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The Burden of Mental Disorders

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Abstract

In the last decade, there has been an increase in interest in the burden of chronic and disabling health conditions that are not necessarily fatal, such as the mental disorders. This review systematically summarizes data on the burden associated with 11 major mental disorders of adults. The measures of burden include estimates of prevalence, mortality associated with the disorders, disabilities and impairments related to the disorders, and costs. This review expands the range of mental disorders considered in a report on the global burden of disease, updates the literature, presents information on the range and depth of sources of information on burden, and adds estimates of costs. The purpose is to provide an accessible guide to the burden of mental disorders, especially for researchers and policy makers who may not be familiar with this subfield of epidemiology.

Keywords

cost of illness; mental disorders; mental health; mortality; prevalence; review

INTRODUCTION

One of the first challenges in building epidemiologic knowledge about a given health condition is to establish the burden associated with it. The field of psychiatric epidemiology has been slow in meeting this challenge, in part because of disagreements about thresholds regarding the presence of disorder (1) and in part because of the connected failure to establish reliability of measurement (2,3). Explicit diagnostic criteria provided in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders*, Third Edition (4) helped address these problems and provided the foundation for population measurement in the so-called third generation of psychiatric epidemiology (5), which began with the National Institute of Mental Health Epidemiologic Catchment Area Program (6–8) and continues to the present.

A stimulus to efforts in descriptive epidemiology has been the Global Burden of Disease (GBD) Study (9). It is easier to describe the population aspects of diseases closely associated with mortality than it is to do so for nonfatal conditions, such as the psychiatric disorders.

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Incorporation of nonfatal disability resulting from health conditions into an overall measure of disease burden demonstrated to many people, for the first time, the importance of the neuropsychiatric conditions. In 2001, neuropsychiatric conditions as a broad category were responsible for 21 percent of the total disease burden in the world: only infectious and parasitic diseases (41 percent) and cardiovascular diseases (26 percent) were more important. Unipolar depressive disorder was the leading source of burden among the psychiatric conditions (6 percent); among the specific disease categories, only lower respiratory infections were more important (11 percent) (Lopez et al., table 3C.9 (10)).

This review concisely and systematically summarizes data on the burden associated with 11 major mental disorders in adults. We decided that the corpus of literature would not sustain a formal meta-analysis (11) and instead present summary measures here. The measures of burden include estimates of prevalence, mortality associated with the disorders, disabilities and impairments related to the disorders, and costs. To the extent possible, we build upon existing reviews that are often focused on a single disorder.

Our review of prevalence and associated mortality presents the essential summary data, including the number of studies conducted, the median prevalence or relative risk, and the interquartile range. It expands the range of mental disorders considered in the GBD report, updates the literature, provides information on the range and depth of sources of information on burden, and adds estimates of costs. The purpose of the review is to provide an accessible guide to the burden of mental disorders, especially for researchers and policy makers who may not be familiar with this subfield of epidemiology.

METHODS

The most common form of prevalence reported across the 11 disorders was the 1-year prevalence. The 1-year prevalence is a hybrid type of prevalence between lifetime prevalence and point prevalence, recording the history of the disorder within a year prior to assessment (12). It differs from lifetime prevalence in focusing on only 1 year. It differs from period prevalence in that data for individuals in the designated population who entered during the year of study but died before the assessment are not included in the numerator of the rate. Since there is not a strong relation between the occurrence of mental disorders and death within 1 year, the 1-year prevalence is close to the 1-year period prevalence. For those disorders that typically endure for a year or more, the 1-year prevalence is not too different from the point prevalence. Limitation of this review to the 1-year prevalence has the advantage of reducing variation due to differences in reporting period; it has the disadvantage that many studies were not included in the results presented here because they reported either a lifetime prevalence rate or a point prevalence rate.

For the review of prevalence, only studies of the general population were included, since a large proportion of individuals with mental disorders never end up in a treatment setting. Studies of samples drawn from clinics, or from the records of health maintenance organizations, were excluded (except where noted for schizophrenia). We required that the sample size be larger than 500 to enhance statistical stability of the findings. To minimize effects of response bias, we excluded studies in which the response rate was less than 60 percent. Only studies of adults, including a range of at least 20 years beyond age 15 years, were included. Studies that focused on specific demographic groups of populations, for example, defined by narrow age ranges, one gender, migrant status, or socioeconomic status, were excluded. Studies of special health populations, such as individuals with a particular health condition or disease, were also excluded. Population-based studies of one ethnic group, or one national group, were included (i.e., fitting within the definition of “general population”). Where possible, in studies reporting data from more than one ethnic group and data from all groups combined, the rate for the

combined group was reported, if available, or was computed, if possible; otherwise, rates for specific ethnic groups were reported as if they were separate studies. Where data for both genders were reported separately and the sample numbers for each gender were also reported, the rate for both sexes combined was estimated and reported.

This review focuses on mental disorders with specific diagnostic criteria, and it was a requirement that the assessment procedure be in person or by telephone and that there be some degree of structure to the assessment. Thus, studies were included only if they used structured or semistructured diagnostically oriented interviews conducted in person or by telephone. The measurement characteristics of these methods have been reviewed elsewhere (13). Many studies were eliminated because of this constraint. The diagnoses reported in the studies had to match exactly the named diagnoses, so that, in the case of major depressive disorder, for example, studies reporting groups of disorders such as “depressive disorders” or “mood disorders” were not included. Two-stage studies were included as long as the second stage yielded a specific diagnosis. In studies reporting a diagnosis based on both the *Diagnostic and Statistical Manual of Mental Disorders* and the *International Classification of Diseases*, the prevalence of diagnosis based on the former source was used.

For the reviews of mortality, there were similar restrictions. Again, taking depressive disorders as the example, assessment of depression had to be similarly oriented toward diagnosis, but the type of occurrence could be lifetime, period, or at only one point in time. Studies based on samples drawn from psychiatric clinics or psychiatric treatment-based registers, or samples chosen because of other illnesses, were excluded. A difference between the studies selected for prevalence and for mortality is that samples with restricted age ranges (usually the elderly) were included. In addition, regarding the study of mortality, several studies selected cases and noncases from population-based cohorts, and these studies were included since estimation of the odds ratio or relative risk does not require complete enumeration of the cohort. Excluded were studies that reported mortality due to a specific condition (e.g., cancer) but did not present mortality due to all causes. As a result of these restrictions, many high-quality studies were excluded.

Measures of disability are taken from the estimates of the GBD Study (9), as well as estimates available from the Collaborative Psychiatric Epidemiology Surveys (CPES, described below (14)) and the Canadian Community Health Survey (15). Measures of per capita cost are taken from a more limited range of studies. Some of these studies are focused on the United States, and the costs given are included here. When studies were not available on costs for the United States, studies from other countries were located, the costs were converted to 2005 US dollars, and then they were applied to the median estimates of prevalence and the US population to generate total costs.

The GBD disability weights were developed from ratings of symptomatic and behavioral vignettes by expert raters in a consensus process. Raters were asked to make choices regarding prevention programs comparing extension of life for a healthy person (e.g., a program that would extend life for a healthy person by 1 year) with extension of life (e.g., for 2 years) for a person disabled by a health condition. A rating of 0.0 indicates no disability at all during a given year of life, whereas a rating of 1.0 is equal to death. Higher values indicate more disability and lower quality of life. A value of 0.5 indicates that the individual would have the same quality of life for 2 years as a completely healthy individual with a value of 0.0 would experience in 1 year. These ratings have the advantage that population aspects of burden of fatal and nonfatal conditions can be compared. As an example, the severity rating for quadriplegia is 0.90, for blindness is 0.62, for multiple sclerosis is 0.41, for deafness is 0.33, for rheumatoid arthritis is 0.21, and for watery diarrhea is 0.07 (9). (Ratings for psychiatric conditions are reported below.)

The CPES (14) is a combination of three surveys in the United States with representative samples of the entire adult population of the United States (National Comorbidity Survey Replication (16)), the African-American population of the United States (National Survey of American Life (17)), and the Latin-American and Asian population of the United States (National Latino and Asian American Survey (18)). The combined sample size for the CPES is 20,130, and all three surveys met our eligibility criteria. The surveys in the CPES used the Sheehan Disability Scale (SDS) to assess impairment due to many of the disorders addressed in this review (19). The SDS is a brief self-report measure that assesses functional impairments on a 10-point, discretized, analog scale (0 = no disability, 1–3 = mild, 4–6 = moderate, 7–9 = marked, 10 = extreme). It was designed for clinical trials and has been used in hundreds of research studies and translated into 48 languages (20). In the CPES, the SDS was used in the separate sections corresponding to each disorder, with separate questions relating to the extent to which each of four areas of functioning in work, household, relationship, and social roles was impaired in the worst month of the past year for the problems associated with the given disorder (21). In the current analysis, a threshold of disability was based on a rating of marked-to-extreme impairment (i.e., scale value of ≥ 7). In this review, we report the percentage of the individuals meeting criteria for a given disorder who have marked-to-extreme impairment on one or more of the four SDS role domains.

The CPES did not include SDS data for alcohol and drug disorders, but these impairment measures were available for alcohol and drug dependence disorders from the 2002 Canadian Community Health Survey cycle 1.2, a probability sample of 36,984 community-dwelling respondents representing the population of Canada older than 15 years of age, which had a special focus on mental health and well-being (15). The diagnoses in this survey were limited to alcohol or drug dependence (i.e., not including alcohol and drug abuse without dependence).

We conducted a targeted literature review by concentrating on US-based studies in the past 15 years to obtain data on total cost estimates for the disease or cost per case per year. Credible estimates for the United States were located for major depressive disorder, alcohol abuse or dependence, drug abuse or dependence, schizophrenia, and bipolar disorder. When data were unavailable, total costs from studies conducted outside the United States were used to estimate per capita costs for the population of adults. For these disorders, the number of adults in the United States in 2005 (222 million) was multiplied by the median prevalences given in table 1, and that product was multiplied by per capita costs to generate total costs in the United States. Cost estimates were adjusted to 2005 US constant dollars by using inflation factor and/or purchasing power parity indices.

Prior systematic reviews were sought and were reported to the degree possible for tables 1 and 2. The searches for relevant studies were conducted by using the PubMed bibliographic retrieval system (National Library of Medicine, Bethesda, Maryland). For example, our review of depressive disorder began with the article by Waraich et al. (22), which reported population-based studies of 1-year prevalence with standardized, diagnostically oriented assessments with publication dates of 1980–2000. The search terms were “population” and “depressive disorder” and “prevalence” and were “depressive disorder” and “mortality” for the reviews of prevalence and mortality, respectively. The yield in articles for these broad terms is included in tables 1 and 2. In searching for the widest net possible, the search terms for each of the disorders were varied but always included these broad terms. Complete citations for all studies used—that is, including those in the prior reviews—are listed in this paper for the convenience of the reader who may want to investigate individual articles more thoroughly.

For each disorder, separate Microsoft Excel spreadsheets (Microsoft Corporation, Redmond, Washington) were prepared for the prevalence and mortality studies, including characteristics of the studies such as their location, target population, sample size, response rate, diagnostic

standard, and assessment procedure. These spreadsheets, and the relevant lists of citations, are available on the World Wide Web at http://www.jhsph.edu/dept/mh/_includes/epi_mental_disorders.html. Readers wanting to present future studies for inclusion in the spreadsheets, criticize the choice of studies, or alert us to studies we have omitted are invited to do so via an e-mail contact address listed on that website. The authors do not promise to respond to these suggestions and critiques but only to read them and possibly adapt the spreadsheets and lists of citations.

PREVALENCE

Median prevalence estimates ranged from 0.5 percent for schizophrenia to 9.1 percent for personality disorders (table 1). There were only five studies of the prevalence of personality disorder, the smallest number for any disorder, and the largest number was 42—for the studies of the prevalence of major depressive disorder.

The reviews of panic disorder, social phobia, and simple/specific phobia built upon the review of Somers et al. (23), who searched for studies from 1980 to 2004 and identified 15 that met their inclusion criteria. For panic disorder, 18 additional nonduplicated studies from our search were eligible for data abstraction. The studies of these anxiety disorders represent more than 200,000 sampled and assessed persons. The estimates of 1-year prevalence for panic disorder ranged from 0.1 percent in rural villages in Taiwan to 3.2 percent in Florence, Italy, with a median of 0.9 and an inter-quartile range of 0.6–1.9. For all six East Asian studies, prevalence estimates were in the lower quartile. The 1-year prevalence estimates for social phobia ranged from 0.2 percent in Korea and in Nigeria to 44.2 percent in Udmurtia, a Russian republic, with a median of 2.8 and an interquartile range of 1.1–5.8. All three of the East Asian studies had prevalence rates of social phobia in the lower quartile. The estimates of 1-year simple/specific phobia prevalence rates ranged from 0.2 percent in Derry, Northern Ireland, to 11.1 percent in Oslo, Norway, with a median of 4.8 and an inter-quartile range of 3.5–7.3 percent.

The findings for major depressive disorder built upon the review of Waraich et al. (22), who searched for studies from 1980 through 2000, finding 13 that met their criteria. PubMed was searched by entering “population prevalence” and “depressive disorder,” yielding 3,935 titles (table 1), of which 2,477 were published after 2000. Fifty-nine of these studies appeared relevant, but only 29 nonduplicated studies meeting the above criteria were eventually added to the studies included in the Waraich et al. review. The 42 studies represent a total sample of 290,471 persons. The 1-year prevalence rates ranged from 0.64 percent in Taipei to 15.4 percent in Udmurtia, with a median of 5.3 and an interquartile range of 3.6–6.5. Six of the nine studies in the low quartile were in East Asia, but otherwise there were no obvious conclusions to be reached about the place of the study, the study method, or the time that it was conducted.

There were 19 studies of the prevalence of obsessive-compulsive disorder. The search for relevant titles was aided by a relatively comprehensive, but nonsystematic review by Fontenelle et al. (24). The median 1-year prevalence of obsessive-compulsive disorder was 1.0 percent, with an interquartile range of 0.6–2.0 percent.

For the review of alcohol use disorder, 14 studies met the inclusion criteria. The range was from a low of 4.1 percent in Germany to a high of 10.6 percent in Norway; median 1-year prevalence was 5.9 percent, and the interquartile range was 5.2–8.1 percent. Most of these studies were conducted in the United States. There were no obvious associations with variables such as place of the study, the study method, or the time that it was conducted.

The search for studies of drug use disorder yielded 1,417 titles, of which 467 were examined closely but only 11 met the above criteria. The 1-year prevalences ranged from 0.4 percent in Mexico to 3.6 percent in the United States, and the median prevalence was 1.8 percent. About

50 percent of the studies were conducted in the United States. All studies in the low quartile were conducted outside the United States (i.e., Mexico, Germany, and Norway). The prevalence in the single Australian study was in the high quartile.

The review of personality disorders identified 629 studies, of which 168 were examined closely. Many of these focused on a single personality disorder and were excluded. More than 20 studies reported prevalence of all personality disorders together, but they included clinical samples, restricted age ranges, or assessments not meeting our criteria. Only five studies met our inclusion criteria, the lowest number in table 1, so we investigated the effect of relaxation of one or another of the criteria. We found that the prevalence rate was not much affected by these differences. Table 1 shows only the five studies meeting our inclusion criteria. The median prevalence based on these studies was 9.1 percent, with an interquartile range of 9.0–14.4 percent.

The review of schizophrenia was taken from the work of McGrath et al. (25) and was not updated. Of all the disorders presented, schizophrenia is the one for which prevalence is least likely to be underestimated because of reliance on data from medical records, and also the one for which the diagnosis by an interviewer without medical training is most suspect (26). Therefore, data from population-based medical reporting systems (registers) were included here. Since the diagnostic criteria for schizophrenia require a degree of chronicity (6 months), these studies include point prevalence as well as 1-year prevalence. There were 23 relevant studies, and the median prevalence was 0.5 percent. The interquartile range for schizophrenia prevalences was the smallest in table 1: 0.3–0.6 percent.

The review of bipolar disorder built upon the review of Waraich et al. (22), who searched for studies from 1980 through 2000, finding 12 that met their criteria. We located five studies published later than 2004 that are included in this review. Studies that included bipolar II diagnoses, that is, not presenting data specifically for bipolar I disorder, were excluded. As with schizophrenia, bipolar disorder is difficult to diagnose without a medically trained examiner, but there were so few reports based on register systems that we decided to include population-based survey studies as long as they used a standardized structured interview. The median prevalence was 0.6 percent, with a relatively small interquartile range of 0.3–1.1 percent.

The review of the prevalence of dementia built upon earlier work by Ferri et al. (27), with supplementary data available on the World Wide Web (http://www.alz.co.uk/research/consensus.html). Only those studies that made diagnoses based on an international and documented operational system (i.e., *Diagnostic and Statistical Manual of Mental Disorders* or the *International Classification of Diseases*) were included. We required that studies of dementia be focused on the elderly, defined here as older than 60 years of age (six studies focused on persons aged >60 years, with the remainder focusing on persons aged >65 years) and that the study report an overall prevalence rate for both sexes and all ages combined. The studies varied as to the number of stages required to reach a diagnosis (from one to three). For this disorder only, the definition of “general population” was expanded to include institutional populations, since, in Japan, Europe, and the United States, many of the elderly live in institutional communities. The review by Ferri et al. included reports from two systematic reviews of 12 (28) and 11 (29) studies in Europe. The studies included in these reviews could not be identified separately, and thus the results shown in table 1 potentially underestimate European studies and the variation in studies generally. The median prevalence was 5.4 percent of the population over the age of 60 years, with an interquartile range of 3.2–7.1 percent.

MORTALITY

We found many fewer studies of the risk of mortality associated with a history of a mental disorder (table 2), even though it has been a long-standing interest in psychiatry (30–33). We were unable to find any credible estimates for the association of mortality with social phobia or simple phobia. Three of the four studies of panic disorder and mortality, and both studies of obsessive-compulsive disorder and mortality, were from different sites and time periods of the Epidemiologic Catchment Area Program. These meager results for anxiety disorders may reflect a raised risk for some individuals and a lower risk for others, depending, for example, on age (34). The three studies that met our criteria for drug abuse or dependence and mortality (drawn from the Epidemiologic Catchment Area Program, as above) suggest a doubling of risk, and three independent studies of personality disorder suggest a quadrupling of risk of mortality.

For the study of major depressive disorder, the reviews of Saz and Dewey (35) and of Wulsin et al. (36) were used. The search terms “mortality” and “depressive disorder” and “population” were entered into PubMed, yielding 282 articles. Many articles were eliminated because they focused on a specific cause of death, many others were excluded because they used screening scales or symptom counts without referring to a diagnosis, and a third large group was eliminated because they included only those persons under treatment for major depressive disorder. Five articles in the review of Saz and Dewey met our criteria, and nine were added from the results of the literature search. Our review indicated that depressive disorder raises the risk of all-cause mortality by about 70 percent, with an interquartile range of relative risks of 1.3–2.2.

For alcohol use disorder, 913 titles were generated by the search terms, and 148 were examined closely. Many studies were eliminated because they included only those persons under treatment for alcohol abuse/dependence. Only seven of these studies met the above criteria. Mortality relative risk rates ranged from 1.4 in the United States to 3.3 in Norway. Two of the seven studies were conducted outside the United States (i.e., in France and Norway), and both were in the high quartile.

Population-based studies focusing on mortality among individuals with drug use disorders are almost nonexistent. For drug use disorder, the search yielded 610 titles, but most were eliminated because they included only those persons under treatment for drug abuse/dependence. Two studies met our criteria, and both were from the United States (mortality relative risks of 1.6 and 2.3).

For the study of schizophrenia, the review of McGrath et al. was used (25). The median relative risk in 38 studies was 2.6.

For bipolar disorder, we found no population-based survey studies of mortality, so we included three studies from population-based registers. The median relative risk for the three was 2.6.

For the study of mortality related to dementia, 15 studies were selected from the review of Dewey and Saz (37), and four later studies (one with two sites) were added. Many studies were eliminated because they did not report the relative odds or standardized mortality ratio for the total sample over 65 years of age. Others were excluded because they did not diagnose according to operational criteria. The median relative risk for mortality associated with dementia was 2.7.

DISABILITY AND COSTS

Schizophrenia and bipolar disorder have the highest disability ratings according to the methodology of the GBD Study (0.53 and 0.40, respectively), and bipolar disorder also includes 83 percent with severe disability on one or more of the four areas in the SDS. It is difficult to imagine what the results would be if the SDS methodology had been applied to persons meeting criteria for schizophrenia, since they may lack insight into their condition. Major depressive disorder is next in both the GBD (rating of 0.35 for the "moderate" form) and SDS (58 percent reporting severe disability) method. Thus, major depressive disorder compares roughly with multiple sclerosis (0.41) or deafness (0.33) in the GBD rating. Major depressive disorder in the so-called severe form has a rating of 0.62, identical to that for blindness. Panic disorder and obsessive-compulsive disorder reveal moderately high disability according to the SDS methods but not according to the GBD method (0.17 for panic disorder, 0.13 for obsessive-compulsive disorder compared with a rating of 0.21 for rheumatoid arthritis). The SDS measures contrast with the disability weights used in the GBD studies presumably because the GBD disability weights are ratings by others, whereas the SDS ratings are from the individual. For example, panic disorder may be quite impairing from the point of view of the individual (47 percent with severe impairment on the SDS) but not be disabling and socially disruptive in the way that bipolar disorder (GBD rating of 0.40) or schizophrenia (0.53) is. Other measures of burden, such as self-assessed distress, might yield different ranks. For example, obsessive-compulsive disorder, with a relatively low GBD rating but a high SDS percentage, might be highly distressing to the individual but less impairing and socially disruptive compared with these other measures, and this difference would have been revealed if we had been able to find and include a parallel set of measures for this aspect of burden.

The cost estimates in our review are based on single studies, in many cases the only study of costs available for that disorder. The estimates reveal considerable variation across disorders, from $11 billion per year for simple phobia to more than $200 billion per year for alcohol use disorders or drug use disorders. These estimates are composed of direct and indirect costs. The direct costs are mostly treatment costs, and only a minority of individuals with the disorders reviewed received treatment (with the possible exception of severe disorders such as schizophrenia). The only study of personality disorders (38) estimated costs for personality disorders in treatment, but, since we had no estimate of the percentage with this diagnosis who need treatment or could benefit from it, we did not include the results in table 3 (which would be $446 billion per year in the United States if every person with the disorder were to receive treatment). The indirect costs reflect all persons with the disorders, whether or not in treatment, and it is not clear whether treatment would be effective if applied to all cases of a disorder. The upshot of these considerations is that the cost estimates in table 3 may *underestimate the direct costs that would occur* if all persons with the disorder were to receive treatment but possibly *overestimate the indirect costs that would be saved* if all persons were treated. The cost estimates are from diverse sources, with a wide range of methodologies, involving numerous assumptions; and the number of estimates is limited. Therefore, they should be considered provisional.

The estimates for costs are complex functions of the prevalence and disability associated with the disorder, the costs of treatment, and the indirect costs. The lowest annual cost estimate in table 3 is for obsessive-compulsive disorder ($10.6 billion per year), which is associated with lower disability than other disorders and is also uncommon. The phobias have low associated disability but are slightly more common, yielding somewhat higher cost estimates ($15.7 billion for social phobia and $11.0 billion for simple phobia). Panic disorder is rare but has higher associated SDS severity, also with higher costs ($30.4 billion). For rare disorders such as schizophrenia and bipolar disorder, the costs for a single year in the United States are $70 billion or more, presumably because of the high associated disability. Major depressive

disorder has high costs that result from its relatively high prevalence and the moderate-to-severe level of disability associated with it. The surprising numbers in table 3 are the costs associated with alcohol and drug disorders, both taken from a single study funded by the US government (39). The three externalizing disorders (drug and alcohol disorders (table 3) and personality disorders (discussed above but not shown in table 3) involve costs to others and to society that are smaller or do not exist for the other conditions.

DISCUSSION

As a group, mental disorders have a high prevalence, in general, compared with many other health conditions. Even schizophrenia and bipolar disorder, with the lowest prevalences among the disorders considered here (i.e., <1 percent), have a higher prevalence than many other diseases and health conditions. These relatively less common disorders have high associated impairment. These two disorders might be termed the "less common and severe mental disorders." Three other disorders—panic disorder, obsessive-compulsive disorder, and drug abuse or dependence—also have a median prevalence of less than 2 percent and might thus be considered "less common." Of these three, drug abuse and/or dependence has nontrivial consequences, including a GBD disability weight of 0.25, a median relative risk of mortality of 2.0, and an estimated annual cost of over $200 billion. Major depressive disorder, the phobias, and alcohol abuse or dependence have median prevalence rates of more than 5 percent and are the "common" mental disorders. Major depressive disorder stands apart from these because of its high associated impairment, either by the GBD rating or the percentage with extreme disability on the SDS scale, which explains its place in the GBD Study as the mental disorder claiming the highest percentage of disability-adjusted life years. A surprise in these comparative results is the high median prevalence of personality disorder, at more than 9 percent, as well as the high associated mortality risk, with a median relative odds of 4.0.

The comparative data reveal stark gaps in the research literature, in that there are almost no data at all concerning mortality risk for obsessive-compulsive disorder or for simple or social phobia and only two known studies on mortality associated with panic disorder, drug abuse or dependence, or personality disorder. The relatively high prevalence of personality disorder contrasts with the scarcity of data on its prevalence, associated mortality, and cost.

Almost all of the studies included in tables 1 and 2 were conducted during the so-called third generation of psychiatric epidemiologic research, which was inaugurated with the National Institute of Mental Health Epidemiologic Catchment Area Program (6,7) and includes a number of studies using similar methodologies around the world (e.g., Bland et al. (40)), including an entire separate body of work following the National Comorbidity Survey (41), with additional recent results of many national surveys from the World Mental Health 2000 Study (42,43) included in table 1. This feature of the review results from the requirement for structured diagnostic interviews such as the Diagnostic Interview Schedule (44) and its descendants, including the Composite International Diagnostic Interview Schedule (45). These and other similar instruments are reliable but connect only moderately well to the results of a psychiatric interview (13,46). However, they are the only alternatives for population-based studies in the field of psychiatric epidemiology in which such a large percentage of cases do not seek or obtain treatment.

In 1996 it was reported, with respect to the GBD Study, that "our understanding of the descriptive epidemiology of many, if not most, conditions is not advanced" (9, p. 42). Have we remedied that situation, at least with respect to the psychiatric conditions? Can we possibly conclude that the third generation of research is complete, since there now is such a strong body of global research on the prevalence of mental disorders? While the prevalence of mental disorders has been well studied, this review shows that data on the simplest aspect of disability

—death—is limited or nonexistent for many disorders. Even keeping within the confines of purely descriptive epidemiology, there are meager results from population-based research concerning the natural history of disorders, such as incidence and symptomatic course, not considered in this review, even though these indicators of the population dynamics of mental disorders are vital to understanding the burden of disease and the implications of various types of prevention strategies. The papers in this issue of *Epidemiologic Reviews* display a range of research with considerable breadth and depth in analytic and experimental epidemiology, moving considerably beyond counting cases. The existence of this issue of *Epidemiologic Reviews*—the second devoted to psychiatric disorders (47)—is evidence of maturity in the field of psychiatric epidemiology. Perhaps the era of "generations" is complete, in that the field of psychiatry has successfully been integrated into the field of epidemiology—something that had not happened as of 1981 when the Epidemiologic Catchment Area was started. Even with these signs of progress, however, much remains to be done.

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Abbreviations

CPES
: Collaborative Psychiatric Epidemiology Surveys

GBD
: Global Burden of Disease

SDS
: Sheehan Disability Scale

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TABLE 1

Prevalence of mental disorders* in adults in the 12 months prior to interview

Mental disorder	Median 1-year prevalence	Interquartile range	No. of studies found	No. of studies included
Panic disorder	0.9	0.6–1.9	486	33
Social phobia	2.8	1.1–5.8	296	30
Simple phobia	4.8	3.5–7.3	296	25
Major depressive disorder	5.3	3.6–6.5	3,935	42
Obsessive-compulsive disorder	1.0	0.6–2.0	293	19
Drug abuse/dependence	1.8	1.1–2.7	1,417	11
Alcohol abuse/dependence	5.9	5.2–8.1	1,646	14
Personality disorders	9.1	9.0–14.4	620	5
Schizophrenia	0.5	0.3–0.6	2,637	23
Bipolar disorder	0.6	0.3–1.1	865	16
Dementia (age >65 years)	5.4	3.2–7.1	2,979	25

* The following reference numbers in parentheses indicate the source of the information for the disorders listed: panic disorder (16,48–77); social phobia (16,49,51–55,57–62,64,68–76,78–84); simple phobia (16,49,51–54,57,59–62,64,66–68,79,82,85); major depressive disorder (21,48–53,59,61,62,66,69–77,79,86–102); obsessive-compulsive disorder (16,48,50,53,67,89,103–114); drug abuse/dependence (16,51,53,54,56,87,89,115–118); alcohol abuse/dependence (16,51,53,54,56,87,89,115,118–123); personality disorders (124–128); schizophrenia (25) (point prevalence studies); bipolar disorder (48–53,66,72,77,79,86–88,129); dementia (29,130–152).

TABLE 2

All-cause mortality associated with mental disorders* compared with that in a general population sample without the disorder

Mental disorder	Median relative risk	Interquartile range	No. of studies found	No. of studies included
Panic disorder	1.9	0.8–3.2	77	4
Social phobia	NA†	NA	28	NA
Simple phobia	NA	NA	28	NA
Major depressive disorder	1.7	1.3–2.2	282	14
Obsessive-compulsive disorder	1.1	1.1–1.7	26	2
Drug abuse/dependence	2.0	1.6–2.1	610	2
Alcohol abuse/dependence	1.8	1.5–2.0	913	7
Personality disorders	4.0	2.8–5.2	111	2
Schizophrenia	2.6	1.9–3.6	832	38
Bipolar disorder	2.6	1.9–9.8	320	3
Dementia (age >60 years)	2.7	2.0–3.0	2,333	20

*The following reference numbers in parentheses indicate the source of the information for the disorders listed: panic disorder (153–156); major depressive disorder (153–155,157–167); obsessive-compulsive disorder (153,154); drug abuse/dependence (153,155); alcohol abuse/dependence (153–155,168–171); personality disorders (172,173); schizophrenia (25); bipolar disorder (174–176); dementia (29,133,177–192).

†NA, no sources available.

TABLE 3

Disability and cost associated with mental disorders

Mental disorder	GBD disability weight*	CPES % severe SDS disability†	Cost‡ per annum in US dollars (billions)
Panic disorder	0.17	47	30.4
Social phobia	NA§	36	15.7
Simple phobia	NA	19	11.0
Major depressive disorder	0.35¶	58	97.3
Obsessive-compulsive disorder	0.13	47	10.6
Drug abuse/dependence	0.25	39#	201.6
Alcohol abuse/dependence	0.16¶	14#	226.0
Personality disorders	NA	NA	NA
Schizophrenia	0.53¶	NA	70.0
Bipolar disorder	0.40¶	83	78.6
Dementia (age >65 years)	NA	NA	76.0

*Global Burden of Disease (GBD) disability weights from Murray and Lopez (9), annex table 3, untreated form, age group 15–44 years.

†Percentage with marked or extremely severe impairment according to the Sheehan Disability Scale (SDS), as used in the Collaborative Psychiatric Epidemiologic Surveys (CPES). The SDS estimate for bipolar disorder was based on the most severe of the SDS rating for depression and mania. Bipolar disorder and its SDS estimate were present in the National Comorbidity Survey Replication (NCS-R) and National Survey of American Life (NSAL) components of the CPES. Obsessive-compulsive disorder and simple phobia and their SDS estimates were present in only the NCS-R component of the CPES.

‡Cost estimates taken directly from US sources (reference number) for the disorders listed: major depressive disorder (193); drug abuse/dependence (39); alcohol abuse/dependence (39); schizophrenia (194); bipolar disorder (195). Cost estimates extrapolated from studies not conducted in the United States: panic disorder (196); social phobia (197); simple phobia (197); obsessive-compulsive disorder (198); personality disorders (38); dementia (199).

§NA, not applicable.

¶Disability weights from Mathers et al. (200); depression level is “moderate.”

#Dependence only.