

Measuring Workplace Depression to Manage It

Alberto Colombi, MD; Zorianna Hyworon, BS; Harris Allen, PhD

ABSTRACT

OBJECTIVES To examine depression symptom severity as (1) a predictor of employee health and productivity loss and (2) an outcome of contextual characteristics.

METHODS For objective No. 1: descriptive and predictive tests of the impact of depression symptom severity on health and productivity loss. For objective No. 2: tests differentiating the prediction of contextual characteristics on mild vs moderate to severe depressive symptoms. These tests were conducted on an international sample comprising 39097 administrations of a comprehensive health risk appraisal containing validated measures of depression and job performance. The analyses included controls for demographic, personal, job, and employer characteristics.

RESULTS Just under 23% of the study respondents recorded depressive symptoms, with just over two-thirds reporting mild (preclinical) depressive symptoms and the balance reporting moderate to severe symptoms indicative of a clinical diagnosis for depression. Depression severity exerted large effects on general health and productivity loss, with the mild group posting an aggregate productivity loss in dollars that was more than 33% greater than the loss associated with the moderate to severe groups combined. Adverse personal life impact more strongly predicted moderate to severe depression, while factors more directly amenable to employer health management efforts, most notably health risks, better predicted mild depression.

CONCLUSIONS By documenting the full range of the burden that depression fosters on employee health and productivity, these findings underscore the need for augmented programs for the detection, diagnosis, and treatment of the condition. By differentiating depression's predictive profile across levels of symptom severity, they further provide pointers for the allocation of available resources, including professional care by clinicians and employer health management programs, for reducing this burden. These results thus strengthen the business case for employer efforts to improve the management of employee depression and illustrate the usefulness of carefully conducted, standardized depression symptom screening for this purpose.

INTRODUCTION

Findings from recent studies combine to make a strong business case for employer initiatives to manage depression in the workplace. The enormous toll it takes on employees—in terms of both direct costs from utilization of the health care system and indirect costs from lost productivity—has been well established.¹⁻⁶ The rates of underdetection of and undertreatment for depression, even for those with severe symptoms, are still substantial.⁷ Moreover, the effectiveness of readily available options for treatment, including medications and counseling, has the capacity for savings resulting from such treatment to offset its cost.^{8,9}

Yet most employers still remain passive with respect to the need for company-based initiatives that bolster the diagnosis, detection, and treatment of depression.¹⁰⁻¹² To date, various organizational and individual “barriers”

have been cited as the primary reasons. Organizational barriers have included the lack of evidence affirming depression initiatives as an investment rather than an additional expense; the fact that the costs in lost productivity stem mostly from sources that are mainly invisible (absenteeism and presenteeism); and confusion over the employer role in depression management. Cited individual barriers have included stigma, inertia, and lack of knowledge about treatment options.¹³

Could it be, however, that an additional factor is at work: a lack of information on the full range of depression's impact when the condition is considered in its broader context? What are the links between depression and employee health and productivity across the continuum of severity of the condition? Does depression need to be at clinically diagnosed

AUTHOR AFFILIATIONS

PPG Industries Inc, Pittsburgh, Pennsylvania (Dr Colombi); InfoTech Inc, Winnipeg, Manitoba, Canada (Ms Hyworon); and Harris Allen Group LLC, Brighton, Massachusetts (Dr Allen).

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KEYWORDS depression; employee health management; productivity loss; symptom screening; workplace

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TABLE 1 Study Measures

Variable	N	Range	Mean (SD) or Percentage	Meaning of High Score
I. Depression				
1. Depression symptom severity (PHQ-9)	39 097	0,27	2.96 (4.05)	Severe depressed symptoms
2. Mild	39 097	0,1	15.76%	Yes
3. Moderate to severe	39 097	0,1	4.28%	Yes
II. Disease & Health Risks				
4. Major diseases (count)	39 097	0,4	0.12 (0.35)	Has heart disease, asthma, bronchitis, or kidney disease
5. Metabolic syndrome/pre-diabetes	38 769	0,1	30.94%	Has either/both conditions
6. Health risks (count)	39 097	0,8	1.93 (1.34)	8 risks (eg, smoking, overweight, stress)
III. Stress				
7. Predisposition toward stress	39 097	-2,24	8.93 (4.68)	Predisposed to greater stress
8. Organizational stressors	28 363	0,7	1.19 (1.47)	More stressors
IV. Job Characteristics				
9. Works outside of normal hours	25 415	0,3	0.97 (1.04)	Normally works overtime
10. Works nights	18 149	0,1	18.51%	Yes
11. Job requires high physicality	30 230	0,1	21.22%	Yes
12. Job exposure risk—minimal stimulation	30 229	0,100	65.69 (33.02)	Greater exposure to risk
13. Stress-satisfaction offset	37 239	-2,2	-0.74 (1.22)	Much more stressful than satisfactory
V. Employee Characteristics				
14. Age	39 095	18,82	40.66 (10.72)	Older
15. Male	39 097	0,1	40.85%	Male
16. Blue-collar	16 468	0,1	24.38%	Yes
17. Industrial (type; vs service = 0)	21 273	0,1	74.89%	Yes
VI. Regional				
18. Europe	38 656	0,1	20.60%	Yes
19. Canada	38 656	0,1	28.67%	Yes
20. Latin America	38 656	0,1	5.36%	Yes
21. US	38 656	0,1	45.35%	Yes

levels for its impact to register, or are its effects operative even at preclinical levels?

Furthermore, what factors co-occur with depression? Do these factors vary across the levels of severity of the condition? Answers to such questions could lead more employers to strive for greater clarity as to how they are being affected by depression. Such answers could also provide the impetus for participation in efforts to better define and tackle the priorities that need to be addressed for intervention.

We undertook this study to explore the insights that an international database of administrations of a comprehensive health risk assessment (HRA), the Wellness Checkpoint, could bring to this issue. Two objectives shaped our approach, both designed to take full advantage of the broad set of self-reports that this HRA elicits on health in the broader context of work, mental well-being, and the demands of organizational and family life:

1. What can be learned about the prediction of health and productivity loss by depression? How does depression compare with other health and non-health factors? Does its impact vary across levels of depression severity?

2. What can be learned about the prediction of workplace depression itself? Does the predictive profile of depression differ across different levels of depression severity? If so, what are the implications for employer strategies for augmenting efforts to reduce the burden of the condition?

The discussion below highlights the portions of the study that focused on these 2 objectives. For more details on the methods and results for the overall study, see Allen, Hyworon, and Colombi (2010).¹⁴

METHODS

To address these objectives, we obtained an extract drawn from a database by InfoTech Inc, located in Winnipeg, Manitoba, Canada, and the developer of the Wellness Checkpoint. This extract contained the most recently completed HRAs of 198 785 respondents spanning some 60 countries, with 27% coming from Europe, 43% from Canada, 26% from the United States, and 4% from Latin America.

Of the 60% to 90% (depending on the metric) of

TABLE 1 Study Measures (cont)

Variable	N	Range	Mean (SD) or Percentage	Meaning of High Score
VII. Work-Life Imbalance				
22. Reduce stress at work	23185	1,5	3.94 (0.92)	Very important
23. Reduce stress at home	23185	1,5	3.76 (1.05)	Very important
24. Better work-life balance	23184	1,5	3.93 (0.93)	Very important
Scale: Work-life imbalance (items 22-24)	23185	0,100	71.96 (19.58)	Worse balance
VIII. Personal Life Impact				
25. Effect: Work on personal life	23633	1,5	2.70 (1.08)	Strongly negative
26. Effect: Personal life on work	23632	1,5	2.47 (0.92)	Strongly negative
27. Stability of personal life	22765	1,4	1.77 (0.70)	Totally unstable
Scale: Adverse personal life impact (items 25-27)	23262	0,100	36.08 (18.76)	Worse impact
IV. Financial Concerns				
28. Financial concerns: Job-related	19137	1,4	2.11 (0.93)	Major concern
29. Financial concerns: Health-related	19137	1,4	1.76 (0.86)	Major concern
30. Financial concerns: Home-related	19137	1,4	2.14 (0.97)	Major concern
Scale: Financial concerns (items 38-30)	19137	0,100	33.40 (25.19)	Worse concerns
X. General Health				
31. Health status	38588	0,100	37.00 (21.70)	Poor
XI. Presenteeism (WLQ Short Form)				
32. Meeting physical work demands	37842	0,100	11.40 (22.27)	Very limited by health
33. Meeting mental work demands	37719	0,100	7.84 (14.66)	Very limited by health
34. Meeting time work demands	38833	0,100	8.98 (16.64)	Very limited by health
35. Meeting output work demands	38814	0,100	7.93 (15.82)	Very limited by health
Scale: Presenteeism (items 32-35)	39097	0,100	9.10 (13.14)	More limitations
XII. Absenteeism				
36. Average days missed due to health, per year	30217	1,4	1.57 (0.71)	10+ days
37. Full days missed due to health, last 2 weeks	39026	0,8	0.20 (0.83)	More days (count)
38. Part days missed due to health, last 2 weeks	39018	0,8	0.16 (0.67)	More days (count)
39. Short- and/or long-term disability	30214	0,3	0.15 (0.41)	Had >=1 STD & >=1 LTD episodes, last 2 years
Scale: Absenteeism (items 36-39)	39072	0,100	4.53 (8.46)	More time away

Abbreviations: LTD, long-term disability; PHQ-9, Patient Health Questionnaire-9; STD, short-term disability; WLQ, Work Limitations Questionnaire.

the sample for whom non-missing data were available, some 25% had blue-collar positions, while 63% were linked to industrial (as opposed to service) companies.

SAMPLE

To focus the study, our analyses identified only those respondents whose observations included responses to the instrument's measures of depression and job performance. These measures in both cases had been selected based on extensive work assessing construct, criterion, and predictive validity conducted elsewhere. The depression measure was the Patient Health Questionnaire-9 (PHQ-9) depression symptom scale, which assesses the 9 criteria on which the diagnosis of the *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition) depressive disorders is based.¹⁵ The measure of job performance was the 8-item short-form version of the Work Limitations Questionnaire (WLQ), which elicits

self-reports on the extent to which health limits capacity to meet the physical, mental, time, and output demands of work.¹⁶

Respondents who did not provide non-missing responses to either item set were dropped. A total of 67016 had non-missing PHQ-9 scores, while 43865 had non-missing WLQ scale scores. A total of 39097 respondents had both sets of scores recorded and thus constituted the sample for this analysis.

MEASURES

A review of the extract identified 39 pertinent measures comprising 12 categories. Table 1 introduces these categories (by roman numerals) and measures (by numbers). Grouping the variables into these categories helps to facilitate the discussion that follows.

Two categories were descriptors of productivity loss: presenteeism as a function of the health of the employee respondents (4 measures) and absenteeism as a function of the health of the employee

respondents (4 measures). A third category included a single measure describing general health (the 5-level excellent-to-poor item). A fourth category consisted of variables that flagged 2 levels of depression symptom severity (mild; moderate to severe) as well as the overall PHQ-9 depression symptom scale. A fifth category was composed of the study's other measures of health, including health risks and 2 measures of disease.

The remaining categories each included a set of contextual characteristics that were plausible predictors of depression, health, and productivity loss: work-life imbalance (3 measures); personal life impact (3 measures); financial concerns (3 measures); stress (2 measures); job characteristics (5 measures); employee characteristics (4 measures); and geographic region (4 measures: Europe, Canada, Latin America, and the US).

Results from factor analyses supported the use of 5 summary scales—presenteeism, absenteeism, work-life imbalance, financial concerns, and adverse personal life impact, each composed from their corresponding sets of items as introduced above—in the results that follow.

ANALYTIC APPROACH

Our first objective was to differentiate in descriptive terms those respondents who reported depressive symptoms from those who did not. Comparisons based on the study's contextual characteristics were used for this purpose.

Next we focused on depression as an independent variable. For our second step, we used the PHQ-9 classification scheme to examine the impact of depression on health and productivity loss strati-

fied by level of severity. These analyses focused on depression by itself, with no adjustments made for potentially confounding factors, and included preliminary estimates of aggregated dollars lost by severity category. Next, depression was pitted against other health and non-health factors in direct tests of the prediction of health and productivity loss that controlled for potentially confounding factors.

The final step focused on depression as a dependent variable. Here we again took advantage of the capacity of the PHQ-9 scale to stratify depressed respondents by level of severity to compare those who reported mild (ie, preclinical) symptoms vs those who reported moderate to severe symptoms indicative of a clinical diagnosis. These latter tests were framed to contrast the prediction of both groups by each contextual characteristic.

RESULTS

SAMPLE CHARACTERISTICS

Just under 23% of this sample reported depressive symptoms in the mild to severe range (Figure 1 and Table 2). Younger, female respondents were more likely to record these symptoms. Also, those with more diseases and more risk behaviors were more likely to report depressive symptoms, as were those who reported less job satisfaction, who worked beyond normal hours, and who worked in minimal-stimulation jobs. Similarly, those who recorded a greater predisposition toward stress and greater exposure to environmental stressors as well as those who reported greater work-life imbalance, negative personal life impact, and more financial concerns all exhibited a greater likelihood of depression.

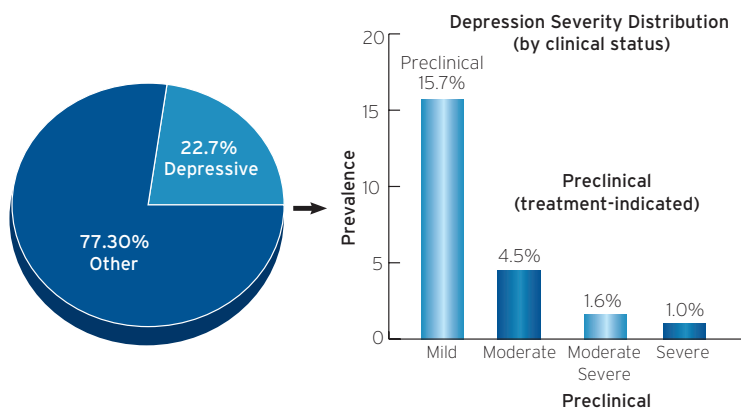
On the other hand, those in blue-collar positions, who worked in industrial companies, whose jobs required high physicality, and whose jobs entailed working nights were less likely to report depressive symptoms. While Canadian and European respondents were more likely to report depressive symptoms, Latin American and US respondents were less likely to do so.

IMPACT OF DEPRESSION BY ITSELF

Considered by itself, depression exerted impacts on health and productivity that were large and in the expected direction. When the depression group was stratified by the 4 levels of severity delineated by the PHQ-9 measure and compared with those with symptom responses in the normal range, the more severe the symptoms, the greater the deficits observed (Table 3). This held true not only for general health but also for presenteeism and absenteeism.

Of particular interest was the relative aggregate

FIGURE 1 Distribution of Depressive Symptoms in Employee Study Sample



productivity loss expressed in dollars that was estimated for each severity group (Table 4 and Figure 2). This aggregate loss was computed by multiplying each group's prevalence (per 1000 employee population) by its average per patient symptom impact, and then multiplying the result by an assumed average annual compensation of \$50,000 per employee. The mild group's deficits proved the largest by a significant margin on both measures of productivity loss. In fact, it generated an aggregate dollar loss estimate that was more than 33% greater than the total loss estimate for the other 3 severity levels combined.

PREDICTING HEALTH AND PRODUCTIVITY LOSS FROM DEPRESSION IN CONTEXT

When adjustments were made for potential confounds, females, blue-collar workers, service employees, those with more health risks and more diseases, and those with greater financial concerns and adverse personal life impact recorded poorer general health (Table 5). Likewise, those holding minimal-stimulation jobs and with stressful (vs satisfactory) jobs reported poorer general health, as did those in each of the 3 regions relative to the US. On the other hand, those who worked outside normal hours and those with jobs requiring high physicality reported better general health. Yet with all of these significant controls, depression symptoms showed a highly significant linkage to poor general health—in fact, the third largest of the predictors in the analysis.

Turning to productivity loss, those with poor general health, who were male, and who had more work/life imbalance, greater financial concerns, and more adverse personal life impact all reported greater levels of presenteeism (Table 5). Greater predisposition toward stress and more exposure to environmental stressors were also linked to more presenteeism, as did being employed by firms in each of 3 regions measured relative to the US. Similarly, having a stressful job or a job that required more physicality or involved minimal stimulation also led to greater presenteeism. In contrast, having a

TABLE 2 Describing Depression in the Study Sample

Characteristic	Normal	Reported Depression	T (p)
	(n=33066) (77.3%)	Symptoms n=10331 (22.7%)	
Age	41.1	39.2	14.8 (.00)
Male	42.9%	33.7%	15.6 (.00)
Blue-collar	25.5%	20.7%	6.0 (.00)
Industrial	79.2%	61.0%	26.5 (.00)
Major diseases (count)	0.10	0.17	17.5 (.00)
Metabolic syndrome/pre-diabetes	28.6%	38.9%	18.3 (.00)
Health risks (count)	1.7	2.6	59.2 (.00)
Work-life imbalance	69.9	78.1	28.4 (.00)
Financial concerns	29.2	45.5	40.6 (.00)
Adverse personal life impact	32.3	47.1	56.3 (.00)
Predisposition toward stress	7.8	12.1	82.7 (.00)
Organizational stressors	1.1	1.3	7.9 (.00)
Works outside of normal hours	0.95	1.0	6.2 (.00)
Works nights	19.5%	15.3%	6.0 (.00)
Job requires high physicality	21.8%	19.1%	4.8 (.00)
Job exposure—minimal stimulation	63.7	72.9	20.1 (.00)
Stress-satisfaction offset	-0.96	0.02	69.8 (.00)
Europe	19.9%	23.0%	6.3 (.00)
Canada	26.5%	36.3%	17.9 (.00)
Latin America	6.1%	3.0%	11.3 (.00)
US	47.6%	37.8%	16.3 (.00)

TABLE 3 Health and Productivity Loss Stratified by Depression Symptom Severity

	Level of Depression Symptom Severity					F	df	P
	Normal (77.3%)	Mild (15.8%)	Moderate (4.3%)	Moderately Severe (1.6%)	Severe (1.0%)			
General health	33.37	47.05	55.13	57.41	60.76	1128.1	4,38533	0.00
Presenteeism	6.1	16.0	23.0	29.7	39.3	2866.6	4,39092	0.00
Absenteeism	3.6	6.4	9.0	12.1	15.9	636.0	4,39067	0.00

TABLE 4 Annual Productivity Dollars Lost to Depression per 1000 Employees, by Symptom Severity

Component	Level of Depression Symptom Severity			
	Mild	Moderate	Moderately Severe	Severe
Prevalence	158	43	16	10
Individual component loss ^a				
Presenteeism (dollars per 1000 employees)	1260800	492200	239085	204360
Absenteeism (dollars per 1000 employees)	504320	192600	97405	82680
Total productivity loss ^a				
Presenteeism + absenteeism (dollars per 1000 employees)	1765120	684800	339490	287040

^aAssumes an average annual compensation of \$50,000 per employee.

metabolic/pre-diabetic condition and working nights were linked to less, not more, presenteeism. Yet even with adjustments for all of these influences, depression symptoms exerted a highly significant effect—in fact, posting the largest of all predictors tested.

On the other hand, being younger or female, being in a blue-collar position, having more major diseases,

having health risks, and being in poorer general health all led to ties to more time away from work (Table 5). More financial concerns and more adverse personal life impact were likewise linked to more absenteeism, as was greater exposure to environmental stressors and working at a European or Canadian firm (relative to a US firm). Conversely, having a greater predisposition toward stress, holding a job requiring greater physicality, and working more “beyond normal” hours were tied to less absenteeism.

Depression symptoms, however, posted the greatest influence when all these factors were controlled.

These analyses accounted for 28%, 32%, and 12% of the variance in general health, presenteeism, and absenteeism, respectively—each an exemplary level of explanation achieved, especially in view of the size and varied nature of the sample.

PREDICTING SEVERITY-STRATIFIED DEPRESSION IN CONTEXT

When controls were made for potential confounds, the presence of depressive symptoms was tied to each of the following (Table 6): younger age; female; working in a service job; having more diseases and more health risks; greater work-life imbalance, more financial concerns, and more adverse personal life impact; greater predisposition toward stress and more exposure to organizational stressors; working in jobs with normal hours only or working in jobs that were stressful; and working for firms in any of 3 regions examined (relative to the US).

When stratification was made for severity, more health risks, being female, having a minimal-stimulation job, and holding a position with a European firm all better predicted mild depression than moderate to severe depression. Conversely, adverse personal impact significantly better predicted moderate to

severe depression than mild depression. Most striking here was the significant contrast in the relative prediction by adverse personal impact vs health risk count for the 2 severity categories (Figure 3). Again, the level of explanation achieved was exemplary: 12% for mild depression and 18% for moderate to severe depression.

DISCUSSION

These results augment and sharpen the business case for continuing—indeed expanding—employer efforts to promote better management of depression. They do so both by refining what is understood about the nature of the burden depression generates on

FIGURE 2 Productivity Dollars Lost to Depression, by Symptom Severity

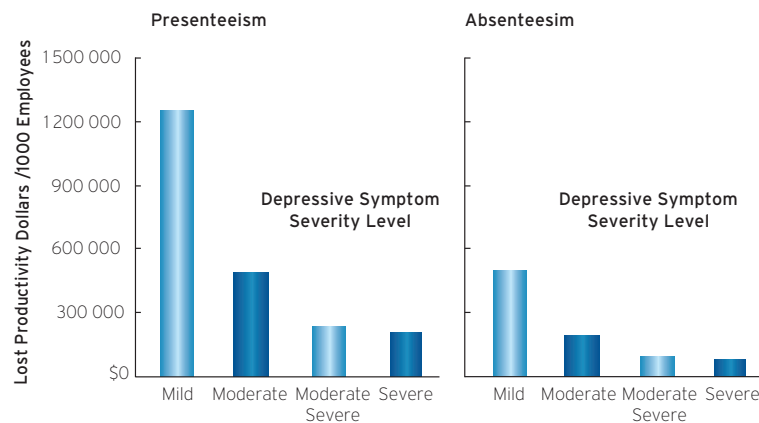


TABLE 5 Health and Productivity Loss as a Function of Depression in Context

Predictor	General Health		Presenteeism		Absenteeism	
	B ^a	Z ^b	B	Z	B	Z
General health	-	-	0.06	9.6@	0.09	14.0@
Depression symptom severity	0.15	2.6@	0.35	40.9@	0.17	16.2@
Age	-0.01	-1.3	0.00	0.5	-0.02	-3.7@
Male	-0.01	-2.1@	0.01	1.1	-0.07	-10.9@
Blue-collar	0.04	4.2@	0.02	1.7	0.06	4.9@
Industrial	-0.04	05.0@	0.01	1.4	-0.01	-0.6
Major diseases (count)	0.07	14.2@	0.02	4.4@	0.07	8.8@
Metabolic syndrome/pre-diabetes	0.12	22.3@	-0.01	-2.2@	0.02	2.5@
Health risks (count)	0.27	47.7@	-0.00	-0.7	0.02	3.0@
Work-life imbalance	0.00	0.3	0.02	3.2@	0.02	1.9
Financial concerns	0.08	9.7@	0.08	9.9@	0.05	5.5@
Adverse personal life impact	0.12	14.6@	0.09	11.2@	0.04	4.4@
Predisposition toward stress	-0.02	-3.5@	0.02	3.2@	-0.07	-10.4@
Organizational stressors	0.02	3.5@	0.02	2.2@	0.02	2.9@
Works outside of normal hours	-0.02	-3.8@	0.02	3.2@	-0.04	-5.6@
Works nights	-0.00	-0.0	-0.03	-3.4@	0.01	1.3
Job requires high physicality	-0.02	-3.4@	0.03	5.3@	0.03	-4.2@
Job exposure—minimal stimulation	0.04	5.9@	0.02	2.9@	0.04	5.6@
Stress-satisfaction offset	0.03	4.7@	0.11	19.9@	0.03	4.3@
Europe (vs US)	0.18	31.0@	0.12	20.5@	0.12	16.7@
Canada (vs US)	0.06	11.0@	0.11	18.8@	0.08	12.5@
Latin America (vs US)	0.08	12.4@	0.07	9.3@	0.01	1.5
R ²	0.28	0.32	0.12			

@ p < .05 ^a Standardized beta. ^b Z score.

employee health and productivity and by differentiating the predictive profile across levels of severity of the condition.

First, not only did depression exert a huge impact on employee health and productivity across a wide variety of demographic and health characteristics, personal circumstances, job types, and geographic regions, but, in the first comparisons of which we are aware, it also ranked at or near the top in terms of the burden it fosters relative to non-health as well as other health characteristics. These findings replicate our earlier study, conducted on a previous version of the data extract used for

this study, which showed depression to be the strongest among a set of health drivers of presenteeism and a significant driver of absenteeism.^{17,18}

Furthermore, depression's reach extends beyond those whose symptoms are indicative of a clinical diagnosis to include those whose symptoms can be characterized as preclinical—ie, present but not at a level that is likely to elicit a clinical diagnosis of depression. In fact, mild depression exerted an aggregate burden in lost productivity dollars that was more than a third greater than the loss associated with moderate to severe depression combined, because of its greater prevalence and the nontrivial impact it registered on those affected.

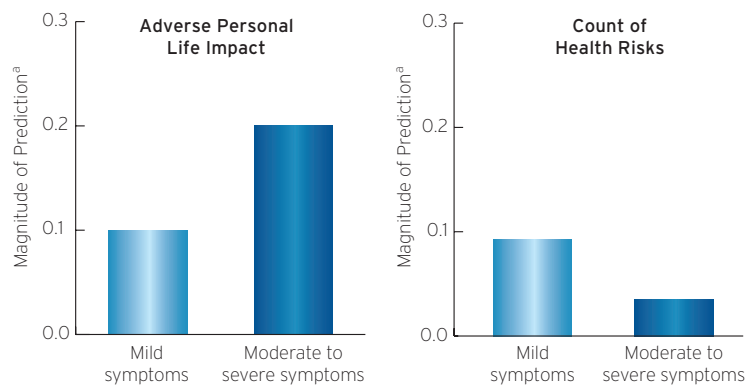
Second, the presence of depression was predicted by a variety of contextual characteristics ranging from demographic and personal characteristics to various job attributes. But the evidence here indicated that the mix of these predictors varied across levels of severity. Adverse personal impact—itsself an inner-focused measure indicative of potentially deep-seated issues involving home, work, and personal life that may merit clinical intervention—was the more potent predictor of moderate to severe depression. In contrast, health risks—factors more directly amenable to employer health promotion efforts—better predicted mild depression.

TABLE 6 Differentiating the Prediction of Mild vs Moderate to Severe Depression in Context

Predictor	Mild		Moderate to Severe		Mild vs. Moderate to Severe	
	B ^a	Z ^b	B	Z	X ²	P
Age	-0.02	-4.2@	0.00	0.6	17.5	0.00@
Male	-0.05	-7.6@	-0.06	-9.3@	0.2	0.65
Blue-collar	-0.00	-0.0	0.00	0.2	0.1	0.70
Industrial	-0.06	-6.8@	-0.07	-7.8@	1.7	0.20
Major diseases (count)	0.02	2.6@	0.03	4.3@	1.1	0.30
Metabolic syndrome/pre-diabetes	0.02	2.6@	0.03	4.9@	0.2	0.63
Health risks (count)	0.09	13.7@	0.03	5.0@	70.7	0.00@
Work-life imbalance	0.05	6.7@	0.04	5.3@	1.8	0.18
Financial concerns	0.07	8.2@	0.12	12.8@	2.1	0.15
Adverse personal life impact	0.10	10.9@	0.20	20.6@	18.1	0.00@
Predisposition toward stress	0.12	16.9@	0.15	20.3@	0.4	0.51
Organizational stressors	0.02	2.7@	0.03	4.3@	3.3	0.07
Works outside of normal hours	-0.02	-2.3@	-0.10	-1.7	0.4	0.52
Works nights	-0.01	-1.1	-0.00	-0.4	1.9	0.17
Job requires high physicality	-0.00	-0.5	-0.00	-0.5	0.1	0.74
Job exposure—minimal stimulation	0.01	1.7	-0.01	-2.1	19.6	0.00@
Stress-satisfaction offset	0.08	11.1@	0.07	10.5@	2.7	0.10
Europe (vs US)	0.07	10.6@	0.06	8.9@	28.3	0.00@
Canada (vs US)	0.02	3.2@	0.03	5.6@	0.0	0.90
Latin America (vs US)	0.02	3.2@	0.06	9.2@	1.2	0.28
	R ²		0.12		0.18	

@ p < .05 ^a Standardized beta. ^b Z score. Note: The X² test for each predictor had 1 degree of freedom and was calculated using forward stepwise regression with controls for all other predictors in the column.

FIGURE 3 Differentiating the Prediction of Depressive Symptoms: The Impact of 2 Contextual Characteristics by Severity Level, by Severity of Depressive Symptoms



^a Prediction entry for each severity level is the standardized beta coefficient calculated from the regression of the severity level on the contextual characteristic with controls for demographic, personal, job, and employer characteristics (range: -1.0 to 1.0).

For employers seeking to improve workforce performance, these findings point to the need to ensure that depression is given top priority. Programs and policies for upgrading the diagnosis, detection, and treatment of depression need to be added to the list of any investments being made in education, training, and other forms of human capital. Benefit

designs are an example. These findings underscore the need for parity in mental and physical health coverage.¹⁹⁻²⁰ It is in the interest of employers to realize this objective in the coverages provided to their employees.

It is also squarely within the employers' interest to pursue expansion of outreach, education, and treatment efforts targeting depression. To date, employees with a clinical diagnosis have typically comprised the main target of the programs and policies that employers have in place for managing depression. Our findings support the calls that have been made for interventions that build upon improvements in medical care, especially ones that address workplace environment issues and provide job-coaching services.²¹ They strongly suggest the need to broaden these efforts to include those who are symptomatic but not diagnosed with the condition. They in fact call for the allocation of available resources that is proportionate across the entire spectrum of depression severity. While more severe episodes need proper referral to professional care, mild depression can be addressed by employer-sponsored efforts such as employee assistance programs and stress-reduction programs that focus on individual coping skills as well as organizational issues.

Screening for depression with HRAs like the one used in this study can serve to streamline this resource allocation. When obtained via processes

that properly safeguard privacy and confidentiality, standardized depression symptom assessment can provide a vehicle for optimizing system entry, for facilitating the integrated management of depression, and for improving the quality of care and creating effective interfaces among fragmented components in the delivery system.^{22,23}

This study illustrates the considerable potential that standardized symptom assessment offers for managing workplace depression. Future work can build on this potential with methodological improvements that incorporate complementary data from other sources (eg, claims) in the context of evaluation designs that follow respondents over time. Future work is also needed to refine the preliminary estimates of dollar loss reported here. These estimates did a reasonable job of conveying relative magnitude, but more refinement on the various components (eg, individual compensation vs average compensation) is needed before the actual magnitude of these estimates can be treated as an actionable basis for policy and program initiatives.

These limitations notwithstanding, this study underscores the importance of coming to grips with and managing the burden of depression across the full continuum of severity of the condition. Future research that serves to facilitate this objective will substantially advance workforce health and productivity. •

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