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The Prevalence and Correlates of Workplace Depression in the National Comorbidity Survey Replication

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Abstract

Objective—To review evidence on the workplace prevalence and correlates of major depressive episodes, with a particular focus on the National Comorbidity Survey Replication, the most recent national survey to focus on these issues.

Method—Nationally representative survey of Diagnostic and Statistical Manual, 4th Revision Mental Disorders.

Results—A total of 6.4% of employed National Comorbidity Survey Replication respondents had 12-month major depressive disorder. An additional 1.1% had major depressive episodes due to bipolar disorder or mania– hypomania. Only about half of depressed workers received treatment. Fewer than half of treated workers received care consistent with published treatment guidelines.

Conclusions—Depression disease management programs can have a positive return-on-investment from the employer perspective, but only when they are based on best practices. Given the generally low depression treatment quality documented here, treatment quality guarantees are needed before expanding workplace depression screening, outreach, and treatment programs.

Although surveys designed to estimate the prevalence and correlates of mental disorders in the workplace as well as in larger community samples have been carried out in the United States since the end of World War II,[1–3] it was not until the early 1980s that the development of fully structured diagnostic interviews made it possible to assess specific mental disorders with accuracy in such assessments.[4,5] Several large-scale surveys using fully structured psychiatric diagnostic interviews have been carried out since that time. However, changes in the criteria for major depression in successive editions of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM) have hampered efforts to replicate results. The most recent nationally representative population data on the prevalence and correlates of depression come from the National Comorbidity Survey Replication (NCS-R).[6] The NCS-R data also provide useful information about the workplace consequence of

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depression.[7] The current report presents an overview of NCS-R results on the prevalence and correlates of depression and relates these results to those in previous studies.

An Overview of Previous Research

It is useful to put the NCS-R results in perspective by noting that a number of previous studies also examined depression in the workplace. The previous studies found repeatedly that depression is one of the most costly health problems in the labor force, with two factors accounting for this consistent finding.

First, depression is a commonly occurring disorder. Epidemiological studies show that approximately 6% to 8% of the US population have a major depressive episode (MDE) associated with a non-bipolar major depressive disorder (MDD) each year[8] and that an additional 1% to 2% of the population have active dysthymic disorder each year.[9] Additional people have sub-threshold depression each year,[10] although the numbers involved are difficult to estimate because no formal criteria exist for a definition of sub-threshold depression. Moreover, an additional 1% to 2% of the population has either episodes of MDE associated with bipolar disorder (BPD) or manic– hypomanic episodes associated with BPD each year.[9] Prevalence estimates are generally somewhat lower among working people than in the total population, presumably reflecting selection processes that interfere with chronically mentally ill people obtaining and retaining jobs.

Second, depression appears to have substantial adverse effects on workplace functioning.[11,12] A number of excellent reviews of recent research document the evidence on this point.[13–15] For example, the Epidemiologic Catchment Area study, the first large-scale (over 20,000 respondents) community epidemiological survey of mental disorders in the United States, found that MDD was associated with a 27 times greater likelihood of work loss than among workers without a mental disorder and that 44% of depressed workers reported that they missed one or more days of work for emotional problems in the prior 3 months.[16] The National Comorbidity Survey,[17] the first nationally representative community survey of mental disorders in the United States, found that MDD was associated both with a significant elevation of sickness absence days and with a significant elevation of cutback days (days when the respondent was at work but performed poorly). It is important to recognize that these associations do not necessarily document a causal effect of depression, as the work impairment could be caused by some unmeasured third factor. However, consistent with a causal interpretation, experimental assignment to a depression treatment intervention has been shown to reduce this work impairment significantly.[18]

Recent research with the experience sampling method, in which a beeper is used to have workers fill out a moment-in-time work performance diary at random moments in the workday,[19] suggests that the adverse effects of depression on on-the-job performance may be even greater than suggested by epidemiological surveys.[20] Although the same caution as at the end of the last paragraph is needed here regarding over-interpretation of this result, it is noteworthy that workers with a history of depression who were not in a current episode did not exhibit the same decrement in work performance as workers in a current episode, suggesting that resolution of the depression is associated with resolution of the work impairment. This finding is consistent with the experimental results noted at the end of the last paragraph.

The WHO Collaborative Study of Psychological Problems in General Health Care,[21] a survey of 25,000 primary care patients in 14 countries, found results generally consistent with the US results regarding sickness absence days.[22] Although fewer investigations have examined the work impairments associated with mood disorders other than major depression, those few observed large decrements in work performance associated with dysthymic disorder[23,24] and BPD.[25,26] The association with BPD is especially striking. In the US National Health Interview

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Survey, for example, people with BPD were 40% less likely than others to be gainfully employed.[27] whereas in the NCS-R workers with BPD reported many more work loss days and impairments in work performance than did workers with MDD.[7]

Cost-of-illness (COI) studies have been carried out to estimate the workplace costs of depression.[28,29] The costs considered here included both direct treatment costs and the costs associated with decreased productive capacity. COI studies suffer from the problem, noted above, that the associations of the illnesses under investigation with work impairment are interpreted as due to causes of the illness on these outcomes even though the associations are not necessarily causal. Nonetheless, if the cost estimates in these studies are high, this evidence can be used to suggest that further research is needed to investigate the extent to which controlled interventions can reduce these putative costs. The cost estimates in the depression COI studies are staggering. Greenberg et al[30] recently estimated that the economic costs of depression are $53 billion each year in the United States, with $33 billion of this total due to work impairment. Depression-related absenteeism was estimated to account for $24.5 billion of this total and depression-related impairment while at work (presenteeism) was estimated to account for $8.5 billion.[30] These estimates translate into annual workplace costs of nearly $250,000 for a company with 1000 employees. To the extent that these putative costs are truly causal, which can only be determined definitively in controlled studies, they suggest that the potential to recoup lost work productivity would be substantial if effective treatments for depression were available. Such treatments do, in fact, exist, as reviewed in a separate article in this special issue.[31]

Related COI findings have been reported for bipolar illness. Wyatt and Henter[32] estimated that the economic costs of BPD are $45 billion each year in the United States. As with non-bipolar depression, the economic losses due to work impairment were estimated to account for the largest proportion (nearly $18 billion annually) of this total. This estimate translates into annual work-place costs of over $125,000 for a company with 1000 employees, again with the caveat that the data on which this estimate is based documented association rather than causation of BPD-related work impairment. Although we have no way from these results to estimate the true economic costs of depression and BPDs to employers, these costs could be larger than those suggested by these results,[28] as the cost estimates do not capture the effects of mood disorders on job termination and associated hiring and training costs.[33] Rather than accept these estimates as accurate, though, a more reasonable approach is to think of them as estimates of potential costs that might, to some unknown degree, be reduced with best-practices outreach and treatment of depressed workers, reserving judgment about the actual return-on-investment of such interventions until a critical mass of controlled treatment studies are carried out that generate unequivocal return-on-investment estimates.

Methods

Sample

As noted above, the focus of this report is the NCS-R because this survey provides the most recent nationally representative data on the prevalence and workplace costs of mood disorders. The NCS-R was a psychiatric epidemiological survey of English-speaking adult household residents of the continental United States. Face-to-face interviews were carried out in the homes of 9282 respondents between February 2001 and April 2003. Informed consent was obtained before data collection. The response rate was 70.9%. Respondents were given a $50 incentive for participation. In addition, a probability sub-sample of hard-to-recruit predesignated respondents was selected for a brief telephone nonrespondent survey, the results of which were used to weight the main sample for nonresponse bias. Nonrespondent survey participants were given a $100 incentive. A series of clinical reappraisal studies was carried out in various NCS-R sub-samples in which clinical interviewers contacted respondents subsequent to their

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participation in the NCS-R and evaluated these respondents for the presence of various *Diagnostic and Statistical Manual, 4th Revision* (DSM-IV)[34] disorders blinded to the diagnostic assessments in the main survey. Separate consent was obtained and financial incentive provided for participation clinical reappraisal interviews. The Human subjects Committees of Harvard Medical School and the University of Michigan both approved these recruitment and consent procedures.

Diagnostic Assessment

The NCS-R interview was administered in two parts. Part I included a core diagnostic assessment of all respondents. Part II included questions about correlates and additional disorders administered to all Part I respondents who met lifetime criteria for any core disorder plus a roughly one-in-three probability sub-sample of other respondents (n = 5692). An assessment of work performance, which we discuss below, was included in Part II in the sub-sample of 3378 respondents were either employed or self-employed 20 hours or more per week in the month before the interview. The records for Part II respondents were weighted to adjust for differential probability of selection into Part II and for differential nonresponse. A more detailed discussion of NCS-R sampling and weighting is presented elsewhere.[35]

NCS-R diagnoses are based on Version 3.0 of the World Health Organization's Composite International Diagnostic Interview (CIDI),[36] a fully structured lay-administered diagnostic interview. DSM-IV criteria were used to define all disorders. Both lifetime and 12-month prevalence were assessed. The core disorders assessed in addition to mood disorders include anxiety disorders (panic disorder, generalized anxiety disorder, phobias, obsessive-compulsive disorder, and posttraumatic stress disorder), impulse-control disorders (oppositional-defiant disorder, conduct disorder, attention-deficit or hyperactivity disorder, and intermittent explosive disorder), and substance disorders (alcohol and drug abuse with or without dependence). Organic exclusion rules were used in making all diagnoses.

As detailed elsewhere,[36,37] blinded clinical reinterviews using the non-patient version of the Structured Clinical Interview for DSM-IV[38] with a probability sub-sample of NCS-R respondents found generally good concordance between CIDI/DSM-IV diagnoses and independent clinical assessments.[39] Concordance between diagnoses based on the CIDI and blinded clinical interviews using the conventional κ statistic[40] was 0.54 for major depression and 0.69 for BPD. Concordance based on the area under the ROC curve (AUC), which, unlike κ,[41] is not dependent on marginal rates,[42] was 0.75 for major depression and 0.93 for BPD.[39]

It is noteworthy that a DSM-IV diagnosis of BPD requires separate assessments of MDE, mania, and hypomania. People are classified as having MDD if they have an episode of MDE and never in their life had either mania or hypomania. They are classified as having lifetime BPD, in comparison, if they have MDE in conjunction with a lifetime manic or hypomanic episode or if they have either a manic episode (with or without a lifetime history of MDE) or a hypomanic episode (but only with a lifetime history of MDE). As documented below, this distinction between non-bipolar MDE and bipolar MDE is an important one in the NCS-R results.

Results

Prevalence

Previous national surveys did not report prevalence estimates of mood disorders separately for working people. As a result, we begin by focusing on total-population prevalence estimates for comparison purposes. Prevalence estimates of DSM-IV MDD in the total NCS-R sample are 16.2% lifetime and 6.6% in the 12 months before the interview.[8] These estimates are within

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the range of those in earlier large-scale US surveys[43,44] and very similar to estimates in a separate national survey carried out at about the same time as the NCS-R.[45] Concordance between CIDI and Structured Clinical Interview for DSM-IV diagnoses in the NCS-R is high,[46,47] arguing against bias in these estimates. This is an important result in light of recent assertion of critics that prevalence estimates such as these, based on fully structured interviews in community sample, substantially over-estimate the prevalence of clinically significant disorders.[48]

Prevalence estimates of broadly defined BPD in the total NCS-R sample are 4.4% lifetime (including 1.0% for BP-I, 1.1% for BP-II, and 2.4% for sub-threshold BPD) and 2.8% in the 12 months before the interview.[49] The BP-I and BP-II prevalence estimates are consistent with estimates from earlier population-based studies,[50–56] with the exception of an implausibly high lifetime prevalence estimate of BP-I (3.3%) using a measure with no evidence of clinical validity in another recent national survey of the United States.[57] It is noteworthy that the NCS-R clinical reappraisal study confirmed the NCS-R BP-I prevalence estimate. The NCS-R definition of sub-threshold BPD, in comparison, is more restrictive than the definitions proposed by clinical researchers[58 − 61] due to the fact that no information was included in the survey on brief episodes that could be assessed in more flexible semi-structured clinical interviews. This means that the NCS-R sub-threshold BPD prevalence estimate is likely to be a lower bound estimate, although it is broadly consistent with the results of two large community epidemiological surveys in Europe.[62,63]

Turning now to prevalence estimates for working people, 12-month prevalence estimates of MDD and BPD among working NCS-R respondents are somewhat lower than in the total sample: 6.4% for MDD and 1.1% for BPD.[7] This pattern is consistent with the finding in previous surveys that mood disorder is associated with not being in the labor force[64,65] and with the results of controlled intervention studies that treatment of depression is associated with a significant reduction in termination of labor force participation.[66] The estimated 12-month prevalence of MDD does not differ significantly by respondent education, occupation, or expected work hours, but is significantly higher among women than men and is inversely related to age. The higher prevalence of depression among women than men is perhaps the most consistent finding in the psychiatric epidemiological literature.[67] Considerable controversy exists about the extent to which this gender difference is due to biological differences between women and men related to sex hormones,[68] although the evidence from twin studies is inconsistent with a genetic basis for the gender difference.[69] The higher prevalence among young than older people in the age range of working people is also consistent with previous epidemiological research.[70,71] The estimated 12-month prevalence of BPD does not differ significantly by respondent sex, age, occupation, or expected work hours, but is inversely related to education. These results are broadly consistent with the results of previous studies.[72] Neither the prevalence of MDD nor the prevalence of BPD is related to average hours worked per week among working people, although both are much more prevalent among previously employed people who were disabled at the time of interview than among the employed.

It is noteworthy that roughly three-fourths of employed NCS-R respondents with 12-month BPD had depressive episodes in the 12 months before interview (63.1% who also had manic–hypomanic episodes and 11.1% who had only depressive episodes). Persistence of depressive episodes in the 365 days before interview was consistently higher in BPD (Mean: 134.0 to 164.0 days across the bipolar spectrum; Median: 90 to 150) than MDD (Mean: 98.1; Median: 60; $z = 2.7$, $P = 0.010$).[7]

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Age-of-Onset Distributions

Retrospective age-of-onset (AOO) reports were obtained in the NCS-R using a special question series designed to stimulate active memory search and to bound the recall inaccuracy that has been found in previous research on AOO reports.[73] Experimental research has shown that this question sequence yields responses with a much more plausible AOO distribution than standard AOO questions.[74] The AOO distribution was then generated using the two-part actuarial method.[75] The AOO distributions were comparable among working people and the remainder of the sample,[37] with a median AOO (ie, the 50th percentile on the AOO distribution) of MDD of 32 and an interquartile range (the years between the 25th and 75th percentiles of the AOO distribution) of 25 years (between ages 19 and 44). Median AOO of BPD was somewhat earlier, [20] with an interquartile range of roughly two decades (from the late teen through the late thirties).

These AOO distributions are consistent with those reported in previous epidemiological surveys.[76,77] Nevertheless, we are aware of no previous attempt to examine the temporal concentration of AOO. It is striking, in light of evidence reported below on the strong comorbidities of mood disorders with other DSM-IV disorders, that comorbid disorders typically have an earlier age of onset than mood disorders. This finding is consistent with prospective family studies of at-risk children.[78,79] Although this finding implies that temporally primary disorders might be risk factors for the subsequent first onset of mood disorders, it is less clear whether this is because these earlier disorders are causal risk factors or, alternatively, because they are markers of other more fundamental causes. If they are causal risk factors, we would expect that their successful treatment before the onset of secondary mood disorders would reduce the risk of subsequent mood disorders occurring. This would not be the case if the earlier disorders were risk markers. We are aware of no experimental research, though, that has evaluated this issue.

Persistence

Persistence, indirectly indicated by the ratio of 12-month prevalence to lifetime prevalence, is lower in the NCS-R data for MDD (40.7%) than BPD (59.5% to 73.2%). Both estimates are only slightly lower for working people than nonworking people. The same pattern holds for retrospectively reported number of years in episode, with means of 5.8 for MDD and 6.8 to 11.6 for BPD. The finding that the ratio of 12-month MDD prevalence to lifetime prevalence is approximately 40% is broadly consistent with the finding of ratios between one-third and one-half in most previous epidemiological surveys carried out throughout the world.[55,80] These ratios, in turn, are indirectly consistent with both retrospective reports in cross-sectional community surveys[44,81] and prospective assessments in community[82,83] and clinical[84] samples that MDD is typically an episodically chronic-recurrent disorder. The much higher estimates of persistence of BPD are consistent with prospective studies in clinical samples and with family studies.[85,86]

Comorbidity

Nearly three-fourths of NCS-R respondents diagnosed with lifetime MDD also met lifetime criteria for at least one of the other DSM-IV disorders assessed in the survey.[8] This pattern did not differ significantly for working people compared with other respondents. The vast majority of NCS-R respondents with a history of BPD (88.4% to 97.7%) also meet criteria for another lifetime DSM-IV disorder.[49] Lifetime comorbidity is even higher among respondents with 12-month MDD and BPD, implying that comorbid MDD and BPD are more persistent (ie, more likely to be either chronic or recurrent) than pure disorders. Comparison of retrospective AOO reports shows that MDD and BPD are both temporally secondary (ie, reported to have started at a later age) in relation to all other comorbid disorders in the vast majority of cases.

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Clinical Severity

Thirty-eight percent of NCS-R respondents with 12-month MDD were classified as being seriously and severely depressed based on standard clinical assessment methods, whereas the remaining 62.0% of cases were classified as mildly–moderately depressed.[8] Importantly, even higher proportions of cases with 12-month MDE related to BPD were rated serious-severe. This was true not only for MDE associated with threshold BPD (where 70.5% to 84.0% of cases were rated serious–severe), but also for MDE associated with sub-threshold BPD (46.4%). Standard clinical severity ratings of mania– hypomania placed the majority of cases in the severe range for BP-I (70.2%) and BP-II (55.4%) and a minority for sub-threshold BPD (31.5%), with almost all of the remainder of threshold BPD and a majority of sub-threshold BPD in the mild–moderate range.[49]

Severity of Work Role Impairment

The NCS-R used the WHO Health and Work Performance Questionnaire (HPQ)[87,88] to estimate the workplace costs of depression. The Health and Work Performance Questionnaire is a validated self-report instrument that combines information about absenteeism (missed days of work) and presenteeism (low performance while at work transformed to lost workday equivalents) to create a summary measure of overall lost workdays in the month of interview. Information about salary was used to transform the measures of lost work performance from a time metric to a salary metric for purposes of estimating human capital loss associated with mood disorders. Although self-reports are subject to reporting error, the HPQ reports of both absenteeism and presenteeism have been shown to correlate significantly with independent administrative data.[87,88] Nonetheless, caution is needed in interpreting the results regarding these reports because they are not based on independent evaluations.

The analysis showed that MDD and BPD are both associated with significant lost work performance, with annualized estimates of 27.2 excess lost workdays per worker with MDD and 65.5 excess lost workdays per worker with BPD.[7] Disaggregation showed that absenteeism, while important to this total, is less important than presenteeism. This means that workers with mood disorders both miss more days of work than workers in the same jobs and are less productive on days when they are at work than workers without mood disorders are. Projections of individual-level associations to the total US civilian labor force based on information about disorder prevalence and salaries of workers with mood disorders yield estimates of 225.0 million workdays and $36.6 billion salary-equivalent lost productivity per year associated with MDD and 96.2 million lost workdays and $14.1 billion salary-equivalent lost productivity per year associated with BPD. The fact that presenteeism is more important than absenteeism gives additional reason for caution in interpreting these results, as reports about work performance are likely to be more subjective than reports of sickness absence.

The individual-level elevation of lost work performance in BPD was consistently higher among respondents with 12-month MDE than only manic– hypomanic episodes. Furthermore, MDE with BPD was consistently associated with significantly more lost work performance than MDD. These findings are not unexpected in light of the greater severity of BPD than MDD, although it is perhaps less obvious that this manifests as MDE being more impairing in the context of BPD than MDD rather than as mania– hypomania being more impairing than MDE. The finding that mania– hypomania in the absence of MDE is associated with significantly less work impairment than BPD with MDE is consistent with the observation in a prospective patient study that functional impairment was associated with variation in depressive symptoms but not manic symptoms.[89]

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Treatment

Slightly more than half (56.7%) of NCS-R respondents with 12-month MDD received some type of treatment in the 12 months before their interview, with the percent in treatment somewhat higher among working people than other respondents. The higher treatment rate among working people appears to reflect the higher rate of health insurance among working than nonworking depressed people. The specialty sector was involved in the highest proportion of treatment (54.9%) and the human services sector in the lowest proportion (16.4%).[8]

Treatment met conventional criteria for adequacy based on minimal concordance with treatment guidelines only in a minority (41.7%) of cases. The criteria for minimally adequate treatment were defined as receiving either i) at least six sessions of psychotherapy, each session lasting at least 30 minutes (based on the fact that published treatment trials have never documented significant effects of psychotherapy in treating depression with treatment protocols that require fewer visits for shorter durations) or ii) treatment with an antidepressant, anxiolytic, or mood stabilizer (required for a definition of adequate treatment of BPD) with at least four physician visits (based on the fact that published treatment guidelines from the American Psychiatric Association require a minimum of three follow-up visits to check for side effects and to monitor treatment response). This means that less than one-fourth of all people with 12-month MDD (ie, 41.7% of the 56.7% in treatment) received even minimally adequate treatment. Although a higher proportion of serious–severe (72.4%) than mild–moderate (47.1%) 12-month NCS-R cases received treatment, severity was not significantly related either to the sector in which treatment was received or to the adequacy of treatment. Sector of treatment, however, was related to treatment adequacy, with a significantly higher 62.3% of patients treated in the specialty mental health sector versus 42.4% of patients treated in the general medical sector receiving adequate treatment.

Treatment of 12-month BPD was higher than treatment of MDD: 67.3% BP-I, 65.8% BP-II, and 36.7% sub-threshold BPD.[49] Non-psychiatrist mental health professionals were the most common providers (35.4% BP-I, 33.8% BP-II, 20.6% sub-threshold BPD). Multisector treatment was the norm, with a 1.7-sector mean. As with MDD, a significantly higher proportion of cases in specialty (45.0%) than general medical (9.0%) treatment received at least minimally adequate treatment when judged in terms of published treatment guidelines. A significantly higher proportion of cases in general medical (73.1%) than specialty (43.4%) treatment received inappropriate medication. A significant gradient was found in the proportion of all 12-month cases (ignoring whether they received treatment) that received appropriate medication: 25.0% BP-I, 15.4% BP-II, 8.1% sub-threshold BPD.

Overview

The NCS-R results are broadly consistent with those of previous studies in showing that depression is both common in the US labor force and associated with substantial workplace costs, although, as noted above, caution is needed in interpreting the data on costs because they are based on associational data. The sociodemographic correlates in the NCS-R are also consistent with previous research. Although an exposition of the explanations for these associations proposed in the literature is beyond the scope of this article, it is nonetheless noteworthy that the associations with age (lower prevalence of depression with increasing age) and gender (higher prevalence of depression but not BPD among women than men) have been found not only among people not in the labor force but also among nonworkers, suggesting that these associations are not related to work-place stress but rather to differential vulnerabilities that are independent of the workplace. Workplaces that have a young and largely female labor force consequently would be expected to have a high prevalence of depression irrespective of work-place stresses.

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Two pairs of new results in the NCS-R need to be highlighted. The first pair includes the finding that much of the MDE among working people is associated with BPD rather than with MDD and that this bipolar-related MDE is more impairing than the MDE associated with MDD. The second pair includes the finding that only a minority of workers with MDE obtain treatment and that much of that treatment fails to meet even the minimal criteria of adequacy in established treatment guidelines. Both pairs of results warrant some discussion.

The finding that people with BPD spend much more time in episodes of depression than in episodes of mania– hypomania is well-known in the literatures.[72] The same is true of the finding that the impairment associated with BPD is more strongly related to MDE than to mania–hypomania other than in extreme cases of mania. Based on these results, it should not be surprising that the NCS-R found that that MDE associated with BPD is associated with more individual-level work impairment than the MDE associated with MDD. This greater impairment is likely due to the fact that depressive episodes are both more severe and more persistent when they are due to BPD than to MDD.

These findings add to the complexity of the treatment picture for depression because MDE due to BPD is often incorrectly treated based on the assumption that it is due to MDD.[90,91] This problem is exacerbated by the fact that people with BPD report more distress due to their depressive than their manic symptoms and more often seeking treatment for their depression than their mania– hypomania.[25] As antidepressant medications can trigger the onset of hypomania or mania, it is important to screen for history of BPD at the initiation of depression treatment. But this often is not done, resulting in a substantial part of the inadequate treatment of BPD documented in the NCS-R. The NCS-R found that this problem is especially common among depressed people treated in primary care settings.

The problem of inadequate treatment is part of a larger problem documented in the NCS-R that mental health service use for depression is disturbingly low. This finding is broadly consistent with the results of other studies,[92–95] although the NCS-R is the only nationally representative general population study available that can provide information on the precise magnitude of the problem. On the positive side, the proportion of depressed workers in the NCS-R who reported 12-month mental health service use is considerably higher than the proportion found a decade earlier in the baseline National Comorbidity Survey[96] and a decade before that in the Epidemiologic Catchment Area study,[97] the two earlier major surveys that are available to monitor trends in depression treatment. However, by far, the greatest part of this treatment expansion occurred in the general medical sector. This is important because only a small minority of depressed patients treated in the general medical sector were found in the NCS-R to receive adequate care. The reasons for this low rate of treatment adequacy are unclear, but presumably involve both provider characteristics (eg, competing demands, inadequate reimbursements for treating depression, less training, and experience than psychiatrists in treating depression) and patient factors (eg, worse compliance with treatments than among patients treated in the mental health specialty sector).[98 –101]

The obvious question raised by these findings is whether more aggressive screening, outreach, and best-practices treatment of workers with depression would be cost-effective for employers. As reviewed in more detail in a separate article in this issue,[31] the evidence on this point is encouraging.[102,103] However, in light of the NCS-R evidence of generally low depression treatment quality, adoption of an expanded depression outreach, and treatment program would be premature unless measures were also taken to make sure the medical care organizations from which treatment is provided use best practices for treatment and a high-quality protocol to detect BPD underlying MDE. This issue of treatment quality assurance is currently underdeveloped, but has to be seen as of critical importance in addressing the problem of depression in the workplace.

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References

1. Comstock GW, Helsing KJ. Symptoms of depression in two communities. Psychol Med 1976;6:551–563. [PubMed: 1005571]
2. Helgason T. Epidemiology of mental disorders in Iceland. Acta Psychiatr Scand 1964;40:115–132. [PubMed: 14345183]
3. Lin T. A study of the incidence of mental disorder in Chinese and other cultures. Psychiatry 1953;16:313–336. [PubMed: 13134403]
4. Robins LN, Helzer JE, Croughan JL, Ratcliff KS. National Institute of Mental Health Diagnostic interview schedule: its history, characteristics and validity. Arch Gen Psychiatry 1981;38:381–389. [PubMed: 6260053]
5. Blazer, DG.; Hughes, D.; George, LK., et al. Generalized anxiety disorder. In: Robins, LN.; Regier, DA., editors. Psychiatric Disorders in America: The Epidemiologic Catchment Area Study. New York: The Free Press; 1991. p. 180-203.
6. Kessler RC, Merikangas KR. The National Comorbidity Survey Replication (NCS-R): background and aims. Int J Methods Psychiatr Res 2004;13:60 – 68. [PubMed: 15297904]
7. Kessler RC, Akiskal HS, Ames M, et al. Prevalence and effects of mood disorders on work performance in a nationally representative sample of U.S. workers. Am J Psychiatry 2006;163:1561–1568. [PubMed: 16946181]
8. Kessler RC, Berglund P, Demler O, et al. The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). JAMA 2003;289:3095–3105. [PubMed: 12813115]
9. Kessler RC, Chiu WT, Demler O, Merikangas KR, Walters EE. Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry 2005;62:617– 627. [PubMed: 15939839]
10. Kessing LV. Epidemiology of subtypes of depression. Acta Psychiatr Scand Suppl 2007;433:85– 89. [PubMed: 17280574]
11. Coryell W, Scheftner W, Keller M, Endicott J, Maser J, Klerman GL. The enduring psychosocial consequences of mania and depression. Am J Psychiatry 1993;150:720 –727. [PubMed: 8480816]

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12. Wells KB, Stewart A, Hays RD, et al. The functioning and well-being of depressed patients. Results from the medical outcomes study. JAMA 1989;262:914 –919. [PubMed: 2754791]
13. Bauer M, Unutzer J, Pincus HA, Lawson WB. Bipolar disorder. Ment Health Serv Res 2002;4:225–229. [PubMed: 12558008]
14. Hirschfeld RM, Montgomery SA, Keller MB, et al. Social functioning in depression: a review. J Clin Psychiatry 2000;61:268–275. [PubMed: 10830147]
15. Simon GE. Social and economic burden of mood disorders. Biol Psychiatry 2003;54:208 –215. [PubMed: 12893097]
16. Kouzis AC, Eaton WW. Emotional disability days: prevalence and predictors. Am J Public Health 1994;84:1304 –1307. [PubMed: 8059890]
17. Kessler RC, Frank RG. The impact of psychiatric disorders on work loss days. Psychol Med 1997;27:861– 873. [PubMed: 9234464]
18. Wang PS, Simon GE, Avorn J, et al. Telephone screening, outreach, and care management for depressed workers and impact on clinical and work productivity outcomes: a randomized controlled trial. JAMA 2007;298:1401–1411. [PubMed: 17895456]
19. Stewart WF, Ricci JA, Chee E, Hahn SR, Morganstein D. Cost of lost productive work time among US workers with depression. JAMA 2003;289:3135–3144. [PubMed: 12813119]
20. Kessler RC, Greenberg PE, Mickelson KD, Meneades LM, Wang PS. The effects of chronic medical conditions on work loss and work cutback. J Occup Environ Med 2001;43:218 –225. [PubMed: 11285869]
21. Sartorius, N.; Ustun, TB. Mental Illness in Primary Care: An International Study. New York: John Wiley & Sons; 1995.
22. Ormel J, VonKorff M, Ustun TB, Pini S, Korten A, Oldehinkel T. Common mental disorders and disability across cultures. Results from the WHO collaborative study on psychological problems in general health care. JAMA 1994;272:1741–1748. [PubMed: 7966922]
23. Cassano, GB.; Perugi, G.; Maremmani, I.; Akiskal, HS. Social adjustment in dysthmia. In: Burton, SW.; Akiskal, HS., editors. Dysthymic Disorder. London: Gaskell; 1990. p. 78-85.
24. Hays RD, Wells KB, Sherbourne CD, Rogers W, Spritzer K. Functioning and well-being outcomes of patients with depression compared with chronic general medical illnesses. Arch Gen Psychiatry 1995;52:11–19. [PubMed: 7811158]
25. Calabrese JR, Hirschfeld RM, Reed M, et al. Impact of bipolar disorder on a U.S. community sample. J Clin Psychiatry 2003;64:425– 432. [PubMed: 12716245]
26. MacQueen GM, Young LT, Joffe RT. A review of psychosocial outcome in patients with bipolar disorder. Acta Psychiatr Scand 2001;103:163–170. [PubMed: 11240572]
27. Zwerling C, Whitten PS, Sprince NL, et al. Workforce participation by persons with disabilities: the National Health Interview Survey disability supplement, 1994 to 1995. J Occup Environ Med 2002;44:358 –364. [PubMed: 11977423]
28. Greenberg PE, Stiglin LE, Finkelstein SN, Berndt ER. The economic burden of depression in 1990. J Clin Psychiatry 1993;54:405– 418. [PubMed: 8270583]
29. Jarvinen, D.; Rice, DP.; Kelman, S. Cost of Illness Studies: An Annotated Bibliography 1988. Washington, DC: U.S. Department of Health and Human Services; 1988.
30. Greenberg, PE.; Kessler, RC.; Nells, TL.; Finkelstein, SN.; Berndt, ER. Depression in the workplace: an economic perspective. In: JP, Feighner; WF, Boyer, editors. Selective Serotonin Reuptake Inhibitors: Advances in Basic Research and Clinical Practice. Vol. 2. New York: John Wiley & Sons; 1996. p. 327-363.
31. Wang PS, Simon GE, Kessler RC. Making the business case for enhanced depression care: the NIMH-Harvard Work Outcomes Research and Cost-effectiveness Study (WORCS). J Occup Environ Med 2008;50:468 – 475. [PubMed: 18404020]
32. Wyatt RJ, Henter I. An economic evaluation of manic-depressive illness–1991. Soc Psychiatry Psychiatr Epidemiol 1995;30:213–219. [PubMed: 7482006]
33. Kessler RC, Foster CL, Saunders WB, Stang PE. Social consequences of psychiatric disorders, I: educational attainment. Am J Psychiatry 1995;152:1026 –1032. [PubMed: 7793438]

NIH-PA Author Manuscript

NIH-PA Author Manuscript

NIH-PA Author Manuscript

34. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. Vol. 4. Washington, DC: American Psychiatric Association; 1994.
35. Kessler RC, Abelson J, Demler O, et al. Clinical calibration of DSM-IV diagnoses in the World Mental Health (WMH) version of the World Health Organization (WHO) Composite International Diagnostic Interview (WMHCIDI). Int J Methods Psychiatr Res 2004;13:122–139. [PubMed: 15297907]
36. Kessler RC, Ustun TB. The World Mental Health (WMH) survey initiative version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). Int J Methods Psychiatr Res 2004;13:93–121. [PubMed: 15297906]
37. Kessler RC, Berglund P, Demler O, Jin R, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry 2005;62:593– 602. [PubMed: 15939837]
38. First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JBW. Structured Clinical Interview for DSM-IV Axis I Disorders, Research Version, Non-patient Edition (SCID-I/NP). New York: Biometrics Research, New York State Psychiatric Institute; 2002.
39. Haro JM, Arbabzadeh-Bouchez S, Brugha TS, et al. Concordance of the Composite International Diagnostic Interview Version 3.0 (CIDI 3.0) with standardized clinical assessments in the WHO World Mental Health Surveys. Int J Methods Psychiatr Res 2006;15:167–180. [PubMed: 17266013]
40. Cohen J. A coefficient of agreement for nominal scales. Educ Psychol Meas 1960;20:37– 46.
41. Cook, RJ. Kappa and its dependence on marginal rates. In: P, Armitage; T, Colton, editors. The Encyclopedia of Biostatistics. New York: Wiley; 1998. p. 2166-2168.
42. Kraemer HC, Morgan GA, Leech NL, Gliner JA, Vaske JJ, Harmon RJ. Measures of clinical significance. J Am Acad Child Adolesc Psychiatry 2003;42:1524 –1529. [PubMed: 14627890]
43. Blazer DG, Kessler RC, McGonagle K, Swartz M. The prevalence and distribution of major depression in a national community sample: the National Comorbidity Survey. Am J Psychiatry 1994;151:979 –986. [PubMed: 8010383]
44. Weissman, MM.; Livingston Bruce, M.; Leaf, PJ.; Florio, LP.; Holzer, CI. Affective disorders. In: LN, Robins; DA, Regier, editors. Psychiatric Disorders in America: The Epidemiologic Catchment Area Study. New York: The Free Press; 1991. p. 53-80.
45. Hasin DS, Goodwin RD, Stinson FS, Grant BF. Epidemiology of major depressive disorder: results from the National Epidemiologic Survey on alcoholism and related conditions. Arch Gen Psychiatry 2005;62:1097–1106. [PubMed: 16203955]
46. Kessler RC, Wittchen H-U, Abelson JM, et al. Methodological studies of the Composite International Diagnostic Interview (CIDI) in the US National Comorbidity Survey. Int J Methods Psychiatr Res 1998;7:33–55.
47. Wittchen H-U. Reliability and validity studies of the WHO Composite International Diagnostic Interview (CIDI): a critical review. J Psychiatr Res 1994;28:57– 84. [PubMed: 8064641]
48. Narrow WE, Rae DS, Robins LN, Regier DA. Revised prevalence estimates of mental disorders in the United States: using a clinical significance criterion to reconcile 2 surveys' estimates. Arch Gen Psychiatry 2002;59:115–123. [PubMed: 11825131]
49. Merikangas KR, Akiskal HS, Angst J, et al. Lifetime and 12-month prevalence of bipolar spectrum disorder in the National Comorbidity Survey replication. Arch Gen Psychiatry 2007;64:543–552. [PubMed: 17485606]
50. Angst J. Bipolar disorder—a seriously underestimated health burden. Eur Arch Psychiatry Clin Neurosci 2004;254:59 – 60. [PubMed: 15146333]
51. Bauer M, Pfennig A. Epidemiology of bipolar disorders. Epilepsia 2005;46(suppl 4):8 –13. [PubMed: 15968806]
52. Pini S, de Queiroz V, Pagnin D, et al. Prevalence and burden of bipolar disorders in European countries. Eur Neuropsychopharmacol 2005;15:425– 434. [PubMed: 15935623]
53. Tohen, M.; Angst, J. Epidemiology of bipolar disorder. In: Tsuang, M.; Tohen, M., editors. Textbook in Psychiatric Epidemiology. New York: Wiley; 2002. p. 427-444.
54. Waraich P, Goldner EM, Somers JM, Hsu L. Prevalence and incidence studies of mood disorders: a systematic review of the literature. Can J Psychiatry 2004;49:124 –138. [PubMed: 15065747]

NIH-PA Author Manuscript

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NIH-PA Author Manuscript

55. Weissman MM, Bland RC, Canino GJ, et al. Cross-national epidemiology of major depression and bipolar disorder. JAMA 1996;276:293–299. [PubMed: 8656541]
56. Wittchen HU, Mhlig S, Pezawas L. Natural course and burden of bipolar disorders. Int J Neuropsychopharmacol 2003;6:145–154. [PubMed: 12890308]
57. Grant BF, Stinson FS, Hasin DS, et al. Prevalence, correlates, and comorbidity of bipolar I disorder and axis I and II disorders: results from the National Epidemiologic Survey on alcohol and related conditions. J Clin Psychiatry 2005;66:1205–1215. [PubMed: 16259532]
58. Akiskal HS, Benazzi F. Optimizing the detection of bipolar II disorder in outpatient private practice: toward a systematization of clinical diagnostic wisdom. J Clin Psychiatry 2005;66:914 –921. [PubMed: 16013908]
59. Akiskal HS, Bourgeois ML, Angst J, Post R, Moller H, Hirschfeld R. Reevaluating the prevalence of and diagnostic composition within the broad clinical spectrum of bipolar disorders. J Affect Disord 2000;59(suppl 1):S5–S30. [PubMed: 11121824]
60. Angst J. The emerging epidemiology of hypomania and bipolar II disorder. J Affect Disord 1998;50:143–151. [PubMed: 9858074]
61. Angst J, Gamma A, Benazzi F, Ajdacic V, Eich D, Rossler W. Toward a redefinition of subthreshold bipolarity: epidemiology and proposed criteria for bipolar-II, minor bipolar disorders and hypomania. J Affect Disord 2003;73:133–146. [PubMed: 12507746]
62. Regeer EJ, ten Have M, Rosso ML, Hakkaart-van Roijen L, Vollebergh W, Nolen WA. Prevalence of bipolar disorder in the general population: a reappraisal study of the Netherlands mental health survey and incidence study. Acta Psychiatr Scand 2004;110:374 –382. [PubMed: 15458561]
63. Szadoczky E, Papp Z, Vitrai J, Rihmer Z, Furedi J. The prevalence of major depressive and bipolar disorders in Hungary. Results from a National Epidemiologic Survey. J Affect Disord 1998;50:153–162. [PubMed: 9858075]
64. Kassam A, Patten SB. Major depression, fibromyalgia and labour force participation: a population-based cross-sectional study. BMC Musculoskelet Disord 2006;7:4. [PubMed: 16423291]
65. Waghorn G, Chant D. Labour force activity by people with depression and anxiety disorders: a population-level second-order analysis. Acta Psychiatr Scand 2005;112:415– 424. [PubMed: 16279870]
66. Timbie JW, Horvitz-Lennon M, Frank RG, Normand SL. A meta-analysis of labor supply effects of interventions for major depressive disorder. Psychiatr Serv 2006;57:212–218. [PubMed: 16452698]
67. Kessler RC. Epidemiology of women and depression. J Affect Disord 2003;74:5–13. [PubMed: 12646294]
68. Angold A, Costello EJ, Worthman CM. Puberty and depression: the roles of age, pubertal status and pubertal timing. Psychol Med 1998;28:51– 61. [PubMed: 9483683]
69. Kendler KS. Gender differences in the genetic epidemiology of major depression. J Gend Specif Med 1998;1:28 –31. [PubMed: 11281009]
70. Kessler RC, Foster C, Webster PS, House JS. The relationship between age and depressive symptoms in two national surveys. Psychol Aging 1992;7:119 –126. [PubMed: 1558696]
71. Nguyen HT, Zonderman AB. Relationship between age and aspects of depression: consistency and reliability across two longitudinal studies. Psychol Aging 2006;21:119 –126. [PubMed: 16594797]
72. Goodwin, FK.; Jamison, KR. Manic-Depressive Illness: Bipolar Disorders and Recurrent Depression. Vol. 2. New York: Oxford University Press; 2007.
73. Simon GE, Von Korff M. Recall of psychiatric history in cross-sectional surveys: implications for epidemiologic research. Epidemiol Rev 1995;17:221–227. [PubMed: 8521941]
74. Knauper B, Cannell CF, Schwarz N, Bruce ML, Kessler RC. Improving the accuracy of major depression age of onset reports in the US National Comorbidity Survey. Int J Methods Psyciatr Res 1999;8:39 – 48.
75. SAS Institute. SAS/STAT Software: Changes and Enhancements, Release 8.2. Cary, NC: SAS Publishing; 2001.
76. Christie KA, Burke JDJ, Regier DA, Rae DS, Boyd JH, Locke BZ. Epidemiologic evidence for early onset of mental disorders and higher risk of drug-abuse in young-adults. Am J Psychiatry 1988;145:971–975. [PubMed: 3394882]

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77. WHO International Consortium in Psychiatric Epidemiology. Cross-national comparisons of the prevalences and correlates of mental disorders. Bull World Health Organ 2000;78:413– 426. [PubMed: 10885160]
78. Loeber, R.; Farrington, DP.; Stouthamer-Loeber, M.; Van Kammen, WB. Antisocial Behavior and Mental Health Problems: Explanatory Factors in Childhood and Adolescence. Mahwah, NJ: Lawrence Earlbaum Associates; 1988.
79. Warner V, Weeisman MM, Mufson L, Wickramaratne PJ. Grandparents, parents, and grandchildren at high risk for depression: a three generation study. J Am Acad Child Adolesc Psychiatry 1999;38:289 –296. [PubMed: 10087690]
80. Andrade L, Caraveo-Anduaga JJ, Berglund P, et al. The epidemiology of major depressive episodes: results from the International Consortium of Psychiatric Epidemiology (ICPE) Surveys. Int J Methods Psychiatr Res 2003;12:3–21. [PubMed: 12830306]
81. Kessler RC, Nelson CB, McGonagle KA, Liu J, Swartz M, Blazer DG. Comorbidity of DSM-III-R major depressive disorder in the general population: results from the U.S. National Comorbidity Survey. Br J Psychiatry 1996;168:17–30.
82. Angst J, Merikangas K. The depressive spectrum: diagnostic classification and course. J Affect Disord 1997;45:31–39. [PubMed: 9268773]discussion 39 – 40
83. Murphy JM, Sobol AM, Neff RK, Olivier DC, Leighton AH. Stability of prevalence: depression and anxiety disorders. Arch Gen Psychiatry 1984;41:990 –997. [PubMed: 6332592]
84. Keller, MB. Chronic and recurrent affective disorders: incidence, course and influencing factors. In: Kemali, D.; Racagni, G., editors. Chronic Treatments in Neuropsychiatry. New York: Raven Press; 1985. p. 111-120.
85. Fisfalen ME, Schulze TG, DePaulo JR Jr, DeGroot LJ, Badner JA, McMahon FJ. Familial variation in episode frequency in bipolar affective disorder. Am J Psychiatry 2005;162:1266 –1272. [PubMed: 15994708]
86. Kupka RW, Luckenbaugh DA, Post RM, et al. Comparison of rapid cycling and non-rapid-cycling bipolar disorder based on prospective mood ratings in 539 outpatients. Am J Psychiatry 2005;162:1273–1280. [PubMed: 15994709]
87. Kessler RC, Ames M, Hymel PA, et al. Using the World Health Organization Health and Work Performance Questionnaire (HPQ) to evaluate the indirect workplace costs of illness. J Occup Environ Med 2004;46:S23–S37. [PubMed: 15194893]
88. Kessler RC, Barber C, Beck A, et al. The World Health Organization Health and Work Performance Questionnaire (HPQ). J Occup Environ Med 2003;45:156 –174. [PubMed: 12625231]
89. Bauer MS, Kirk GF, Gavin C, Williford WO. Determinants of functional outcome and healthcare costs in bipolar disorder: a high-intensity follow-up study. J Affect Disord 2001;65:231–241. [PubMed: 11511403]
90. Hirschfeld RM. Bipolar depression: the real challenge. Eur Neuropsychopharmacol 2004;14(suppl 2):S83–S88. [PubMed: 15142612]
91. Judd LL, Akiskal HS. Depressive episodes and symptoms dominate the longitudinal course of bipolar disorder. Curr Psychiatry Rep 2003;5:417– 418. [PubMed: 14609495]
92. Blanco C, Laje G, Olfson M, Marcus SC, Pincus HA. Trends in the treatment of bipolar disorder by outpatient psychiatrists. Am J Psychiatry 2002;159:1005–1010. [PubMed: 12042190]
93. Wang PS, Berglund P, Kessler RC. Recent care of common mental disorders in the United States: prevalence and conformance with evidence-based recommendations. J Gen Intern Med 2000;15:284 –292. [PubMed: 10840263]
94. Wang PS, Demler O, Kessler RC. The adequacy of treatment for serious mental illness in the United States. Am J Public Health 2002;92:92–98. [PubMed: 11772769]
95. Young AS, Klap R, Sherbourne CD, Wells KB. The quality of care for depressive and anxiety disorders in the United States. Arch Gen Psychiatry 2001;58:55– 61. [PubMed: 11146758]
96. Kessler, RC.; Wang, PS. Screening measures for behavioral health assessment. In: Hyner, G.; Peterson, K.; Travis, J.; Dewey, J.; Foerster, J.; Framer, E., editors. SPM Handbook of Health Assessment Tools. Pittsburgh, PA: Society for Prospective Medicine; 1999. p. 33-40.

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97. Regier DA, Narrow WE, Rae DS, Manderscheid RW, Locke BZ, Goodwin FK. The de facto U.S. Mental and Addictive Disorders Service System: epidemiologic catchment area prospective 1-year prevalence rates of disorders and services. Arch Gen Psychiatry 1993;50:85–94. [PubMed: 8427558]

98. Klinkman MS. Competing demands in psychosocial care: a model for the identification and treatment of depressive disorders in primary care. Gen Hosp Psychiatry 1997;19:98 –111. [PubMed: 9097064]

99. Pincus HA, Hough L, Houtsinger JK, Rollman BL, Frank RG. Emerging models of depression care: multilevel ('6P') strategies. Int J Methods Psychiatr Res 2003;12:54 – 63. [PubMed: 12830310]

100. Williams JW. Competing demands: does care for depression fit in primary care? J Gen Intern Med 1998;13:137–139. [PubMed: 9502376]

101. Williams JW Jr, Rost K, Dietrich AJ, Ciotti MC, Zyzanski SJ, Cornell J. Primary care physicians' approach to depressive disorders. Effects of physician specialty and practice structure. Arch Fam Med 1999;8:58 – 67. [PubMed: 9932074]

102. Wang PS, Patrick A, Avorn J, et al. The costs and benefits of enhanced depression care to employers. Arch Gen Psychiatry 2006;63:1345–1353. [PubMed: 17146009]

103. Wang PS, Simon GE, Kessler RC. The economic burden of depression and the cost-effectiveness of treatment. Int J Methods Psychiatr Res 2003;12:22–33. [PubMed: 12830307]