Review

Economic Impacts of Anxiety Disorders

By Ernst R. Berndt, PhD
and Tamar Sisitsky, MA

KEY WORDS

anxiety disorders, economic burden, direct costs, indirect costs

ABSTRACT

This article reviews recent assessments of the economic burden of anxiety disorders, the most common of the mental disorders. It summarizes several recent studies estimating direct and indirect costs associated with anxiety disorders, and discusses reasons why those estimates likely understate the true burden of illness. It also distinguishes among the subtypes of anxiety disorders and evaluates them in terms of their relative contributions to the total costs. The final portion of the review suggests that greater awareness, recognition, and treatment of anxiety disorders could have significant implications for reducing the unnecessary and avoidable costs that anxiety disorders impose on our economy and society. Mental Fitness. *2003;2(4):32-36*

BACKGROUND

Epidemiological studies initiated in the 1980s and 1990s have reported that about 30% of the US population aged 15 to 54 experienced at least 1 psychiatric disorder, with more than one third having an anxiety disorder alone, and another quarter having an anxiety disorder in conjunction with at least 1 other form of psychiatric disorder.[1] Applied to the US population in 2000, these prevalence proportions imply that in 2000, approximately 48 million individuals were affected by at least 1 psychiatric disorder, including 17 million people having an anxiety disorder alone, and almost 13 million having an anxiety disorder in conjunction with at least 1 other psychiatric disorder.

Although there are inherent difficulties in developing quantitative estimates of the economic burden of illnesses, particularly when they frequently occur comorbidly with other psychiatric and medical disorders, it has been estimated that in 1990, the economic burden of anxiety was approximately $42.3 billion;[2] updated to 2002 dollars, this amounts to approximately $73.6 billion. These figures are comparable to estimates of the economic burden of depression;[2,21] however, they likely understate the true burden, because anxiety disorders are associated with other long-term adverse outcomes that are difficult to evaluate and quantify. Anxiety disorders as a group are the most common of the mental disorders, accounting for an even greater proportion of mental illness than the depressive disorders.

This article reviews recent assessments of the economic burden of anxiety disorders in the US. It aims to: (1) summarize several recent studies estimating direct and indirect costs associated with the anxiety disorders; and (2) evaluate the subtypes of anxiety disorders, and various cost categories, in terms of their relative contributions to the total costs. The final portion of the review argues that greater awareness, recognition, and treatment of anxiety disorders could have significant implications for reducing the unnecessary and avoidable costs that anxiety disorders impose on our economy and society.

TYPES OF ANXIETY DISORDERS

The term anxiety disorders refers to a collection of related forms of mental illness characterized by symptoms of anxiety and avoidance behaviors. These include social phobia, posttraumatic stress disorder (PTSD), generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), panic disorder with or without agoraphobia, and also simple phobias. Although collectively known as anxiety disorders, the various types have been distinguished by clinical criteria as set out in the *Diagnostic and Statistical*

Dr. Berndt is Louis B. Seley professor of applied economics at the Massachusetts Institute of Technology, Sloan School of Management. Ms. Sisitsky is a vice president with Analysis Group, an economic, financial, and strategic consulting firm in Boston, MA.

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Manual of Mental Disorders, Fourth Edition (*DSM-IV*).[3] Some major distinctions among the anxiety disorder subtypes, as outlined in the *DSM-IV*, have been summarized by Grudzinski.[4]

Social phobia, also known as social anxiety disorder, can be characterized in broad terms as the occurrence of anxiety responses brought on by the persistent fear of social or performance situations, as well as the avoidance of these situations.

Although also characterized by intense anxiety and fear, PTSD is manifestly different from the other anxiety disorders. Its cause can be linked directly to exposure to a specific traumatic experience with the response of fear, helplessness and/or horror resulting from actual or threatened death or serious injury to the person or to others. PTSD patients repeatedly reexperience the traumatic event through dreams, memories and/or flashbacks. They also manifest symptoms of distinctive and persistent avoidance and numbing, and display symptoms of hyperarousal.

GAD is primarily characterized by the more frequent presence than absence of excessive anxiety and worry about events or activities over a period of 6 months or more, adversely affecting the life of the patient. This anxiety or worry is generally manifested by the presence of at least 3 of 6 specific physiological and psychological symptoms associated with the disorder. The anxiety is above and beyond what the situation would warrant.

OCD is characterized by recurrent and unwanted obsessions that provoke anxiety and/or repetitive compulsions or behavior that are performed to alleviate the anxiety resulting from the obsession.

Panic disorder is characterized by the presence of repeated panic attacks that occur spontaneously and quickly peak. They are generally accompanied by 4 or more of a set of specific symptoms including, but not limited to, palpitations or accelerated heart rate, sweating, trembling or shaking, chest pain or discomfort, fear of losing control, and chills or hot flashes. These attacks are generally followed by persistent concern or worry about the attacks, or attempts to avoid places or things that may initiate an attack. Panic disorder is commonly mistaken by primary care physicians as a general medical condition, such as angina, myocardial infarction, pneumonia, etc.

Although each of these disorders is treatable, one of the principal obstacles to effective therapy is the lack of recognition of these disorders among primary care physicians and other healthcare providers. This is particularly significant, as several of these disorders, most notably panic disorder and PTSD, frequently result in high levels of medical help-seeking behavior, generally in a primary care setting.[5-17] Health services researchers and health economists have identified patients with these disorders as frequent utilizers of general medical and emergency room care, and this combination of lack of recognition and continued high utilization of medical resources contributes to the observed high direct medical costs of these diseases.[12-17]

THE ECONOMIC COSTS OF ANXIETY DISORDERS

Two types of economic costs—direct and indirect—have been estimated in the recent literature.[2,18-20] Direct economic costs include psychiatric treatment costs (eg, counseling, pharmacotherapy, hospitalization), and nonpsychiatric medical costs (eg, emergency room treatment services, laboratory tests). Indirect economic costs include the costs to society of anxiety-related suicide, as well as workplace costs stemming from excess absenteeism (eg, sufferers of anxiety disorders who cannot work; they may either take time off to receive treatment, or to stay at home) and reduced at-work productivity due to anxiety problems ("presenteeism").

Estimated annual direct and indirect economic costs of anxiety disorders in the US, drawn from a study by Greenberg et al,[2] are summarized in Table 1. Although expressed in billions of 2002 dollars, these cost estimates were based on a consideration of all individuals from anxiety in 1990, regardless of when or even whether they were diagnosed. The estimates, therefore, reflect a blended average of costs over diverse groups of people with anxiety; for example, individuals who have experienced anxiety for many years may have taken more time off from work than those who developed the illness more recently. These cost estimates include both treated and untreated, diagnosed and undiagnosed individuals, as well as the employed and unemployed.

As shown in Table 1, the total annual economic cost of anxiety disorders in the US, expressed in 2002 dollars, is $73.6 billion. This is slightly larger than the Greenberg et al[21] estimates for depression, which, when updated by Keller and Berndt[22] to 2001 dollars, were estimated to be $66.2 billion. In contrast to depression, however, the 2 largest cost components of anxiety were direct in nature: nonpsychiatric medical treatment costs, accounting for 56% of the total; and psychiatric treatment costs (not including prescription drug costs), responsible for another 32%. Indirect workplace costs, the third largest cost component, accounted for only 8% of total costs, with premature

ESTIMATED ANNUAL ECONOMIC COSTS OF ANXIETY DISORDERS IN THE US

TABLE 1

TYPE OF COST	COST (IN BILLIONS $ 2002)	DISTRIBUTION (%)
NONPSYCHIATRIC MEDICAL TREATMENT	41.0	56
PSYCHIATRIC TREATMENT	23.6	32
INDIRECT WORKPLACE	6.0	8
MORTALITY	1.7	2
PRESCRIPTION PHARMACEUTICALS	1.3	2
TOTAL	73.6	100

Source: Adapted from Greenberg PE, Sisitsky T, Kessler RC, et al. The economic burden of anxiety disorders in the 1990s. *J Clin Psychiatry*. 1999;60:427-435 (Table 3, converted to $ 2002).[2]

mortality comprising another 2%. Prescription pharmaceuticals contributed 2% to total economic costs.

Among the workplace costs, 88% was attributable to lost productivity at work ("presenteeism"), and only 12% to excess absenteeism. This reflected the finding that those with anxiety disorders were more likely (and more frequently) to be negatively affected by their emotional problems than were their nonanxious counterparts. Moreover, although anxious and nonanxious workers had the same probability of taking time off from work due to their emotional problems, anxious workers tended to take more days off than their nonanxious employees.

Notably, the economic costs of anxiety are quite different in composition from those of depression. For depression, as reported in Greenberg et al,[21] only about 28% of the estimated total burden was attributable to direct medical costs, while premature mortality accounted for 17%. In addition, for depression both excessive absenteeism (27%) and decreased at-work productivity (28%) comprised a very substantial share of the illness burden.

In terms of direct medical costs, Greenberg et al[2] found that compared with nonanxious individuals, those with anxiety disorders were more likely to seek both psychiatric and nonpsychiatric treatment, in both inpatient and outpatient settings. Moreover, patients with anxiety disorders were more likely to seek care from providers of general medical care and emergency services rather than providers of specialized psychiatric care. These findings of greater health care utilization, and the preponderance of greater nonpsychiatric care, mirror those reported elsewhere.[10,11,12,16,17]

Greenberg et al[2] also evaluated 6 subtypes of anxiety disorders in terms of their relative contributions to the overall costs of anxiety disorders. These subtypes were PTSD, panic disorder, agoraphobia, GAD, social phobia, and simple phobia. The study found that PTSD and panic disorder were the primary cost drivers with respect to direct and indirect costs of anxiety disorders. PTSD and panic disorder were associated with the highest rates of psychiatric service usage; and, with the exception of simple phobia, all anxiety disorder subtypes were associated with suboptimal workplace performance.

In a different study involving 2,222 persons (95% female) employed as claims processors by a company at multiple sites nationwide, Berndt et al[15] examined the workplace performance and medical care utilization of employees diagnosed with and treated for various illnesses, including anxiety disorders. Among employees with anxiety disorders, 51% had a comorbid mental disorder, with depression being most common (36%). The study found that employees with either anxiety disorder only or anxiety disorder plus one or more mental health comorbidities not only exhibited no difference in annualized absentee days when compared with a group with no mental disorders, but also, somewhat surprisingly, exhibited no difference in average daily productivity when at

work. This latter finding could reflect the fact that those with anxiety disorders had already sorted themselves into an occupation and employment situation in which they performed, on average, the same as other employees, and/or that they were receiving effective medical treatment for their mental disorder that allowed them to function acceptably while at work.

In terms of direct medical costs, annual per capita medical costs of anxiety disorders from the same study,[15] expressed in 1995 dollars, are summarized in Table 2. These costs are broken down into various cost categories (inpatient, outpatient, and prescription pharmaceuticals) and diagnostic categories (ie, separately for those diagnosed/treated for selected anxiety disorders [panic disorders, GAD, OCD, phobic disorders and other], PTSD and other adjustment reaction disorders, and no mental disorders). Several findings merit discussion.

First, for all 3 cost categories (inpatient, outpatient, and prescription drugs), costs per employee were 2.5-3.5 times higher for employees with anxiety disorders, particularly those treated for PTSD and other adjustment reaction disorders, than for those not treated/diagnosed with any mental disorder. Second, outpatient costs comprise the largest cost category for each of the 3 groups, accounting for 48% to 54% of total direct medical costs. Although the level of inpatient costs is higher for PTSD than for the other anxiety disorders group ($2,982 versus $2,665), the inpatient cost share is slightly smaller (43% versus 45%). Prescription drugs account for 6% to 7% of direct medical costs for all 3 groups.

Direct medical costs were also decomposed into treatments for mental disorders and all other disorders (similar to psychiatric and non-psychiatric treatment costs). As in the Greenberg et al study,[2] Berndt et al[15] found that for individuals with anxiety disorders, direct costs related to treatment of nonpsychiatric conditions dominated over costs related to treatment of mental disorders (73% versus 27%, respectively, in Berndt et al study; and 64% versus 36%, respectively, in Greenberg et al study). Among the factors contributing to nonpsychiatric disorder costs, Berndt et al report that employees with anxiety disorders had more emergency room claims involving injury and poisoning, neoplasms, and circulatory system complaints, as well as greater number of other outpatient diagnostic claims involving the digestive system, skin disorders, musculoskeletal and connective tissue systems, and other ill-defined symptoms.

DISCUSSION

Recent published estimates of the level and composition of the economic costs of anxiety disorders imply that the burden is large (even slightly larger than that

AVERAGE ANNUAL DIRECT MEDICAL COSTS PER EMPLOYEE AT NATIONAL FIRM BY COST AND DIAGNOSTIC CATEGORY ($1995)

TABLE 2

COST CATEGORY	ANXIETY DISORDERS* COST	ANXIETY DISORDERS* PERCENT	PTSD AND OTHER ADJUSTMENT REACTION DISORDERS COST	PTSD AND OTHER ADJUSTMENT REACTION DISORDERS PERCENT	NO MENTAL DISORDER COST	NO MENTAL DISORDER PERCENT
INPATIENT	$2,665	45	$2,982	43	$ 851	40
OUTPATIENT	$2,853	48	$3,566	51	$1,150	54
PRESCRIPTION DRUGS	$ 429	7	$ 382	6	$ 134	6
TOTAL	$5,947	100	$6,930	100	$2,135	100

*Includes panic disorder, generalized anxiety disorder, phobic disorder, and other anxiety disorders.

PTSD=posttraumatic stress disorder.

Source: Adapted from Berndt ER, Bailit HL, Keller MB, et al. Health care use and at-work productivity among employees with mental disorders. *Health Affairs.* 2000;19(4):244-256 (Exhibit 2).[15]

for depression), it consists primarily of increased direct medical costs rather than indirect workplace—or mortality-related costs, and that the direct medical cost excess burden is primarily related to nonpsychiatric care. Though already large, these estimated costs likely understate true costs, for a number of reasons. First, not only are anxiety disorders chronic illnesses, but their median age of onset is reported to be less than 15 years.[20] The impairment and decreased ability to function associated with early-onset anxiety disorders are likely to negatively impact educational attainment and choice of occupation.[20] Berndt et al[23] report a reduction in college graduation rates among individuals with depression, which according to Russell et al[24] is reduced even further for patients presenting with concurrent anxiety disorders at trial baseline. Estimates of the economic costs related to anxiety disorders reported in this review do not capture long-term societal costs involving educational attainment and occupational choice.

Second, the economic costs evaluated in the burden-of-illness studies of anxiety disorders reviewed here do not incorporate reductions in the quality of life of patients with anxiety disorders or their caregivers and loved ones. Because the age of onset for anxiety is frequently in adolescence, and because anxiety disorders are chronic, these nonquantifiable but real costs of anxiety could be very large.

Third, as reported by, among others, Kessler and Greenberg,[20] there is growing evidence that the prevalence of anxiety disorders has been increasing over the past several decades. If this is true, studies such as those by Greenberg et al[2] that are based on 1990-1992 prevalence data could understate current prevalence rates and, therefore, societal costs.

REDUCING THE BURDEN OF ANXIETY

Estimates suggest that only about 27% of those with anxiety disorders typically receive treatment.[2,4,20] Health care treatment investments geared toward more targeted diagnoses and early treatment of these illnesses, although potentially costly in the short run, are likely to lead to substantial savings in the long run. Such savings relate both to direct (eg, nonpsychiatric medical) and indirect (eg, workplace-related) costs, as well as other costs (eg, comorbidities, excess unemployment and underemployment). Early diagnosis and treatment are particularly warranted because anxiety disorders tend to commence at a young age, are highly chronic, and have been increasing in prevalence over the past several decades. MF

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