Epidemiology, Burden, and Disability in Depression and Anxiety

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Studies of the prevalence of depression and anxiety disorders have shown that there is a high prevalence of comorbidity of these 2 disorders. The resulting disability and burden affect not only the individual in terms of decreased productivity, but the level of health care utilization is also increased. The objective of this article is to look at the epidemiology, disability, and global burden of depression and anxiety across the different nations of the world. This article will concentrate on the results from the Cross-National Collaborative Group. The transcultural trends in prevalence and disability presented here must be viewed in the light of the limitations of the study, such as methodology and population sampling, uniformity in the method of clinical assessment, and the collection and processing of data. New studies of depression and anxiety among different cultures are currently in progress in the form of the European Study of Epidemiology on Mental Disorders (ESEMeD), which is closely linked to the World Health Organization (WHO) World Mental Health 2000 initiative. The methodology for ESEMeD is similar to that of the WHO World Mental Health 2000 study, which will facilitate comparisons between the results for Europe and the rest of the world. Results of these studies are awaited with anticipation. *(J Clin Psychiatry 2001;62[suppl 13]:4–10)*

Depressive and anxiety disorders are highly prevalent in the community. In a large study by the World Health Organization (WHO), 11.7% of those sampled had a current depressive disorder, while 10.2% had a current anxiety disorder.[1] Studies of the comorbidity of depression and anxiety disorders demonstrate a high prevalence of between 14% and 19.2% in both the community and primary care in the United States and Canada.[2,3] The objective of this article is to look at the epidemiology, disability, and global burden of depression and anxiety across the different nations of the world.

To make transcultural comparisons in epidemiologic research, several methodological conditions should be met, and the existence of these should be borne in mind when making any comparison. Strict adherence to methodology and population sampling, together with a consensus on the classification and definition of psychiatric disorders, is critical. Similarly, there has to be uniformity in the method of clinical assessment and the collection and processing of data.

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Although there have been several networks that have tried to compare depression and anxiety across the nations, this article will concentrate on the results from the Cross-National Collaborative Group,[4–6] which collected data from the United States, Edmonton (Alberta, Canada), Puerto Rico, West Germany, Taiwan, Korea, Christchurch (New Zealand), and for some of the disorders, Paris (France), Florence (Italy), and Beirut (Lebanon). In order to control some of the variables between nations, the data collected in this study were standardized for the age and sex of the U.S. population.

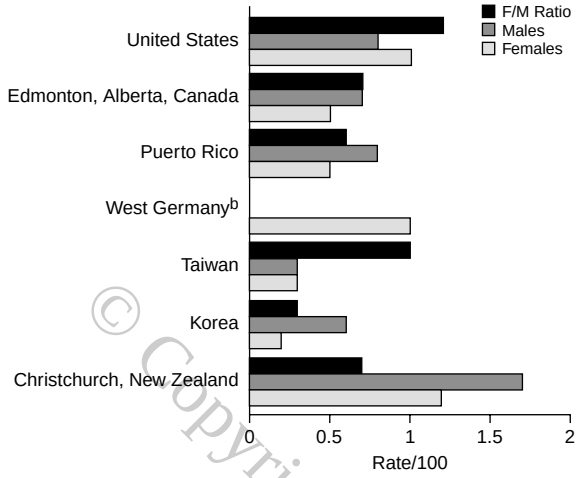
PREVALENCE AND PATTERN OF DEPRESSION AND ANXIETY ACROSS COUNTRIES

Depression

The lifetime rates for bipolar disorder estimated in the Cross-National Study are shown in Figure 1.[4] Rates range between 0.2% and 1.7% with no apparent wide cross-cultural variation. The results suggest that there is no preponderance of bipolar disorder in females, although caution is required in the interpretation because the sample size was small.

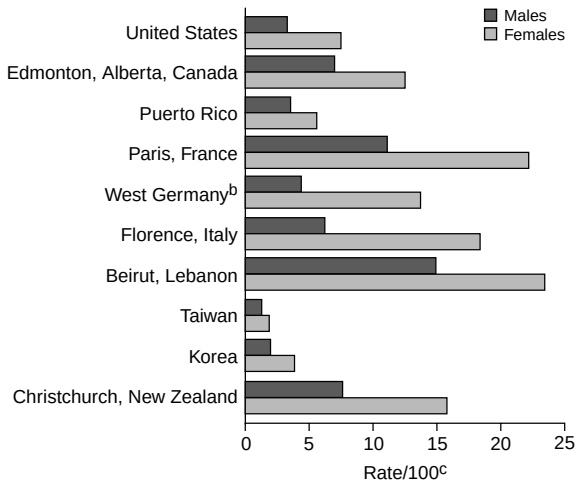
An annual prevalence for major depression of 2% to 6% was recorded in the Cross-National Study. Data were collected in the late 1980s and early 1990s,[4,5] and the rates are generally lower than those recorded in later years. This may reflect the methodology employed in collecting the data. Nevertheless, the important point to note is that major depression was prevalent in the population of all the

Figure 1. Lifetime Rates of Bipolar Disorder by Sex, Ages 18 to 64 Years[a]



[a]Data from Weissman et al.[4]
[b]Data from former Federal Republic of Germany (West Germany) based on ages 26 to 64 years. The 1 study participant in Munich with bipolar disorder was female.

Figure 2. Lifetime Prevalence of Major Depression by Sex, Ages 18 to 64 Years[a]

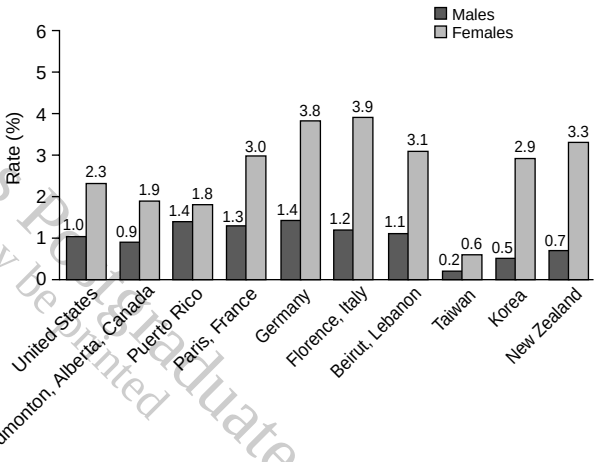


[a]Data from Weissman et al.[4]
[b]Data from former Federal Republic of Germany (West Germany) based on ages 26 to 64 years.
[c]Figures standardized to U.S. age and sex distribution.

countries sampled. There was, however, a larger variation in the lifetime prevalence estimates for major depression across centers, with extremes of 1.5% in Taiwan and 19% in Beirut (Figure 2).[4] In Lebanon, the data were collected during the time of the war; however, for Florence and Christchurch there is no such explanation for the high rates (12.4% and 11.6%, respectively). Certain features of major depression were consistent across the countries, and there was an excess of female subjects over males. Similarly, the mean age at onset in major depression is concentrated around the late 20s for population samples from most countries.

As part of the Cross-National Study, the symptoms most commonly reported by subjects were collated in order to examine variations in the expression of major depression across cultures. Interestingly, it was noted that symptoms most commonly experienced in all the countries were insomnia, loss of energy, and thoughts of suicide.[4]

Figure 3. Panic Disorder Lifetime Rates by Sex[a]



[a]Data from Weissman et al.[6]

Anxiety

The epidemiology of a number of anxiety disorders was studied in the Cross-National Study. Despite differences in prevalence across the various countries, it is noteworthy that all the different anxiety disorders were identified in each country.

Panic disorder lifetime rates overall vary across countries between 1.4% and 2.9%, with the exception of Taiwan which, as with major depression, had a much lower rate (0.4%).[6] Once again, as with major depression, a stable finding was the greater proportion of females (Figure 3)[6] and the mean age at onset in late 20s. It is worth noting that the mean age at onset reflects when patients first meet the full DSM-III criteria for panic disorder and not when they experience their first panic attack. Many patients will have experienced their first panic attack in their late teens but will not meet the full diagnostic criteria for panic attacks until many years later. Panic attacks are predictors of future psychological disorder.

Social anxiety disorder lifetime rate, as seen in Table 1,[7] differs across countries, with Asian countries showing low rates of around 0.5%, and Paris and Zurich showing rates of around 4%. Nevertheless it is important to remember that there are cross-cultural differences that relate to social habits. So, for example, the lifetime rates of social anxiety disorder may actually not be low in Asia, but with

Table 1. Lifetime Prevalence of DSM-III Social Anxiety Disorder[a]

Study Center	Lifetime Prevalence (%)
United States (ECA study)	2.7
Puerto Rico	1.6
Edmonton, Alberta, Canada	1.7
Paris, France	4.1
Zurich, Switzerland	3.8
Munich, Germany	2.5
Florence, Italy	1.0
Christchurch, New Zealand	3.5
Seoul, Korea	0.5
Taiwan	0.4–0.6

[a]Data from Lépine and Lellouch.[7] Abbreviations:
DSM-III = *Diagnostic and Statistical Manual of Mental Disorders*, Third Edition; ECA = Epidemiologic Catchment Area.

Table 2. Prevalence (%) of Current ICD-10 Diagnoses in Primary Care (WHO-PPGHC)[a]

Study Center	Depression[b]	Panic Disorder[c]	Agoraphobia[c]	GAD[c]
All centers	10.4	1.1	1.0	7.9
Ankara, Turkey	11.6	0.2	1.2	0.9
Athens, Greece	6.4	0.7	0.9	14.9
Bangalore, India	9.1	1.0	0.1	8.5
Berlin, Germany	6.1	0.9	1.5	9.0
Groningen, the Netherlands	15.9	1.5	2.7	6.4
Ibadan, Nigeria	4.2	0.7	0.1	2.9
Mainz, Germany	11.2	1.7	1.6	7.9
Manchester, England	16.9	3.5	3.8	7.1
Nagasaki, Japan	2.6	0.2	0.0	5.0
Paris, France	13.7	1.7	2.2	11.9
Rio de Janeiro, Brazil	15.8	0.0	2.7	22.6
Santiago, Chile	29.5	0.6	3.9	18.7
Seattle, Washington, United States	6.3	1.9	1.3	2.1
Shanghai, China	4.0	0.2	0.1	1.9
Verona, Italy	4.7	1.5	0.6	37.0

[a]Abbreviations: GAD = generalized anxiety disorder; ICD = *International Classification of Diseases*, Tenth Edition; WHO-PPGHC = World Health Organization Collaborative Study on Psychological Problems in General Health Care.
[b]Data from Goldberg and Lecrubier.[15]
[c]Data from Üstün and Sartorius.[14]

the current methodology used, low rates are recorded in Asia, particularly when compared with those response rates of 60% to 80% recorded in the West. Another important point is the change in the definition in social anxiety disorder between DSM-III, DSM-III-R, and DSM-IV. Subsequent studies, based on DSM-III-R criteria and diagnostic interviews that explored more numerous and diversified social situations, suggested higher lifetime prevalence rates for social phobia, between 4.1% and 16%.[2,7,8]

More recently, very similar lifetime prevalence rates for DSM-IV social anxiety disorder were found in 4 large community studies carried out in Germany, 7.3%[9]; France, 7.3%[10]; Italy, 6.6%[11]; and the United States, 7.2%.[12] It is also noteworthy that the data from the United States suggest an increased prevalence of social phobia in recent cohorts, especially in generalized forms and in white, educated, and married individuals.[13]

The course and frequency of psychiatric disorders in primary care attenders worldwide were examined in the World Health Organization Collaborative Study on Psychological Problems in General Health Care (WHO-PPGHC).[14] The prevalence of anxiety disorders such as generalized anxiety disorder (GAD) and agoraphobia across countries for the primary care setting is shown in Table 2.[14,15] There are widely varying rates between countries, with a prevalence of GAD of 0.9% in Ankara and 37.0% in Verona. Although the same instruments of assessment were used in all sites, the WHO studied divergent sample sizes in different countries. Despite variations in absolute rates, sex differences were consistent across most centers for depression, agoraphobia, and panic disorder, but varied for GAD. There was no evidence that physicians recognized psychological disorders at varying rates in men and women.

Comorbidity

The comorbidity of depression and anxiety is recognized as being a consistent finding, as evidenced in all the sites in the Cross-National Study (6% to 17%).[4] Persons with major depression were at increased risk of having panic disorder (Figure 4) and obsessive-compulsive disorder at all the sites. Comorbidity of major depression with lifetime alcohol abuse was also high, although the comorbidity of major depression with lifetime drug abuse was more variable and was high only in the United States, Canada, and New Zealand (Figures 5 and 6).

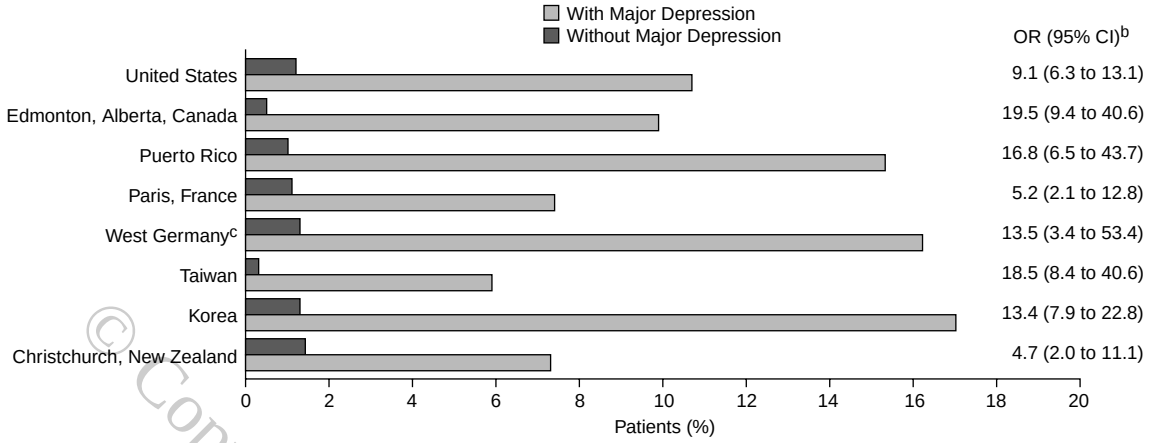
In the primary care setting (WHO-PPGHC), psychiatric comorbidity, as defined by the co-presence of another current ICD-10 psychiatric disorder, was common.[14] Pooled across centers, 21% of the consecutive attenders had 1 or more of the 8 selected current ICD psychiatric disorders. In most centers the disorders with relatively high prevalences were depressive episode, GAD, and neurasthenia. All specific psychiatric disorders had comorbidity higher than 50%, except alcohol dependence. Psychiatric comorbidity for depressive episode was 62%; panic disorder, 71%; agoraphobia, 71%; and GAD, 54%.

Suicide

Suicide attempts and suicidal ideation are consistently found in the depressed population and also found in patients diagnosed with anxiety disorders. The Cross-National Collaborative Group has looked at lifetime rates of suicide attempts, which showed a variance between countries with less than 1% for Beirut and Taiwan and up to 6% for Puerto Rico. Figure 7 shows the lifetime rate of suicide attempts divided by sex.[16] In most countries it is clearly at a higher rate for females, with the exception of Korea where the ratio is close to 1.

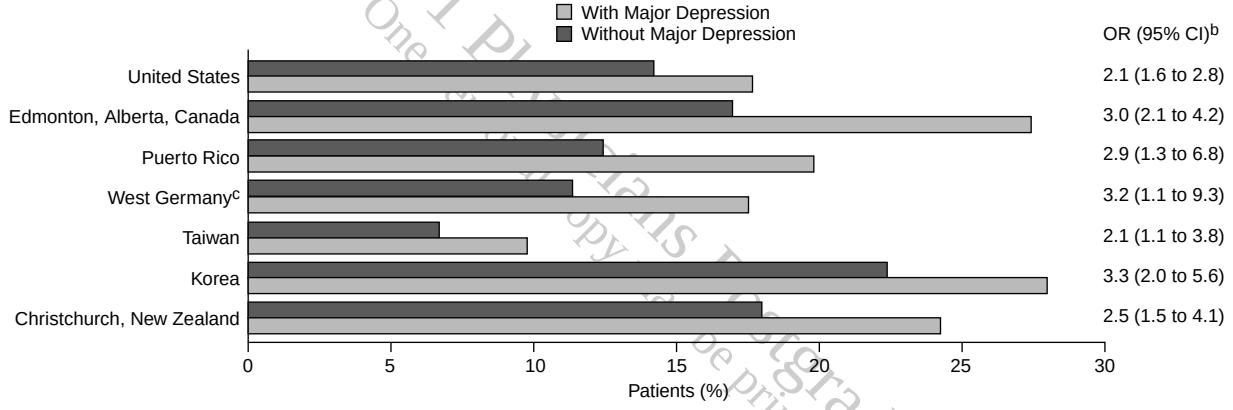
In a 10-year follow-up of the WHO-Collaborative Study on the Assessment of Depressive Disorders, which

Figure 4. Comorbidity of Major Depression With Lifetime Panic Disorder, Ages 18 to 64 Years[a]



[a]Data from Weissman et al,[4]
[b]Proportions are standardized to U.S. age and sex distribution. Odds ratio (ORs) are standardized to U.S. age and sex distribution and adjusted by age and sex within each site. CI indicates confidence interval.
[c]Data from former Federal Republic of Germany (West Germany) based on ages 26 to 64 years.

Figure 5. Comorbidity of Major Depression With Lifetime Alcohol Abuse/Dependence, Ages 18 to 64 Years[a]



[a]Data from Weissman et al.[4]
[b]Proportions are standardized to U.S. age and sex distribution. Odds ratio (ORs) are standardized to U.S. age and sex distribution and adjusted by age and sex within each site. CI indicates confidence interval.
[c]Data from former Federal Republic of Germany (West Germany) based on ages 26 to 64 years.

was conducted in Basel, Montreal, Nagasaki, Teheran, and Tokyo,[17] more people with depressive disorders in Montreal had completed suicide (18%) compared with those in Tokyo (9%); however, it is difficult to make valid comparisons in view of the sample and method inconsistencies at these sites (Table 3). The important message from this study is that across different cultures and sites there are similar outcomes at the 10-year follow-up.

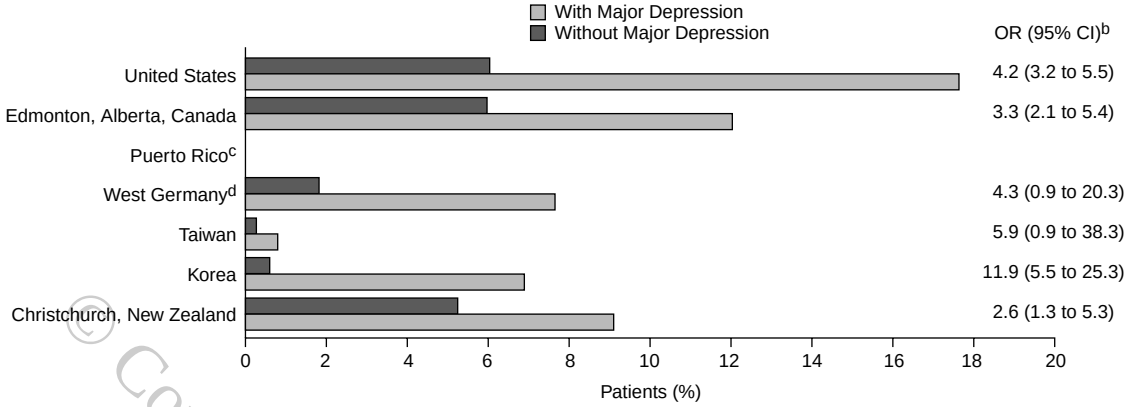
Suicide is an important consequence of depression and anxiety comorbidity.[18] When anxiety disorders are comorbid with depression, the suicide attempt rate is increased, adding further burden to the families of sufferers.[19]

In the primary care WHO-PPGHC study,[14] the percentage of suicide attempts varied according to the diagnosis. Among patients with depressive episode and panic attacks, 13.3% attempted suicide, whereas for patients with a subthreshold ICD-10 diagnosis and panic attacks, only 3.3% attempted suicide.[20]

BURDEN AND DISABILITY OF DEPRESSION AND ANXIETY

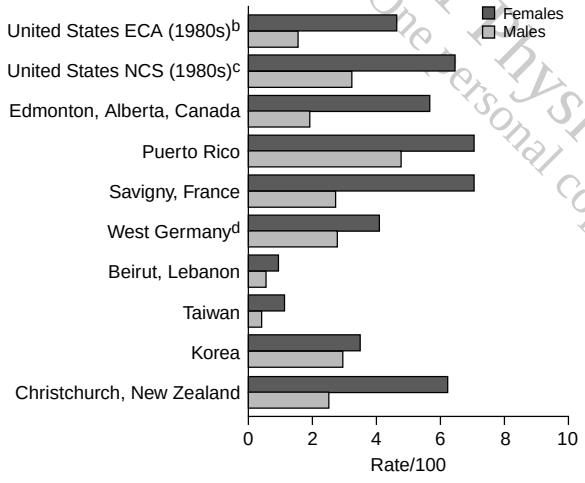
The disability associated with comorbid conditions was researched as part of the Depression Research in European Society (DEPRES) study in which patients were interviewed using the depression section of the Mini-International Neuropsychiatric Interview (MINI) as part of a house-to-house omnibus market research survey con-

Figure 6. Comorbidity of Major Depression With Lifetime Drug Abuse/Dependence, Ages 18 to 64 Years[a]



[a]Data from Weissman et al.[4]
[b]Proportions are standardized to U.S. age and sex distribution. Odds ratio (ORs) are standardized to U.S. age and sex distribution and adjusted by age and sex within each site. CI indicates confidence interval.
[c]Variables not assessed.
[d]Data from former Federal Republic of Germany (West Germany) based on ages 26 to 64 years.

Figure 7. Lifetime Rate of Suicide Attempts, Cross-National Study[a]



[a]Data from Weissman et al.[16]
[b]Epidemiologic Catchment Area (ECA) study.
[c]National Comorbidity Survey (NCS), ages 18 to 54; weighted to 1989 U.S. National Health Interview Survey.
[d]Data from former Federal Republic of Germany (West Germany) based on ages 26 to 64 years.

ducted in Belgium, France, Germany, the Netherlands, Spain, and the United Kingdom.[21] Of all the patients surveyed, 17% were identified as suffering from depression at some time in the last 6 months. According to the number of positive responses to a set of defining factors that were derived using 8 questions in the MINI, patients were classified in the following groups: major depression, minor depression, depressive symptoms, and nondepressed. The number of days of work lost through illness in the previous 6 months is shown in Table 4 for each of these groups.[21]

Table 3. Outcome of Depression and Suicidal Acts: 10-Year Follow-Up of the WHO-Collaborative Study on the Assessment of Depressive Disorders[a]

Suicide	All	Basel, Switzerland	Montreal, Quebec, Canada	Nagasaki, Japan	Tokyo, Japan
Attempt	14	11	31	11	6
Completed	11	10	18	8	9

[a]Data from Thornicroft and Sartorius.[17]

Interestingly, those who did not meet criteria for major depression but had depressive symptoms nevertheless had more working days lost to illness (4.1 days) compared with the nondepressed (2.0 days).

The impact of comorbidity in terms of increase of disability is clearly shown in the WHO-Mainz Center study of a primary care population.[22] The degree of disability caused by psychiatric illnesses is comparable with the disability induced by chronic somatic disorders (Table 5). More importantly, comorbidity between different psychiatric disorders, or psychiatric disorders and chronic somatic disorders, induces maximal rates of disability that are greatly superior to those of the "pure" condition alone.

Worldwide projections undertaken by the WHO for the main contributors to the burden of disease in the year 2020 identify unipolar major depression as the second greatest cause of burden after ischemic heart disease.[23,24] Importantly, in developing countries, unipolar major depression is projected to be the leading cause of disease burden (Table 6).

ESEMeD

Future initiatives to investigate the prevalence of depression and anxiety among different cultures are currently

Table 4. Depression Research in European Society Study: Number of Days of Work Lost Through Illness During Previous 6 Months[a]

Study Center	Major Depression	Minor Depression	Depressive Symptoms	Non-depressed
Belgium	16.9	7.2	2.3	3.2
France	10.8	10.9	4.4	2.7
Germany	12.0	7.2	4.5	3.7
The Netherlands	26.8	26.9	6.7	4.0
Spain	8.6	6.1	3.8	2.0
United Kingdom	11.4	7.1	3.5	2.5
Total	12.7	10.2	4.1	2.0

[a]Data from Lépine et al.[21]

Table 5. Impact of Comorbidity on Mean Number of Days With Marked Disability (during the last 30 days) in WHO-PPGHC (Mainz Center)[a]

Disorder	Days With Disability
Single disorders	
Depression	7.6
GAD	7.4
Any chronic somatic disorder (without associated psychiatric disorder)	5.0
Comorbid disorders	
Depression + GAD	8.0
Depression + any chronic somatic disease	8.1
GAD + any chronic somatic disease	7.9

[a]Data from Maier and Falkai.[22] Abbreviations: GAD = generalized anxiety disorder, WHO-PPGHC = World Health Organization Collaborative Study on Psychological Problems in General Health Care.

Table 6. Five Projected Leading Causes of Disability Adjusted Life Years (DALYs) in 2020 According to Baseline Projection[a]

Cause of Burden	DALYs × 10^6
Worldwide	
Ischemic heart disease	82.3
Unipolar major depression	78.7
Road-traffic accidents	71.2
Cerebrovascular disease	61.4
Chronic obstructive pulmonary disease	57.6
Developed region	
Ischemic heart disease	18.0
Cerebrovascular disease	9.9
Unipolar major depression	9.8
Trachea, bronchus, and lung cancers	7.3
Road-traffic accidents	6.9
Developing region	
Unipolar major depression	68.8
Road-traffic accidents	64.4
Ischemic heart disease	64.3
Chronic obstructive pulmonary disease	52.7
Cerebrovascular disease	51.5

[a]Data from Murray and Lopez.[23,24]

ongoing in the form of the European Study of Epidemiology on Mental Disorders (ESEMeD), which is being conducted in 6 European countries (Belgium, France, Spain, Italy, Germany, and the Netherlands). This cross-sectional study involves home interviews for up to 25,000 individuals from a general noninstitutionalized adult population. Interviews will be conducted using a computerized questionnaire and will last for approximately 90 minutes. The survey consists of a battery of separate standardized instruments and individual questions: data will be collected on sociodemographics (family structure and relations), the Composite International Diagnostic Interview (CIDI), severity of mental disorders, the Short Form Health Survey (SF-36), the EuroQol 5D (EQ-5D), and sections of the WHO Disablement Assessment Schedule II (WHO-DAS II). The utilization of services (treatment, duration, and intensity of care by type of provider and clinical setting), both currently and in the previous 12 months, will also be assessed during the interview. There is also to be a clinical reappraisal included in the design of this study. The methodology for ESEMeD is similar to that of the WHO World Mental Health 2000 study, which comprises 100,000 interviews conducted in 23 countries around the world. This collection of data will facilitate comparisons between the results for Europe and the rest of the world. The studies focus on mood disorders, anxiety disorders, addiction, eating disorders, and other mixed anxiety-depression disorders. The main objectives of the studies include evaluating the prevalence, severity, and disabilities of these disorders and assessing the resultant use of services and medications. The studies will also compare the current proportions of treated and untreated cases. In addition, data from the studies will help to quantify the current prevalence of comorbid depression and anxiety.

CONCLUSIONS

Transcultural trends in the prevalence of depression and anxiety were examined mainly through the results of the Cross-National Study and the WHO Collaborative Study on Psychological Problems in General Health Care. Although the prevalence of major depression, anxiety disorders, and suicide attempts varied between countries, the important finding was that these disorders were prevalent in the populations of all the countries in the studies. Current large epidemiologic initiatives into the prevalence of psychiatric disorders include the ESEMeD study and WHO World Mental Health 2000 study, which both have a similar methodology. These studies will facilitate future comparisons of the prevalence of depression and anxiety disorders between Europe and the rest of the world.

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