The Economic Burden of Depression With Painful Symptoms

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The economic burden of depression is substantial. The condition is highly prevalent, with both psychiatric and physical symptoms that often inflict pain. The chronic and often debilitating nature of depression results in costly medical therapies, as well as impaired workplace productivity. As a result, the overall economic burden of depression is comparable to that of serious physical illnesses, such as cancer and heart disease. This article presents an overview of the economic burden of depression and provides background on the relationship between depression and pain in this context. Research findings are also presented on the economic burden associated with a particular manifestation of pain among depressed patients, fibromyalgia. When painful physical symptoms accompany the already debilitating psychiatric and behavioral symptoms of depression, the economic burden that ensues for patients and their employers increases considerably. On purely economic grounds, more aggressive outreach may be warranted for patients with depression and comorbid pain to initiate treatment before symptoms are allowed to persist. However, more research is needed to assess the comprehensive economic impact that depression with painful physical symptoms can have on society.

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The economic burden of depression is substantial and rivals that of serious physical illnesses.[1–3] Contributing to the economic burden of depression are the high prevalence rate and chronic, debilitating nature of the condition. Major depression is one of the most prevalent psychiatric conditions on an annual basis (10.3%), with a lifetime prevalence rate of 17.1%.[4] The condition also has a relatively young age at onset (i.e., early adulthood) as compared with that of equally debilitating physical conditions. The symptoms of depression are psychiatric (e.g., anxiety/nervousness and reduced concentration), behavioral (e.g., social withdrawal and crying spells), and physical (e.g., pain, headaches, and insomnia).[5] Over time, many of the symptoms of depression can be debilitating in nature and impact both the patient's medical treatment patterns and workplace productivity.

Indeed, the psychiatric and physical impairments associated with depression generate a significant cost burden of depression not only for sufferers, but also for their employers, third-party payers, caregivers, and society in general. For example, in 1990, the economic burden of depression in the United States was estimated between $43.7 billion and $52.9 billion, based on the costs of depression treatment, lost earnings due to suicides, and workplace absenteeism and presenteeism.[2,3] More than 50% of these costs were found to be borne by employers in the form of lost workplace productivity. While the impact on employers is substantial, these estimates are not a complete picture of true cost of depression. Excluded are the excess costs of treating comorbid medical conditions, caregivers' cost burden, and the value of other societal costs, such as the burden of depression-related failure to complete high school and subsequent increased likelihood of divorce in first marriage.[6–8]

Many people with depression fail to receive specific treatment for their condition. A 1999 study based on the National Comorbidity Survey found that, in 1990, only 27.7% of major depression sufferers received any type of outpatient health care treatment for their depression during a 12-month period.[9] While it is generally anticipated that the rate of treatment among depressed individuals is currently increasing as depression awareness and outreach improve, there are a number of reasons why the treatment rate of depression remains low. Depressed individuals often do not realize that they need treatment, deny their need for treatment due to the stigmatization of having a psychiatric disorder, or believe that treatment would not

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be effective in their case.[10,11] Those who do seek medical care often see a primary care physician, who is more likely to diagnose and treat the patient's physical symptoms (e.g., pain or insomnia) than his or her underlying depression.[12,13] As suggested above and substantiated by the pattern of depression treatment, studies of the burden of depression that exclude the costs of treating comorbid conditions, including the somatic symptoms of depression, vastly understate the true cost of depression.

A number of common medical conditions are often comorbid with depression. In fact, there is evidence that patients with chronic illnesses are at higher risk for depression than the average individual and depressed patients exhibit substantially higher rates of comorbid chronic medical conditions than do average individuals.[5] For example, patients with diabetes, hyperthyroidism and hypothyroidism, and Addison's disease are often found to experience comorbid depression.[14,15] Similarly, depression sufferers are more likely to experience comorbid arthritis, hypertension, back pain, and heart problems.[5,16]

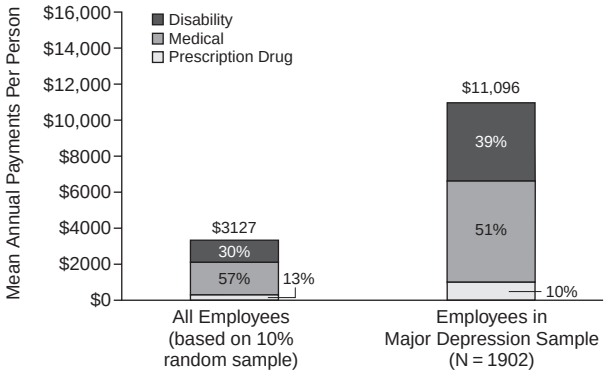
In a number of cases, the conditions comorbid with depression are associated with painful physical symptoms, while others are not. A recent telephone survey conducted in Europe found that 43.4% of major depression sufferers also experience 1 or more painful physical conditions and 32.7% also experience a nonpainful medical condition.[17] These figures each account for the 14.5% of depressed individuals who experience both painful and nonpainful comorbid conditions. Fewer than 40% of major depression sufferers experience no comorbid conditions. The primary focus of this article is the economic burden of depression with painful physical symptoms. In the next section, we present a general overview of the economic burden of depression as it is understood today and then provide background on the relationship between depression and pain. Finally, we present the economic cost burdens associated with distinct manifestations of depression and painful physical symptoms, including, in particular, depression and fibromyalgia. Although the economic burden of depression varies by age and gender, these additional factors are beyond the scope of this article.

ECONOMIC BURDEN OF DEPRESSION

Aggregate Cost Estimates

In early cost-of-illness studies, the burden of depression was often assessed together with that of all other mental illnesses. Two of the earliest cost-of-illness studies by Rice[18,19] included a measure of the cost of mental illnesses, with a focus on the costs of treatment, workplace disability (i.e., morbidity costs), and premature death (i.e., mortality costs). Stoudemire et al.[20] presented the first systematic analysis of the economic burden of major depression in 1986. The study indicated that, in 1980 in the United States, the economic burden of major depression was in excess of $16 billion per year and comprised $2 billion in annual direct costs, $4 billion in annual mortality costs, and $10 billion in annual morbidity costs due to lost productivity. Greenberg et al.[2,3] estimated that the annual cost of depression in the United States totaled between $43.7 billion and $52.9 billion in 1990. Between 24% and 28% of these costs were direct costs of treating depression, while 14% to 17% were mortality costs and 55% to 62% were workplace morbidity costs. Adjusted for inflation, this annual estimate would be close to $70 billion today, comparable to that of many prominent physical disorders.

Figure 1. 1997 Economic Burden of Major Depression to an Employer[a]

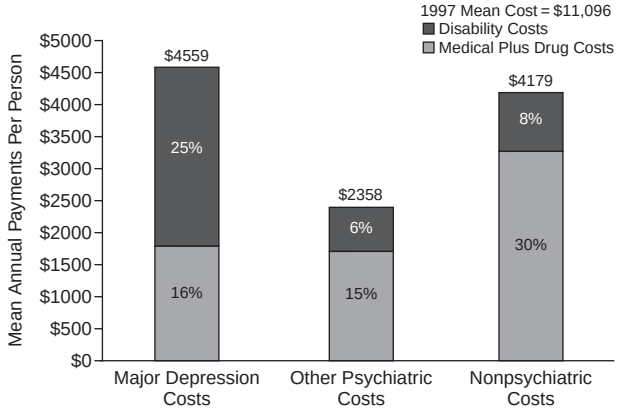


[a]Data from Birnbaum et al.[21] Major depression patients were identified based on at least 1 claim for depression in 1997 (ICD-9 code 296.2 or 296.3).

Per-Patient Cost Estimates

More recent studies have disaggregated these estimates to highlight the per-patient costs associated with major depression. Unlike the previously described aggregate cost studies of depression, it is more common in these analyses of patients treated for depression to assess the excess costs of treating comorbid conditions based on statistical analyses of patient utilization of health care services and disability. Employer-based administrative claims databases are commonly used for these types of studies, as they provide detailed patient-level information on medical and prescription drug utilization costs, as well as the utilization and costs of workplace disability. Birnbaum et al.[21] used 1997 medical, pharmaceutical, and disability claims data from a national Fortune 100 company to estimate the annual cost of a patient treated for major depression. Figure 1 illustrates their findings showing that the average worker cost the employer a total of $3127 in 1997. In contrast, employees who were treated at least once for major depression cost the employer $11,096 per patient, or approximately 3.5 times more than the average employee. By separating both health care (i.e., medical and prescription drug) costs and reason for disability into 3 categories,

Figure 2. Components of the 1997 Economic Burden of Major Depression to an Employer[a]



[a]Data from Birnbaum et al.[21]

major depression, other psychiatric, and nonpsychiatric, Figure 2 shows the mean amounts spent by the employer per depressed patient. Forty-one percent of the company's expenditures on an employee with major depression were specifically due to the employee's depression, another 21% were attributable to other psychiatric conditions, and 38% were related to nonpsychiatric conditions, including many medical diagnoses that include symptoms overlapping with the painful physical symptoms of depression.

Sheehan[16] performed an analysis of 1995 to 1998 claims data from a different source to assess the economic impact of comorbid depression on common medical conditions. Specifically, Sheehan compared the per capita annual medical costs of treating patients with and without depression, who also suffered from 1 of the following: heart failure, allergic rhinitis, asthma, migraine, back pain, diabetes, hypertension, or ischemic heart disease. Sheehan found that comorbid depression increases the per-patient cost of treating these common medical conditions by approximately 200% to 400%, with comorbid depression affecting the costs of patients with ischemic heart disease the least and patients with migraine the most.

Workplace Costs

As illustrated by both the aggregate and per-patient cost studies, the debilitating nature of depression leads to substantial workplace costs. Moreover, by 2020, major depression is predicted to be second only to heart disease as a cause of worldwide disability.[22] Goldberg and Steury[23] found that while 17% to 21% of the workforce takes short-term disability in a year, 37% to 48% of the workforce with depression takes short-term disability in a year. The average length of disability and rate of relapse into disability are also greater among depressed patients than those in comparative medical groups.[24] Kessler et al.[25] report that depressed workers incurred between 1.5 and 3.2 more short-term work-disability days during a 30-day period than did other workers.

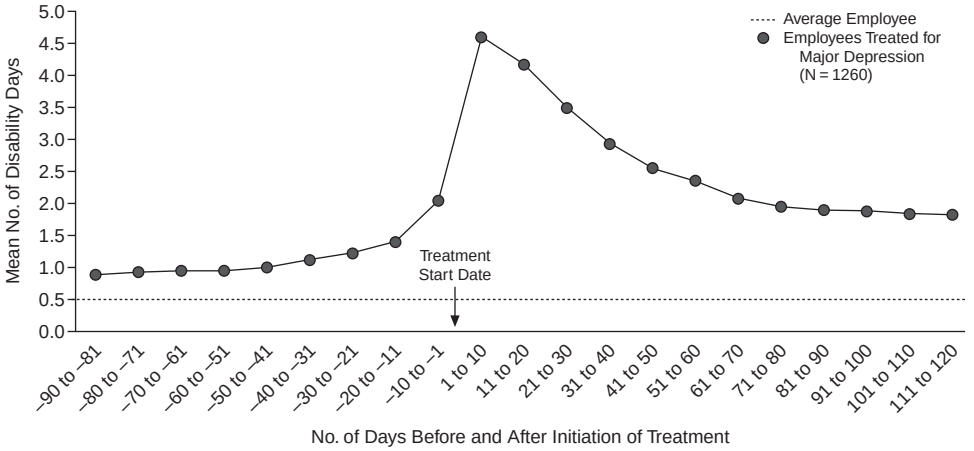
In another study, Birnbaum et al.[26] analyzed the patterns of workplace disability relative to treatment onset by using the medical, pharmaceutical, and disability claims of 1260 employees who had each filed at least 1 prior medical or disability claim for major depression from a national U.S. manufacturer (Figure 3). Their study results indicate that employees treated for major depression experienced slightly less than 1 disability day per 10-day observation window before their first treatment for major depression compared with 0.5 days for the average employee. Some of the disparity might have been due to the onset of physical symptoms prior to the manifestation of psychiatric and behavioral depression symptoms. Additionally, immediately prior to the first treatment for depression, there was a dramatic increase from 1.0 to 2.0 days missed per 10-day interval that was followed by a peak of more than 4.5 days, and then a fall to slightly under 2.0 days per 10-day interval after 3 months. While treated depression patients experienced substantial reductions in disability days, pre-depression levels were not regained. The researchers estimated that the decreased disability payments in the first 30 days following treatment resulted in employer savings that exceeded the comprehensive costs of treatment for a similar period of time.

A study by Claxton et al.[27] presented similar findings that depressed patients treated with selective serotonin reuptake inhibitors had a mean of approximately 3 work absenteeism days during the months prior to treatment, a peak at between 4 and 5 absenteeism days per month just prior to treatment, and a reduction back to pretreatment levels on average after commencing treatment. These results were compared with those of patients treated with tricyclic antidepressants, who experienced consistently higher absenteeism each month, both before and after treatment. These studies suggest on an economic basis that more aggressive outreach is warranted for employees with depression, to initiate treatment prior to the appearance of disabling symptoms.

DEPRESSION AND PAIN

As mentioned above, there are a number of conditions often comorbid with depression, some of which share the overlapping physical symptoms of pain. The relationship between depression and pain in terms of neurobiological, psychological, and behavioral associations has been well established.[28] Wells et al.[29] compared the level of pain experienced by patients with depressive symptoms and patients with 1 of 8 other chronic conditions, including hypertension, diabetes, advanced coronary artery disease, angina, arthritis, and gastrointestinal, lung, and back problems. They found that patients with depressive symptoms

Figure 3. Patterns of Work Disability Relative to Treatment Onset in Employees Treated for Major Depression[a]



[a]Data from Birnbaum et al.[26]

experienced significantly more bodily pain than patients suffering from hypertension, diabetes, advanced coronary artery disease, angina, or lung problems, although significantly less than arthritis sufferers.

The outcomes related to depression with comorbid pain have been a research focus in a number of studies. Findings show that patients with depression and comorbid pain experience more complaints of pain than those with pain only, and they are also more likely to suffer from persistent pain.[30–34] The perception of worse pain among those with depression and comorbid pain is also reflected in the fact that increased depressive symptoms in patients with low back pain increased health care utilization.[35] In particular, patients with more depressive symptoms were also more likely to seek primary care follow-up visits for back pain, back pain radiographs, and pain medication refills. Not surprisingly, comorbid depression and pain are also associated with reduced functionality, higher rates of disability, and more days in bed, as well as more hospitalizations.[30,31,36–38] Comorbid depression and pain are also associated with higher unemployment rates.[39–42] As a result, individuals suffering from depression and pain were also found to have higher total costs than those with pain alone.[30]

ECONOMIC BURDEN OF DEPRESSION WITH PAINFUL PHYSICAL SYMPTOMS

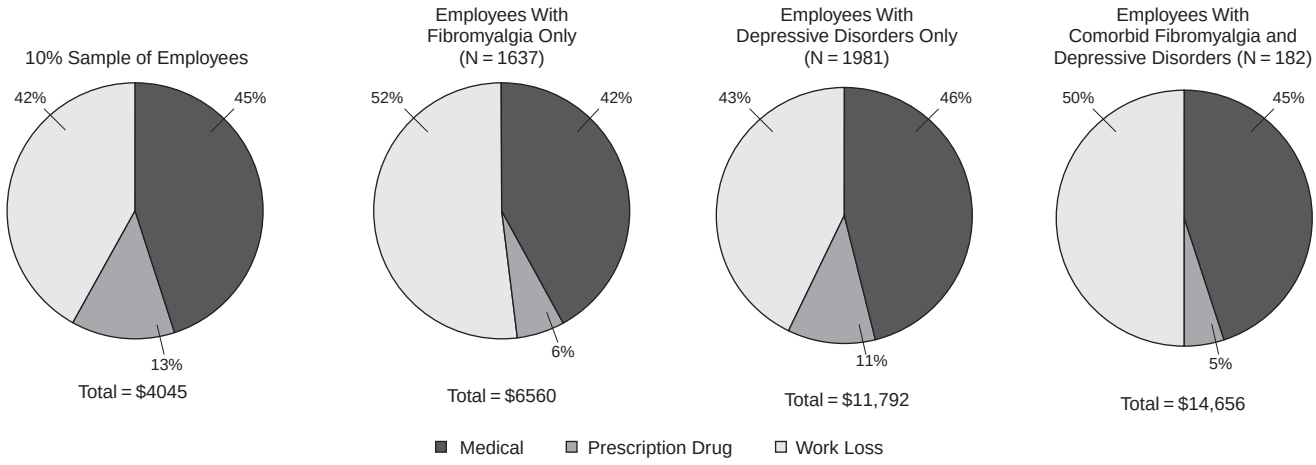
Recent data indicate that when physical symptoms accompany the already debilitating emotional symptoms of depression, the economic burden on employers and employees is magnified. Additionally, physical symptoms, in particular those involving pain, not only add to the immediate economic burden of depression on the patient and employer, but also signal the risk of recurrent depression.

Among depression sufferers with and without comorbid conditions, some patients can be considered treatment resistant (i.e., suffering from treatment-resistant depression [TRD]). In a clinical setting, TRD patients are often identified retrospectively if, following acute depression treatment, they continue to exhibit emotional and physical symptoms. In particular, research suggests that residual symptoms such as pain are strong predictors of subsequent early relapse.[43] Using claims data, Corey-Lisle et al.[44] developed a methodology for identifying TRD patients and found that in 1998, the mean total cost (i.e., direct medical and indirect workplace cost) to an employer per patient identified as TRD-likely was $14,990, while TRD-unlikely patients cost $6665, and the average beneficiary cost $4043. Thus, the prevalence of painful physical symptoms among treated depression sufferers not only is an indicator of TRD, but also signals the possibility of substantial additional costs among sufferers.

In addition to the painful physical symptoms of depression, there are a number of painful physical conditions that are often comorbid with depression. Two of the most common of these conditions are headaches and back pain. Major depression sufferers are found to be 5 times more likely to experience backaches and 4 times more likely to have headaches than other individuals.[17] The economic implications of the combination of these painful conditions with depression were investigated in a claims data–based study by Sheehan.[16] That study showed that patients with back pain and depression have 2.8 times higher medical costs than patients with back pain alone. Patients with migraine and depression were found to have 4.0 times higher medical costs than patients with migraines alone.

Another painful physical condition, fibromyalgia, is experienced by 22% to 45% of current depression sufferers.[45–48] An ongoing study by Analysis Group/Economics,

Figure 4. 1998 Economic Burden of Depressive Disorders and Fibromyalgia to an Employer for Employees Only[a]



[a]Data on file, Analysis Group/Economics, Boston, Mass. Depressive disorders = ICD-9 codes 296.2, 296.3, 300.4, 309.0, and 311.

Inc., of Boston, Mass., (data on file) uses 1998 administrative health care and disability claims data to compare the economic burden associated with patients treated for depressive disorders and fibromyalgia with that of patients treated for only 1 of these conditions. An extension of this research focuses exclusively on company employees younger than age 65 years who are enrolled in a company-sponsored fee-for-service health plan and are eligible for disability benefits. The medical and disability claims files of these employees were analyzed, and patients were placed into 3 mutually exclusive cohorts: fibromyalgia only (FM-only), depressive disorders only (DD-only), and fibromyalgia with comorbid depressive disorders (FM/DD). Employees classified as FM-only were defined as having at least 1 medical or disability claim for fibromyalgia at any point from 1996 to 1998 but no claim for depressive disorder in 1998. DD-only employees were defined as having at least 1 claim for depressive disorder in 1998 but no claim for fibromyalgia from 1996 to 1998. FM/DD employees were classified as having claims for fibromyalgia from 1996 to 1998 as well as claims for depressive disorder in 1998. A fourth group was drawn as a benchmark and included a 10% random sample of all employees.

According to the study group criteria, 1637 of the employees were FM-only, 1981 were DD-only, and 182 were FM/DD. Employer payments for medical care, pharmaceuticals, and work losses totaled $14,656 for employees with FM/DD, $11,792 for employees with DD only, and $6560 for employees with FM only, compared with only $4045 for the average employee. This implies that the incremental cost for employees with FM/DD (i.e., $14,656 – $4045 = $10,611) was somewhat greater than the sum of the incremental costs of employees with DD-only and FM-only (i.e., [$11,792 – $4045] + [$6560 – $4045] = $10,262) (Figure 4). In addition, half of the costs of employees with FM/DD and FM only were due to workplace absenteeism. This research also shows that the rates of absenteeism among employees treated for fibromyalgia, depressive disorders, or fibromyalgia and depressive disorders were higher than that of the average employee—1.9 times higher among the FM-only group, 2.6 times higher in the DD-only group, and 3.4 times higher in the FM/DD group. These findings show that when painful physical symptoms accompany the already debilitating emotional symptoms of depressive disorders, the economic burden on patients and their employers is particularly severe.

CONCLUSION

It is widely accepted that the economic burden of depression is substantial. Recent studies show that the economic burden of depression is even greater when it is comorbid with pain. In particular, research by Analysis Group/Economics, Inc., shows that the per-employee cost of depressive disorders comorbid with fibromyalgia is 1.2 times greater than that of employees with depressive disorders only. Moreover, the difference in economic burden between employed depressive disorder patients with and without fibromyalgia is somewhat greater than the incremental burden associated with an employed patient with fibromyalgia alone (i.e., the difference in burden between an employed patient with fibromyalgia and an average employed individual). Half of the costs incurred by employed patients with depressive disorder and comorbid fibromyalgia were associated with workplace absenteeism. Further research should investigate more generally the economic burden of depression and painful physical symptoms.

Due to the substantial impact of depression with comorbid pain on employers in the form of morbidity costs, em-

ployers are increasingly becoming advocates for effective mental health treatments. Employees suffering from depression and comorbid pain should be equally aware of the impact of their conditions on their long-term career path and, in particular, on their ability to advance in the labor force. Awareness of the costs associated with their conditions would surely spur employees to become more actively involved in decisions regarding their care and treatment options. Improved depression and pain diagnosis and treatments could enable employees to return to work more quickly, to gain employment more easily, and to become more productive while on the job. From an economic perspective, these are the criteria for success in the labor force.

Employers and other payers need to become more aware of the fact that depression and pain treatment outreach, while costly, can have offsetting benefits in terms of reduced work absenteeism and increased productivity while on the job. Although disability costs are high and a large portion of the economic burden of depression and pain falls on the employer, these costs remain an underestimate of the total workplace burden on an employer. In fact, industry estimates suggest that for every $1 of disability claims paid, there is an associated cost of $1.50 in workplace disruption.[23] Improved diagnosis and treatment for those with depression and pain could reduce disability-related work absenteeism costs, as well as these related work disruption costs. Indeed, studies show that the costs of a treatment program can be partially offset by reductions in employer payments for lost work time due to disability.[26,27]

One step toward improving the diagnosis and treatment of depression is for primary care physicians to consider depression as a possible underlying diagnosis for patients with chronic pain,[49] multiple medical problems,[50] unexplained physical symptoms,[51] or more frequent than average use of medical services.[5,52] A study by Katzelnick et al.[53] reports that more effective outreach to those who suffer from depression has the potential to yield substantial benefits not only in terms of patient quality of life, but also in terms of potential cost offsets in the form of reduced inefficient direct medical expenditure. As a result, the benefits of improved diagnosis and treatment of individuals suffering from depression with or without comorbid physical conditions would have benefits on several levels (e.g., to patients, employers, and insurers) by reducing the economic burden and improving efficiency in both the labor market and health care system.

Disclosure of off-label usage: The authors have determined that, to the best of their knowledge, no investigational information about pharmaceutical agents has been presented in this article that is outside U.S. Food and Drug Administration–approved labeling.

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