Overview of Key Data From the European Study of the Epidemiology of Mental Disorders (ESEMeD)

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The European Study of the Epidemiology of Mental Disorders (ESEMeD) is the first large-scale survey to collect data comprehensively on the prevalence, risk factors, disability, and use of health care services associated with mood, anxiety, and alcohol-related disorders throughout Europe. Findings from the ESEMeD study are updated using a modified version of the Composite International Diagnostic Interview 3.0 in order to achieve the maximum diagnostic accuracy. The study is based on a sample of 21,425 non-institutionalized adults, representative of an overall population of more than 212 million from Belgium, France, Germany, Italy, the Netherlands, and Spain. In total, 25.9% of participants reported a lifetime presence of any mental disorder, and 11.5% had experienced a mental disorder during the past 12 months. Females, younger participants, the unmarried, and the unemployed were more at risk, and comorbidity was prevalent. Associated levels of disability and reductions in quality of life exceeded levels seen in patients with chronic physical conditions. Nevertheless, only 36.8% of participants with a mood disorder and 20.6% with an anxiety disorder sought help from health care services; of these, 20.7% received no treatment. ESEMeD data provide an epidemiologic basis for reform of mental health policy within Europe.


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Over the past decade, epidemiologic studies have shown that mental disorders are prevalent throughout many countries in the world and are associated with marked disability and functional impairment.1-11 Although these studies have provided valuable information, their findings are limited by incompleteness and the lack of comparability, particularly in relationship to Europe.

To date, only 2 studies have used comparable measures to assess the epidemiology of mental disorders across Europe: the Outcome of Depression International Network (ODIN) study4 and the Depression Research in European Society (DEPRES) survey.8-10 Both surveys focused solely on depression. Other studies, such as the Netherlands Mental Health Survey and Incidence Study (NEMESIS),9 the U.K. National Survey of Psychiatric Morbidity,5 and the mental health supplement to the German National Health Interview and Examination Survey,6 have assessed a much broader range of mental disorders, but findings are limited to a single country. Differences in sampling technique, target population, chosen diagnostic/assessment tools, and methods of data collection make direct comparison of the results difficult.

The European Study of the Epidemiology of Mental Disorders (ESEMeD) was the first epidemiologic survey to collect data comprehensively on the prevalence, risk factors, disability, health-related quality of life, and use of treatment and health care services associated with mood, anxiety, and substance abuse disorders in Europe. ESEMeD was a joint collaboration between European in-

vestigators and the World Health Organization (WHO) and received funding from both public and private bodies. For the study, the new version of the instrument Composite International Diagnostic Interview (CIDI 3.0) developed and adapted by the Coordinating Committee of the WHO was used. The data collection was completed in August 2003.

**STUDY DESIGN**

The ESEMeD project was a cross-sectional, general population, household survey in which a representative sample of noninstitutionalized adults from 6 European countries (Belgium, France, Germany, Italy, the Netherlands, and Spain) underwent a face-to-face Computer-Assisted Personal Interview conducted by a trained lay interviewer. The design, sampling, and methodology used in the ESEMeD project have been described in full elsewhere and only several key design features will be outlined here. This project is part of the larger World Mental Health (WMH) Survey Initiative.

**Sampling**

The target population for the ESEMeD project was identified from a national household list or a list of residents in each country, obtained from either census or local postal registries, except for France, where telephone lists were used instead. In most countries, selection of municipalities stratified by region and/or population size was followed by selection of households using either systematic or random sampling procedure. Computer-assisted random selection then identified a single interviewee from each household.

**The Diagnostic Interview**

The ESEMeD project included an updated version of the CIDI (CIDI 3.0), a state-of-the-art tool containing 38 sections. The CIDI is a commonly used, structured diagnostic interview that enables classification of mental disorders according to DSM-IV or ICD-10 criteria, providing estimates of 30-day, 12-month, and lifetime prevalence. This updated version has been developed by the WHO as part of their WMH Survey Initiative; thus, the findings of the ESEMeD project are globally comparable. The CIDI 3.0 differs from the previous CIDI versions in several ways. The standardization section is excluded and the screening section is located at the beginning of the interview. Interviewees responding positively to any of the screening questions were then directed to the relevant CIDI 3.0 section for that specific disorder, thus expediting the interview process.

Also incorporated in the Computer-Assisted Personal Interview were a set of questions designed to elicit sociodemographic data and validated assessment tools to measure disease severity, disability, and quality of life. Another set of questions focused on health care utilization—the type of service used, the reason for consultation, the type of treatment provided, the duration of care, and any specific barriers.

Among the different mental disorders assessed, the ESEMeD analyses summarized in this article include the following DSM-IV disorders: mood disorders (major depressive episode and dysthymia), anxiety disorders (generalized anxiety disorder, simple phobia, social phobia/social anxiety disorder, posttraumatic stress disorder, panic disorder, agoraphobia), and alcohol disorders (alcohol abuse and dependence). When symptoms were attributable to organic disease, individuals were not considered to suffer a mental disorder (“organic” exclusion). Nonhierarchical rules were used for all the disorders with the exception of alcohol abuse and dependence and agoraphobia without panic. The computerized algorithms used to obtain the diagnostics of the mental disorders based on DSM-IV or ICD-10 criteria are internally reviewed on a regular basis, and updated if necessary, in order to achieve the maximum diagnostic accuracy. In this article, the latest available version of the analytical diagnostic algorithms for the CIDI 3.0 was used (updated June 2005). The new version varies from that used for previous analyses, so prevalence estimates presented here vary slightly from those published previously.

**Quality Control**

The ESEMeD project incorporated several methodological features designed to maximize the quality of its data output and to identify bias. Questions were administered using the Computer-Assisted Personal Interview, which was programmed centrally with the Blaise software system (Statistics Netherlands, Voorburg, The Netherlands). This system guides the interviewer through the respondent selection process, delivers the questions, and directs the interviewer through the questioning sequence. Integral to the innovative computer technology were sophisticated data-checking procedures that enabled verification of the completeness and consistency of interviews across individuals and interviewers, as well as the timeliness of the interview.

Locally, investigators were responsible for monitoring the conduct of Computer-Assisted Personal Interviews, verifying records and informed consent, and reviewing responses to open-ended questions in order to exclude symptoms due to organic disease. Several steps were also taken to monitor the performance of each interviewer. The prevalence of specific symptoms recorded during the screening section of each interview was analyzed for outliers. Furthermore, random verification interviews were conducted with 10% of the interviewers. Retraining was administered if necessary.

**Data Weighting**

Data were weighted to provide representative estimates applicable to the entire sampling frame. These weights enabled the results of the project to be adjusted for the
probability of selection (within a household), random skip patterns introduced by the CIDI 3.0 questionnaire, and imbalances of age and gender of the adult population of each country.

Screening

A 2-stage interview procedure was used, with the first phase screening all respondents (N = 21,425) for the most common mood and anxiety symptoms. The second phase involved interviewing those who presented a number of symptoms of specific mood and anxiety disorders and a random 25% of those who did not. This second phase included in-depth questions about additional mental disorders and other information. This article presents analysis from individuals who were assessed in the second phase (N = 8796).

Quality of life was measured using the Short-Form 12-Item (SF-12) Health Survey.15 Two summary measures can be obtained from this questionnaire: the Physical Component Summary (PCS-12) and the Mental Component Summary (MCS-12). These summary measures use the 12 items of the questionnaire but with item weights from the general U.S. population. These 2 summary measures are constructed using norm-based methods, with a mean of 50 and a standard deviation of 10 in the U.S. general population. Therefore, scores above and below 50 represent better and worse health status, respectively, than the U.S. general population.

Work loss days (WLDs) were calculated using a scale composed of 3 items with the time frame of these items being 30 days prior to performing the assessment. This scale is part of the WHO Disability Assessment Schedule II (WHO-DAS II),16 a modified version of which was also included in the survey. The respondent was asked about the number of days that he/she was totally unable to work or perform his/her normal activities and the number of days that the respondent had to cut back on the quality of his/her work. These answers were combined so that the days that subjects were totally unable to work were given a double weighting in comparison to the “cut down” and “cut back” days. Scores (0–100) represent the percentage of the previous 30 days with total disability.

KEY FINDINGS FROM ESEMeD

Population and Sample Distribution

The total sample of the ESEMeD project consists of 21,425 individuals, representative of an overall population of 212,794,642 from the 6 participating countries.12 Some variation existed in response rates between countries, ranging from 46% in France to 79% in Spain (Table 1).12 The overall response rate exceeded 60%, which is lower than rates found in other epidemiologic studies, such as NEMESIS9 or the National Comorbidity Survey (NCS).11 Limited financial incentives, general “commercial survey fatigue,” and different approach methods (i.e., initial contact was made by telephone in France), were probable contributory factors.

Demographics

The study sample12 comprised a higher proportion of females (51.8%) who participated in the survey than males. More than two thirds of the sample (66.8%) were married or cohabiting, whereas 22.1% had never been married. The mean age (± standard error [SE]) of the participants was 47 (± 0.5) years with most individuals falling into the “middle-aged” category (aged 35–49 years). Approximately 20% of participants were 65 years or over—a population seldom included in previous epidemiologic surveys. More than one third of the study population (34.6%) had been educated for more than 12 years, over half (56.5%) were in paid employment, and 23.5% were retired. The remainder of the sample included unemployed, homemakers, students, and the disabled.12

Prevalence and Pattern of Mental Disorders in Europe

Figure 1 shows the 12-month and lifetime prevalence rates for any mental disorders. Approximately 1 in 4
participants reported a lifetime presence of any mental disorder, and 1 in 10 had experienced a mental disorder during the past 12 months. A total of 14.5% of the participants reported a lifetime presence of anxiety disorder, with 8.4% experiencing an episode during the past year (Figure 2). Specific phobia, generalized anxiety disorder, social anxiety disorder/social phobia, and posttraumatic stress disorder were the most prevalent disorders. The overall lifetime prevalence of any mood disorder in the ESEMeD project was similar to anxiety disorders with 14.7% prevalence, but only 4.5% experienced an episode during the past year (Figure 1). A lifetime history of alcohol disorder, abuse, or dependence was reported in 4.9%, 3.8%, and 1.1% of the participants, respectively, and less than 1% of participants met criteria for these disorders within the past 12 months.

Methodological differences in survey methods, instruments, nuances in language, and translation limit their comparability; this greatly limits comparisons with rates observed in previous cross-national studies. However, the prevalence rates detected in the ESEMeD project are based on essentially the same survey design and method of estimation used in the National Comorbidity Survey Replication (NCS-R), which has very recently reported lifetime and 12-month prevalence rates of 16.6% and 6.7% for major depressive episode, compared with respective estimates of 13.4% and 4.1% in the ESEMeD project. Similarly, NCS-R lifetime and 12-month prevalence rates for social anxiety disorder/social phobia (12.1% and 6.8%) were notably higher than the ESEMeD estimates (2.8% and 1.6%). A recent meta-analysis of 27 studies estimated that approximately 27% of the adult (aged 18–65 years) population in the European Union is or has been affected by at least 1 mental disorder in the previous 12 months.

Indeed, while it is useful to compare ESEMeD results to the findings of the NCS-R, it is important to remember that the latter is a U.S. study. Cultural bias and differing attitudes to mental illness and its stigmatization can affect what participants reveal to interviewers and how they perceive impairment. Interestingly, prevalence rates for mental disorders varied between the 6 countries included in the ESEMeD project; thus, the mean prevalence rate presented for the overall study population is not representative of all European countries. Notably, the DEPRES survey, which was performed in 5 of the countries surveyed in the ESEMeD project, found similar “between country” prevalence patterns.

Special Groups and Risk Factors

Gender and age. The ESEMeD project found that females were twice as likely as males to have experienced an anxiety (odds ratio [OR] = 2.47; 95% confidence interval [CI] = 1.95 to 3.14) or mood (OR = 1.97; 95% CI = 1.60 to 2.42) disorder within the past 12 months, but were less likely than males to have experienced an alcohol-related disorder (OR = 0.22; 95% CI = 0.11 to 0.44). With regard to age, mental disorders were more prevalent in younger participants (Figure 4); elderly patients were the least affected.

The assessment of mental disorders in the elderly is complex. Relationships between mental disorders, mortality, and organic disease can confound prevalence estimates in this age group, and the appropriateness of diagnostic and assessment tools for use in this population has been subject to much debate. As a result, many studies, including the NCS and the NEMESIS, excluded elderly participants. By contrast, elderly patients comprised 20.7% of the ESEMeD study population. This could be an additional explanatory factor for the lower prevalence rates detected by the project.

Marital, education, and employment status. Participants who had never married and, to a lesser degree, those
who were either widowed or divorced were more likely, although not significantly, to have experienced a mental disorder in the past 12 months than those who were currently married (OR = 1.21; 95% CI = 0.97 to 1.51 and OR = 1.23; 95% CI = 0.96 to 1.58, respectively). Indeed, participants who had never married were more than 4 times more likely than married participants to have experienced an alcohol-related disorder during the past year (OR = 4.62; 95% CI = 2.16 to 9.87). Odds ratios for education and employment status varied, but compared with those in paid employment, the unemployed were particularly at risk of depression (OR = 2.96; 95% CI = 2.23 to 3.94) and alcohol-related disorders (OR = 4.69; 95% CI = 1.76 to 12.52).

Comorbidity

The term comorbidity is used to denote respondents meeting criteria for more than 1 disorder although many of these may be complex clinical presentations that are not otherwise amenable to classification. More than 40% of participants with a 12-month diagnosis of a mood disorder had also experienced an anxiety or alcohol-related disorder in the past 12 months. This finding highlights the need for integrated treatment and primary prevention of secondary disorders.\textsuperscript{21} The association between mood and anxiety was higher (OR = 10.2; 95% CI = 8.2 to 12.7) than between mood and alcohol-related disorders (OR = 5.1; 95% CI = 2.6 to 10.1) or anxiety and alcohol-related disorders (OR = 3.7; 95% CI = 1.7 to 8.3).

Dysthymia, generalized anxiety disorder, panic disorder, and agoraphobia without panic were most commonly comorbid with another mental disorder (Figure 5).\textsuperscript{21} Indeed, agoraphobia was most commonly comorbid with social phobia, dysthymia, and generalized anxiety disorder, and panic disorder was most commonly comorbid with major depressive episode (Table 2).\textsuperscript{21} Alcohol disorders and specific phobias coexisted less frequently with other mental disorders (Figure 5; Table 2).\textsuperscript{21} Gender differences were also common in comorbidity patterns; comorbid mood and anxiety was more prevalent among females, while comorbid mood and alcohol disorders were more common among males.\textsuperscript{21}

Disability

The percentage of days with work loss due to mental disorders in the past 30 days was calculated using 1 of the 9 disability modules of WHO Disability Assessment Schedule II (WHO-DAS II) (Figure 6). The results showed that mental disorders were consistently associated with substantial functional impairment.\textsuperscript{21} Indeed, mood and anxiety disorders were more debilitating than some chronic physical conditions, such as heart disease and diabetes.\textsuperscript{22}

Further analysis of the quality of life data as measured by the SF-12 showed a substantial decrease in those with mental disorders. The mean mental component summary score of the SF-12 illustrated a marked reduction in mental quality of life in participants with anxiety (46.9) and mood (40.6) disorders, compared with individuals with no 12-month disorders (55.0). In fact, the impact on mental quality of life exceeded that associated with physical conditions, such as heart disease (52.8) or diabetes (53.9). The converse was observed when the mean physical component summary scores of the SF-12 were examined. Although physical quality of life was also impaired in participants with anxiety (46.0) and mood (45.8) disorders, the impact of heart disease (40.4) and diabetes (43.6) on this measure was greater.

When adjusted for age/gender and comorbidity, dysthymia, major depressive episode, posttraumatic stress disorder, panic disorder, and social anxiety disorder/social phobia had the most impact across all disability and quality of life measures.\textsuperscript{14} The highest levels of disability and impairment were seen in individuals meeting criteria for comorbid disorders (Table 3), with levels of impairment increasing in line with the number of comorbid conditions.\textsuperscript{22}
Table 3. Mean Work Loss Days (WLDs) and SF-12 Mental Component Summary (MCS) and Physical Component Summary (PCS) Scores, According to the Number of 12-Month Mental Disorders

<table>
<thead>
<tr>
<th>Mental Health</th>
<th>WLDs a</th>
<th>PCS-12</th>
<th>MCS-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>No 12-month disorder</td>
<td>7</td>
<td>49.65</td>
<td>54.43</td>
</tr>
<tr>
<td>One 12-month disorder</td>
<td>16</td>
<td>47.28</td>
<td>48.60</td>
</tr>
<tr>
<td>Two 12-month disorders</td>
<td>22</td>
<td>44.24</td>
<td>41.79</td>
</tr>
<tr>
<td>≥ Three 12-month disorders</td>
<td>33</td>
<td>43.67</td>
<td>35.65</td>
</tr>
</tbody>
</table>

aSignificant gender differences were found after adjusting the raw p value to the number of comparisons performed by Hochberg method at p < .0002.

Abbreviations: CI = confidence interval, GAD = generalized anxiety disorder, OR = odds ratio, PTSD = posttraumatic stress disorder.

Figure 6. Mean Work Loss Days (WLDs) in the Past 30 Days for Mental and Physical Disorders

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Mean WLD Index (per month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Disorder</td>
<td>3</td>
</tr>
<tr>
<td>Any Mood Disorder</td>
<td>23</td>
</tr>
<tr>
<td>Any Anxiety Disorder</td>
<td>19</td>
</tr>
<tr>
<td>Diabetes</td>
<td>12</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>18</td>
</tr>
</tbody>
</table>

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Table 2. Associations Between 12-Month Mental Disorders in the General Population of the European Countries in the ESEMeD Project

<table>
<thead>
<tr>
<th>Disorder</th>
<th>OR (CI)</th>
<th>OR (CI)</th>
<th>OR (CI)</th>
<th>OR (CI)</th>
<th>OR (CI)</th>
<th>OR (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Depression</td>
<td>37.1 (23.2, 59.1)</td>
<td>3.7 (1.8, 7.5)</td>
<td>14.2 (8.6, 25.0)</td>
<td>8.8 (4.6, 16.7)</td>
<td>4.0 (2.7, 5.5)</td>
<td>0.9 (0.3, 2.3)</td>
</tr>
<tr>
<td>GAD</td>
<td>5.5 (4.2, 7.3)</td>
<td>5.5 (4.2, 7.3)</td>
<td>7.8 (5.0, 12.0)</td>
<td>7.8 (5.0, 12.0)</td>
<td>7.8 (5.0, 12.0)</td>
<td>7.8 (5.0, 12.0)</td>
</tr>
<tr>
<td>Social anxiety disorder</td>
<td>18.1 (10.4, 31.6)</td>
<td>4.7 (2.9, 7.4)</td>
<td>14.2 (8.6, 25.0)</td>
<td>8.8 (4.6, 16.7)</td>
<td>4.0 (2.7, 5.5)</td>
<td>0.9 (0.3, 2.3)</td>
</tr>
<tr>
<td>Specific phobia</td>
<td>15.5 (8.0, 30.0)</td>
<td>26.6 (10.8, 65.1)</td>
<td>12.7 (5.5, 28.8)</td>
<td>9.5 (5.6, 16.1)</td>
<td>9.5 (5.6, 16.1)</td>
<td>9.5 (5.6, 16.1)</td>
</tr>
<tr>
<td>Panic disorder</td>
<td>29.8 (19.0, 46.6)</td>
<td>21.8 (11.5, 41.2)</td>
<td>1.8 (0.4, 8.0)</td>
<td>1.8 (0.4, 8.0)</td>
<td>1.8 (0.4, 8.0)</td>
<td>1.8 (0.4, 8.0)</td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>3.3* (1.3, 8.7)</td>
<td>3.3* (1.3, 8.7)</td>
<td>3.3* (1.3, 8.7)</td>
<td>3.3* (1.3, 8.7)</td>
<td>3.3* (1.3, 8.7)</td>
<td>3.3* (1.3, 8.7)</td>
</tr>
<tr>
<td>Alcohol dependence</td>
<td>9.8* (2.7, 35.8)</td>
<td>9.8* (2.7, 35.8)</td>
<td>9.8* (2.7, 35.8)</td>
<td>9.8* (2.7, 35.8)</td>
<td>9.8* (2.7, 35.8)</td>
<td>9.8* (2.7, 35.8)</td>
</tr>
</tbody>
</table>

The ESEMeD project is the first pan-European survey to use published diagnostic criteria (DSM-IV) to assess the prevalence of mental disorders, their severity, associ-
ated impairment, and use of services. It is the largest European survey conducted to date, including more than 21,400 participants from 6 countries—a representative sample of about 213 million individuals. The study provides novel data, including the first European data on posttraumatic stress disorder and the first cross-national European assessment of mental disorders in patients aged over 65 years. Importantly, since ESEMeD is part of the WHO World Mental Health Survey Initiative, the CIDI 3.0 was used, providing data that are comparable with those in more than 20 countries.

The ESEMeD project provides useful information about the prevalence of mental disorder in Europe and associated risk factors. Analyses presented here reveal that more than 1 in 10 individuals throughout Europe suffered from a mental disorder every year. Females, younger individuals, the unmarried, and the unemployed are at greater risk, and comorbidity is prevalent, highlighting the need for targeted and integrated therapy. Despite limitations of functioning and quality of life with mental disorders that exceed levels seen in chronic physical conditions, ESEMeD data show that consultation rates are low. Furthermore, despite a decade of educational initiatives, one fifth of affected individuals who present to health care services receive no treatment.24 This information will be useful in promoting change in mental health policy within Europe and should help to encourage the allocation of resources according to need rather than demand.

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REFERENCES


Figure 7. Level of Health Care Consulted by Individuals With Any Mental Disorder Contacting Health Care Services Due to Their Emotions or Mental Health*