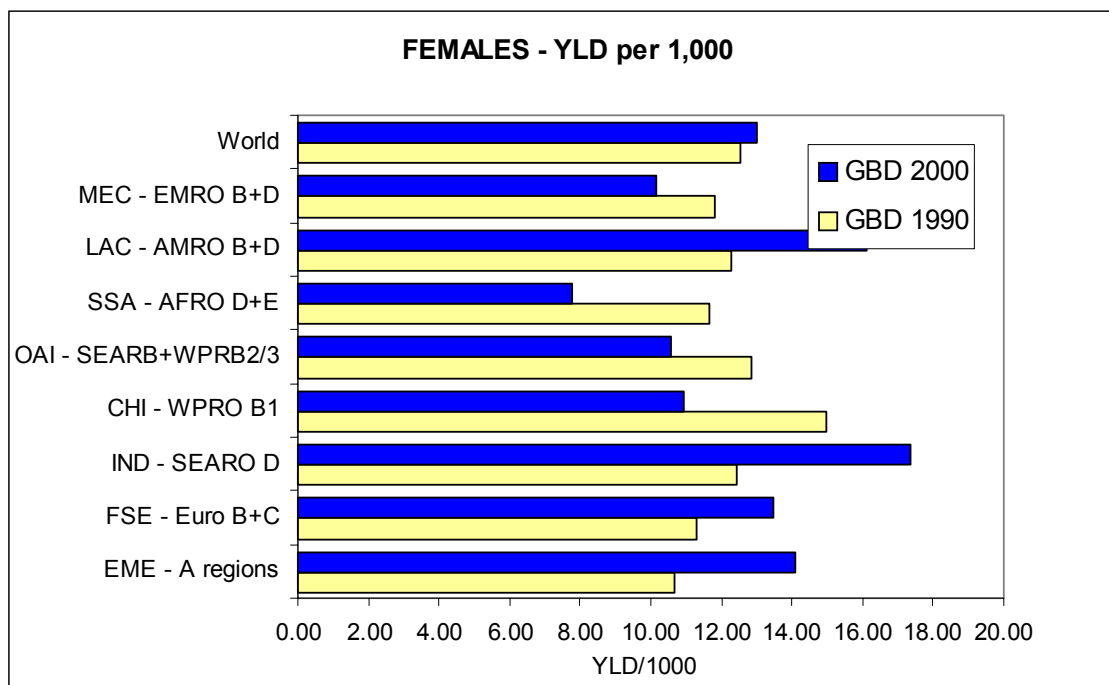
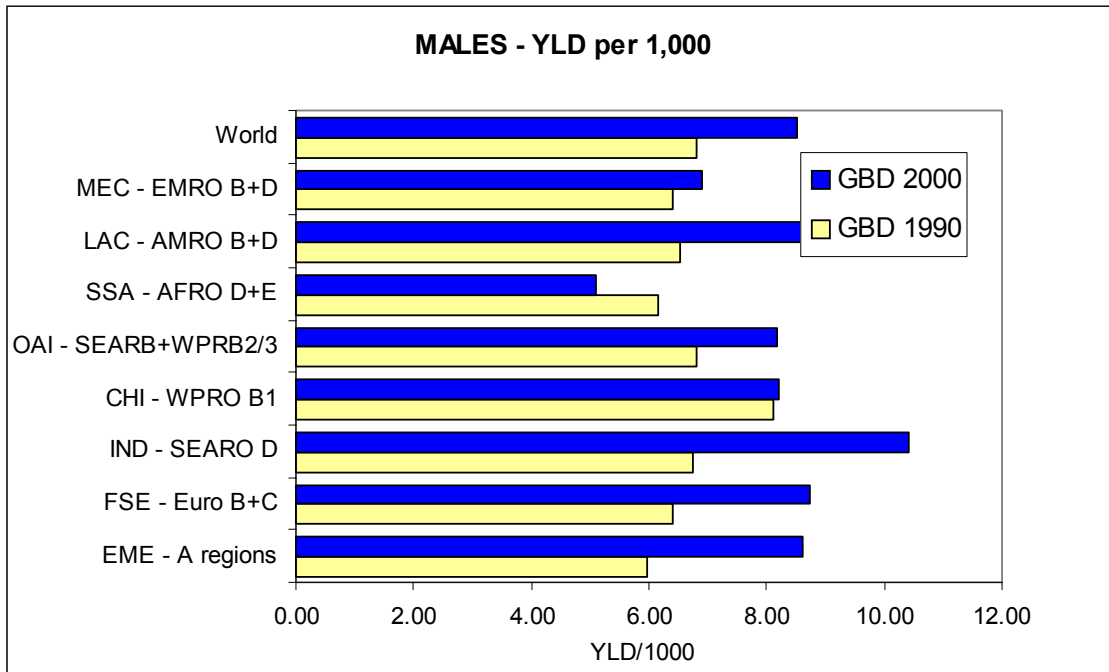
General methods used for the estimation of the global burden of disease are given elsewhere (3). The tables and graphs below summarise the global burden of depression estimates for the GBD 2000 and compare them with the leprosy estimates from the GBD 1990 (5).

**Table 6. 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>	18,070	32,740	50,810
<i>GBD2000</i>	25,901	39,063	64,963
<b>YLL('000)</b>			
<i>GBD1990</i>	0	0	0
<i>GBD2000</i>	0	0	0
<b>DALY('000)</b>			
<i>GBD1990</i>	18,070	32,740	50,810
<i>GBD2000</i>	25,901	39,063	64,963

**Table 7. YLD, YLL and DALY estimates for WHO epidemiological subregions, 2000.**

<b>Subregion</b>	<b>YLD/100,000</b>		<b>YLL/100,000</b>		<b>YLD (‘000)</b>	<b>YLL (‘000)</b>	<b>DALY (‘000)</b>
	<b>Males</b>	<b>Females</b>	<b>Males</b>	<b>Females</b>			
AFRO D	514	786	0	0	<b>2,172</b>	0	<b>2,172</b>
AFRO E	507	768	0	0	<b>2,154</b>	0	<b>2,154</b>
AMRO A	1190	1951	0	0	<b>4,878</b>	0	<b>4,878</b>
AMRO B	961	1628	0	0	<b>5,742</b>	0	<b>5,742</b>
AMRO D	905	1523	0	0	<b>867</b>	0	<b>867</b>
EMRO B	697	1012	0	0	<b>1,184</b>	0	<b>1,184</b>
EMRO D	685	1015	0	0	<b>1,171</b>	0	<b>1,171</b>
EURO A	729	1243	0	0	<b>4,074</b>	0	<b>4,074</b>
EURO B1	905	1473	0	0	<b>1,978</b>	0	<b>1,978</b>
EURO B2	850	1382	0	0	<b>570</b>	0	<b>570</b>
EURO C	855	1264	0	0	<b>2,634</b>	0	<b>2,634</b>
SEARO B	829	1082	0	0	<b>3,767</b>	0	<b>3,767</b>
SEARO D	1040	1735	0	0	<b>18,562</b>	0	<b>18,562</b>
WPRO A	539	738	0	0	<b>957</b>	0	<b>957</b>
WPRO B1	819	1093	0	0	<b>12,932</b>	0	<b>12,932</b>
WPRO B2	790	989	0	0	<b>1,265</b>	0	<b>1,265</b>
WPRO B3	755	922	0	0	<b>57</b>	0	<b>57</b>
World	851	1,302	0	0	64,963	0	64,963



**Figure 4. Total YLD rates, by sex, broad regions, 1990 and 2000.**

## 10. Uncertainty analysis

General methods for uncertainty analysis of estimates for the Global Burden of Disease 2000 are outlined elsewhere (6). Uncertainty analysis for depression estimates has not yet been completed.

## 11. Conclusions

These are version 1 estimates for the GBD 2000. These estimates will be revised and finalized over the next six months, with version 2 estimates published in the World Health Report 2002.

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)

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