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Employment Outcomes Among Individuals with Mental Health Disorders and Comorbid Chronic Pain

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Abstract

Objective—We sought to examine the independent and interactive effects of common mental health disorders and chronic pain conditions on employment and work outcomes among individuals younger than 65 years of age.

Methods—We analyzed cross-sectional data from the second wave of Healthcare for Communities (HCC2), a household telephone survey of U.S. civilian adults conducted in 2000 to 2001 (N=5328). Common mental disorders were assessed using the short-form versions of the World Health Organization's Composite International Diagnostic Interview (CIDI-SF). Chronic pain conditions and labor market outcomes were identified by self report. Logistic and linear regression analysis was used to provide estimates for work impairment based on the presence of a mental health disorder and/or a chronic pain condition.

Results—The interaction between presence of a mental health disorder and presence of a chronic pain condition was significantly associated with no work for pay in the past 12 months (OR 2.3 [1.2–4.2]) and number of days of work missed in the past month due to health (regression coefficient 1.5 [0.6]). In stratified analyses, this effect persisted in women but not men. The presence of a mental health disorder or chronic pain condition were each independently associated with limitations in work and any work missed in the past 30 days due to health, although the interaction was not significant.

Conclusion—Mental health disorders and chronic pain are each associated with work disability. Mental health disorders are more highly associated with some work disability outcomes when accompanied by chronic pain, especially in women.

Introduction

Comorbidity between mental health, substance use disorders and chronic non-cancer pain is common and contributes to overall disability and treatment outcomes. Studies of depressed persons in outpatient clinical settings have found prevalence rates for pain symptoms ranging

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from 40 to 85% (1,2). In an analysis of data from the National Comorbidity Survey Replication, rates of chronic spinal (back, neck) pain were 29.3% among individuals meeting criteria for any mental disorder in the past 12 months, 34.5% among those with a mood disorder, 31.4% among those with an anxiety disorder, and 23.4% among those with a substance use disorder, compared to 15.9% among those not meeting criteria for a mental disorder (3). Sixty-three percent of depressed persons surveyed in the first wave of the Healthcare for Communities Survey reported having a chronic pain condition (4). Studies have also found high rates of pain-related diagnoses in substance abusers (5–7). Pain severity is associated with poor depression outcomes (2) and the presence of both chronic pain and depression is associated with greater emotional distress, poorer health-related quality of life, and decreased physical functioning relative to those with only one of these conditions (1,2,4).

Prior studies have assessed the individual effects of mental health disorders and chronic pain on work and employment outcomes. Depression and/or depressive symptoms have been associated with increased work disability (8–12); reduced productivity, reduced aggressiveness in job-seeking, reduced ambitions in job choice (13), and higher rates of unemployment (8, 14,15). Similarly, chronic pain has been associated with negative employment outcomes, including increased sick leave among individuals with frequent headaches (16), reduced productivity and absenteeism due to migraine (14,17), unemployment and lost work days in individuals with chronic low back pain (18–20), and work disability in rheumatoid arthritis (21).

A few studies have examined the relationship between mental health-chronic pain comorbidity and work-related outcomes. Several studies have identified psychological factors as predictive of return to work status among those with low back pain (22–24). In a survey of Dutch adults (25), chronic back troubles, rheumatism, migraine, and mood disorder were associated with significant work loss days in the prior year. When a mood disorder was present with a physical condition, the number of work loss days increased, and the effect of physical-mental comorbidity was noted to be synergistic with chronic back troubles. In a survey of adults from several European countries, the presence of painful physical symptoms and major depression had an additive effect on work loss days (26).

In an analysis of data from the Health and Retirement Study, those with comorbid pain and depression were more likely to be unemployed and to report health limited work than those with either pain or depression alone, and the percent reporting either outcome increased with pain severity (27). A separate analysis found that participants with depression plus severe pain were also more likely to lose employment than those with depression alone (28). The study focused on individuals near retirement, however, and thus did not assess all persons of working age. In addition, the presence and severity of pain was assessed but not location, and assessment of mental health was limited to depressive symptoms.

In our study, we sought to examine the independent and interactive effects of common mental health disorders and chronic pain conditions on several employment and work outcomes representing different levels of impairment among individuals younger than 65 years of age using data from a population-based survey of U.S. adults. We hypothesized that individuals with both chronic pain and mental health disorders would report the highest rates of unemployment and work limitations due to health, followed by those with a mental health disorder or chronic pain condition alone.

Methods

Data source

Data are from the second wave of Healthcare for Communities (HCC2), a part of the Robert Wood Johnson Foundation's Health Tracking Initiative conducted in 2000–2001. HCC was a nationwide telephone survey designed to track the effects of the changing health care system on individuals at risk for alcohol, drug abuse, and mental health disorders (29). The HCC respondents were a stratified probability sample of participants in the Community Tracking Study (CTS), a nationally representative study of the U.S. civilian population (30). Details of the sampling design are described elsewhere (29). The initial HCC survey was conducted in 1997–1998 (HCC1). HCC2 was conducted in 2000–2001 and was designed to follow all individuals who responded to HCC1. Of the 14,985 respondents selected for HCC1, 9,585 complete interviews were obtained, for a response rate of 64%. A total of 6,659 of the 9,585 HCC1 respondents (70.9%, weighted) completed the HCC2 survey. Informed consent was obtained verbally before the interview, and the study was approved by the institutional review boards at UCLA and RAND. Excluding respondents with missing data for mental health disorders and chronic pain conditions, the number of responses analyzed for this study was 5328.

Variables

The presence of common mental disorders in the past 12 months (major depression, dysthymia, generalized anxiety disorder, and panic disorder) were assessed using short-form versions (31) of the World Health Organization's Composite International Diagnostic Interview (CIDI-SF) (32), based upon the Diagnostic and Statistical Manual Third Edition-revised (DSM-III-R) (33). The presence of lifetime mania and psychosis were assessed by single screening questions. Chronic pain conditions and other chronic conditions were identified by self-report. The HCC survey asked about 17 different chronic conditions, four of which were defined for this analysis as chronic pain conditions: Arthritis, chronic back problems, migraine/chronic headaches, and 'other' chronic pain condition. The four chronic pain categories and four common mental disorders were used to create four categories indicating the presence of chronic pain and/or mental health: (i) mental health disorder without comorbid chronic pain, (ii) mental health disorder with comorbid chronic pain, (iii) no mental health disorder but chronic pain, and (iv) no mental health disorder and no chronic pain.

Problem alcohol use was defined as an Alcohol Use Disorders Identification Test (AUDIT) core total score of eight or higher (34). Problem drug use was defined as a positive answer to either of two questions, adapted from the CIDI, assessing tolerance or emotional or psychological problems as a result of drug use. The Physical Component Summary-12 (PCS-12) and Mental Health Summary-12 (MCS-12) from the Short Form-12 (SF-12) (35) were used as aggregate measures of physical functioning and mental health functioning, respectively (both scores have a mean of 50 with standard deviation 10 in the U.S. adult population, a higher score indicating better functioning). Level of pain interference with the respondents' daily activities was derived from the SF-12 pain interference item (extremely/a lot versus moderately/a little bit versus not at all).

Labor market outcomes were assessed by self report. These included the number of weeks worked in the past 12 months; the number of days of work missed in the past 30 days, and the number of days of work arrived late or left early in the past 30 days. Respondents were also asked how many of the days of work missed or shortened were due to health problems. Whether a respondent's ability to work was limited by health was assessed with the following question: Are you unable to work or unable to work as much as you'd like to because of your health?

Data analysis

Sample weights designed by the statisticians on the HCC study staff were used to weight the data to make them representative of the U.S. population and adjusted for the probability of selection, non-response, and the number of households in the CTS survey that did not have a phone. Statistical differences were assessed with χ^2 statistic for categorical variables or F statistic for continuous variables. Logistic regression analysis was used to estimate odds ratios for work impairment based on risk factors, while controlling for socio-demographic covariates, mean number of chronic non-pain conditions, and presence of an alcohol or drug use disorder. Linear regression analysis was used to estimate coefficients for days of work missed; coefficients were assumed to be distributed normally based on sample size (36). In the case of non-dichotomous categorical covariates (race, marital status, education level), dummy variables were created for use in the models. No work in the past 12 months was defined as responding no to questions concerning current employment and if any work for pay was done in the past 12 months. A composite variable to estimate work missed was created, summing days of work missed and 40% of days arrived late or left early due to health in the past 30 days, and was modeled after the approach taken by Kessler et al (10). In sensitivity analysis, logistic regression analyses were rerun defining no work in the past 12 months as only those not currently working; no significant differences in results were noted. Dichotomous variables that indicated the presence of a mental health disorder and presence of a chronic pain condition were included in all the models, and an interaction term concerning the presence of a chronic pain condition and presence of a mental health disorder was added to estimate the effect sizes for those with both a mental disorder and comorbid chronic pain. All analyses were conducted using Software for the Statistical Analysis of Correlated Data (SUDAAN, version 9.01, Research Triangle Park, NC).

Results

Socio-demographic characteristics

Table 1 lists the socio-demographic characteristics of the 2000–2001 Healthcare for Communities (HCC2) population, age 18 to 64 years, by chronic pain/mental health status. The four groups differed significantly in all characteristics except race/ethnicity. Individuals with a mental health disorder and comorbid chronic pain condition were the most likely to be female and least likely to have graduated from college or to be married relative to the other three groups.

Clinical characteristics

Table 2 lists the clinical characteristics of the 2000–2001 HCC2 population, age 18 to 64 years, by chronic pain/mental health status.

Pain types, interference, and other chronic conditions

Individuals with chronic pain and a mental health disorder, compared to those with chronic pain and no mental health disorder, had a higher current prevalence of chronic back troubles, chronic headaches and other chronic pain disorder, were more likely to report a high level of pain interference, and had a higher mean number of chronic pain conditions. The mean number of non-pain chronic conditions was highest, and the mean PCS-12 score lowest, in those with a mental health disorder and chronic pain relative to the other three groups.

Employment outcomes

Table 3 lists employment outcomes of the 2000–2001 HCC2 population, age 18 to 64 years, by chronic pain/mental health status.

Individuals with a mental health disorder and chronic pain were the least likely among the four groups to be currently working and most likely to report their ability to work was limited because of health. These individuals also reported a higher mean number of days of work missed, arrived late or left early in the past 30 days due to health, relative to the other three groups. The mean number of weeks worked in the past 12 months was also lowest for these individuals, though in post-hoc pair-wise comparisons, this group did not differ significantly from individuals with a mental health disorder without chronic pain (44.7, $\text{chisq}=1.89$, degrees of freedom (df)=1, $p=0.059$).

The presence of both a mental health disorder and a chronic pain condition was significantly more likely to be associated with no work or limitations in work in the past 12 months relative to the presence of either condition alone. In pair-wise comparisons, individuals with a chronic pain condition without a mental health disorder were not significantly different compared to those without either condition with respect to mean weeks worked, mean days of work missed because of health, or mean days arrived late/left early due to health. Individuals with a mental health disorder without chronic pain were not significantly different compared to those without either condition in respect to mean days of work missed or arrived late/left early due to health.

Logistic and linear regression analyses

Table 4 and Table 5 present the results of multivariate regression analyses examining risk factors for the outcomes 1) no work in the past 12 months 2) ability to work limited by health 3) any work missed (logistic regression) or 4) days of work missed (linear regression) in the past 30 days due to health, among those age 18 to 64 years.

The presence of a mental health disorder or chronic pain condition was each independently associated with reporting that ability to work was limited due to health. Likewise, among those currently working, the presence of a mental health disorder or a chronic pain condition was each independently associated with work missed in the past 30 days due to health (Table 4). For these outcomes, however, the interaction between presence of a mental health disorder and presence of a chronic pain condition was not significant.

In contrast, a significant interaction effect existed between presence of a mental health disorder and the presence of a chronic pain condition on the outcomes no work in the past 12 months (Table 4), and number of days of work missed in the past month due to health (Table 5), suggesting effect modification, and specifically, that mental disorders have a greater effect on how much one is able to work when combined with a chronic pain condition. In stratified analyses (data not shown), this effect persisted in women, but not in men.

In sensitivity analyses, we added pain interference as an additional covariate, however this did not change results substantially, and suggests that the effects observed are not observed only in those with more severe pain.

Discussion

Our study of the association of chronic pain and mental health disorders with employment in the general population shows that each independently is associated with a doubling of the likelihood of reported work limitations due to health. Furthermore, the presence of both conditions is synergistically associated with a lack of paid employment in the prior year and the number of work days missed in the prior month due to health among women. Results are consistent with findings from a recent analysis of individuals age 55 to 65 years in the Health and Retirement Study (27) and expand on those findings to confirm the association between comorbid pain with any mental health disorder and poor employment outcomes in those age 18 to 64 years.

In our study, absence from the work force was seen primarily in those with a mental health disorder and comorbid chronic pain. An interaction effect between mental health and chronic pain was significantly associated with no work for pay in the prior year and number of work days missed in the prior month due to health, but not with health limiting work. In our data, approximately half of those reporting their ability to work was limited by health also reported one or more of the other forms of work disability assessed, suggesting that a positive answer to this question captured a broad range of severity in terms of work functioning. In addition, endorsing work limitations provides information that disability is present but not how much. Having either a chronic pain condition or a mental health disorder alone may be sufficient to cross a certain threshold level of impairment, but the degree of impairment worsens when both are present. The gender effects observed may reflect increased rates of depression, anxiety, and somatic symptoms in women (26,37), and/or differences in total of paid and unpaid (e.g., home) work load compared to men (38).

Strengths of this study are its population-based study design and information on both DSM-III-R mental health disorders and chronic medical conditions. Limitations include the self-report nature of information on medical and chronic pain conditions, limited data on substance abuse disorders, and the cross-sectional nature of the information obtained. The outcome “no work in the past 12 months” is less specific to health, and may have been influenced by other unmeasured variables. In addition, our data did not assess other aspects of work disability, such as productivity, that may be affected by chronic pain and/or mental health. While the associations found between mental health, chronic pain, and employment outcomes are robust, the data are cross-sectional and thus no conclusions can be drawn about the direction of the association. In addition, data did not include information on the duration of pain or mental health symptoms. Prospective studies have demonstrated an association between depressive symptoms and subsequent unemployment (15) and loss of employment and subsequent depression (13,39,40). Depression has also been shown in prior studies to both precede and follow the development of chronic back pain (41–44). A World Health Organization study found both baseline depression/anxiety and moderate-severe occupational disability to predict onset of persistent pain disorders 12 months later (45). A prospective analysis of data from the Health and Retirement Survey found an association between depression plus severe pain and subsequent loss of employment relative to depression alone (28). In our study, the fact that pain and mental health were synergistically associated with no work as well as days missed among those working, suggests that pain and mental health may be mutually reinforcing factors leading to impairment in functioning, and decreased ability to meet the demands of the work place.

In this study, 68% of those with a mental health disorder also had a chronic pain condition, and 30% of those with a chronic pain condition also had a mental health disorder. Previous studies have documented improvement in employment outcomes with enhanced treatment of depression (46–49). Given the high degree of comorbidity between chronic pain and mental disorders, and increased disability in the presence of both conditions, future studies should examine the single and conjoint effects of treatment for each of these disorders on employment outcomes.

Conclusions

Results of this study suggest that mental health disorders are more highly associated with some work disability outcomes when accompanied by chronic pain, especially among women. Future studies should examine the temporality of this association and the effects of treatment for each of these disorders on employment outcomes.

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Table 1
Socio-demographic characteristics of respondents by presence of chronic pain or mental health disorder, age 18 ~ 64

Sample Characteristics	Overall (N=5328)		Mental health disorder with comorbid chronic pain (N=695)		Mental health disorder without comorbid chronic pain (N=333)		No mental health disorder, but chronic pain (N=1,605)		No mental health disorder and no chronic pain (N=2,695)		χ^2	df	p
	N	%	N	%	N	%	N	%	N	%			
Age Group											117.87	6	<0.001
Under 31	852	17.8	69	11.6	81	27.1	150	9.9	552	21.8			
31 to 45	2117	42.8	276	43.3	154	48.7	532	35.8	1155	45.6			
46 to 64	2359	39.4	350	45.1	98	24.2	923	54.3	988	32.6			
Gender											43.84	3	<0.001
Female	3256	49.9	493	60.0	218	54.8	1056	55.3	1489	45.0			
Race/Ethnicity											11.26	9	0.259
White	4162	72.6	543	72.6	247	68.7	1297	76.4	1075	71.1			
Black	638	12.9	89	12.5	42	14.9	176	12.4	331	12.9			
Hispanic	359	11.3	44	12.3	34	14.6	74	8.0	207	12.4			
Other	169	3.2	19	2.6	10	1.9	58	3.2	82	3.5			
Marital status											30.96	6	<0.001
Married	3323	64.6	337	48.1	156	52.5	1063	65.4	1767	68.3			
Single	1628	28.6	302	43.9	151	40.4	438	27.2	737	25.3			
Unmarried partner	363	6.85	52	8.0	26	7.1	101	7.4	184	6.4			
Education											49.22	6	<0.001
Less than high school	431	9.8	115	19.9	29	10.1	138	10.0	149	7.9			
HS graduate or some college	3206	62.1	455	66.7	215	67.4	962	63.5	1574	60.0			
College graduate or higher	1691	28.1	125	13.4	89	22.5	505	26.6	972	32.1			

Table 2
Clinical characteristics of respondents by presence of chronic pain or mental health disorder, age 18 ~ 64

Sample characteristics	Overall (N=5328)		Mental health disorder with comorbid chronic pain (N=695)		Mental health disorder without comorbid chronic pain (N=333)		No mental health disorder, but chronic pain (N=1,605)		No mental health disorder and no chronic pain (N=2,695)		χ ² /F	df	p
	N	%	N	%	N	%	N	%	N	%			
Pain interference											250.00	6	<0.001
High pain	561	8.4	273	37.2	22	4.0	224	12.8	42	1.6			
Moderate pain	1947	34.2	326	47.7	86	29.5	891	55.8	644	21.9			
No pain	2820	57.3	96	15.1	225	66.5	490	31.4	2009	76.5			
Type of chronic pain ^a													
Arthritis/rheumatism	1297	21.3	415	57.9			882	56.0			0.46	1	0.497
Back problem	999	15.7	379	54.5			620	37.0			15.68	1	<0.001
Headaches	784	12.4	335	50.0			449	26.6			51.95	1	<0.001
Other	587	9.3	236	33.5			351	21.5			14.98	1	<0.001
Mean number of chronic pain conditions, Mean ± SD	0.6 ± 0.8		2.0 ± 1.0				1.4 ± 0.6				82.44	1,639	<0.001
Type of mental health conditions ^a													
Major depression	718	10.5	494	68.8	224	65.4					0.49	1	0.485
Dysthymia	294	4.1	212	28.1	82	23.5					1.29	1	0.257
Panic	263	3.8	195	28.2	68	18.1					5.65	1	0.018
Generalized anxiety disorder	265	4.3	197	31.0	68	21.7					1.45	1	0.230
Mania	134	1.9	95	12.7	39	12.0					0.04	1	0.843
Psychotic	95	1.4	66	9.4	29	7.9					0.35	1	0.557
Problem alcohol use	341	6.6	56	9.2	40	11.2	77	4.5	168	6.6	14.47	3	0.002
Problem drug use	118	1.8	43	7.2	20	4.8	24	1.1	31	0.9	36.01	3	<0.001
Mean number of non-pain chronic conditions, Mean ± SD	0.6 ± 1.0		1.7 ± 1.6		0.6 ± 0.9		0.8 ± 1.1		0.3 ± 0.7		115.27	3,1229	<0.001
Mean PCS-12 Score ^b , Mean ± SD	47.2 ± 5.8		41.1 ± 7.3		47.2 ± 5.4		45.4 ± 6.2		49.1 ± 4.1		124.14	3,1239	<0.001
Mean MCS-12 Score ^b , Mean ± SD	45.7 ± 5.5		40.9 ± 7.2		43.3 ± 6.7		45.7 ± 5.5		46.8 ± 4.4		96.92	3,1239	<0.001

Sample characteristics	Overall (N=5328)		Mental health disorder with comorbid chronic pain (N=695)		Mental health disorder without comorbid chronic pain (N=333)		No mental health disorder, but chronic pain (N=1,605)		No mental health disorder and no chronic pain (N=2,695)		χ ² /F	df	p
	N	%	N	%	N	%	N	%	N	%			

^aColumn percents do not add up to 100% because individuals can have more than one pain or mental health disorder

^bPhysical and mental health summary scores from the Short Form-12 (SF-12)

Table 3

Employment and work outcomes by presence of chronic pain or mental health disorder, age 18 ~ 64

Sample characteristics	Mental health disorder with comorbid chronic pain (N=695)		Mental health disorder without comorbid chronic pain (N=333)		No mental health disorder, but chronic pain (N=1,605)		No mental health disorder and no chronic pain (N=2,695)		χ ² /F	df	p
	N	%	N	%	N	%	N	%			
Overall (N=5328)											
Work status									83.43	6	<0.001
Currently working	4155	80.6	395	57.7	250	82.5	1199	78.5			
Worked in past 12 months	342	6.2	56	10.5	35	7.9	114	6.0			
Has not worked in past 12 months	819	13.2	243	31.8	48	9.6	289	15.5			
Ability to work limited due to health (physical, emotional, drug/alcohol disorder)	850	14.0	351	52.0	52	12.1	323	18.2	105.12	3	<0.001
Mean weeks ± SD worked in past 12 months (N=4404)	46.2 ± 11.4		42.1 ± 14.3		44.7 ± 12.1		46.4 ± 11.6		7.92	3, 1085	<0.001
Mean days work missed past 30 days ± SD due to health (N=1918) ^a	1.8 ± 5.3		3.9 ± 5.9		1.3 ± 2.8		1.8 ± 5.3		5.29	3, 572	0.001
Mean days ± SD arrived late/left work early in past 30 days due to health (N=1170) ^a	0.7 ± 2.5		2.3 ± 4.3		1.0 ± 2.4		0.7 ± 1.8		4.93	3, 399	0.002

^a Applicable N reflects skip pattern to survey questions and is therefore less than 5328

Table 4
 Logistic regression models: effect of the presence of a chronic pain and/or mental health disorder on employment in those age 18 ~ 64

Risk factors	No work in past 12 months			Ability to work limited because of health			Any work missed in past month because of health ^d		
	Odds ratio	95% CI	t ^b	Odds ratio	95% CI	t ^b	Odds ratio	95% CI	t ^b
Presence of mental health disorder	0.8	0.5, 1.4	-0.74	2.7 ^e	2.1, 3.5	5.42	2.3 ^e	1.6, 3.1	4.80
Presence of a chronic pain condition	0.9	0.6, 1.2	-0.92	2.7 ^e	1.9, 3.8	7.70	1.7 ^e	1.3, 2.2	4.08
Interaction effect of mental health disorder and chronic pain	2.3 ^d	1.2, 4.2	2.64	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant
Covariates									
Age	1.05 ^e	1.04, 1.07	7.56	1.01 ^c	1.00, 1.03	2.32	0.99 ^c	0.98, 1.00	-2.2
Gender (reference= male)	2.9 ^e	2.2, 3.8	7.62	0.8	0.6, 1.1	-1.46	1.0	0.8, 1.2	-0.06
Race (reference=Caucasian)			F _{1,3} =0.82			F _{3,1218} =0.28			F _{3,1036} =2.16
Black/African American	0.9	0.7, 1.3		1.1	0.8, 1.6		0.6	0.4, 0.9	
Hispanic	0.7	0.3, 1.4		1.1	0.7, 1.8		0.8	0.5, 1.2	
Other race	1.5	0.7, 3.2		0.8	0.4, 1.8		0.8	0.4, 1.5	
Marital status (reference=married)			F _{1,3} =4.48			F _{2,1218} =5.62 ^d			F _{2,1036} =1.06
Single	0.9	0.7, 1.1		1.8	1.3, 2.5		1.2	0.9, 1.7	
Unmarried partner	0.5	0.3, 0.8		0.8	0.5, 1.2		1.2	0.9, 1.8	
Education (reference=high school graduate or some college)			F _{1,3} =32.4 ^e			F _{2,1218} =25.0 ^e			F _{2,1036} =3.32 ^c
Less than high school	2.3	1.6, 3.3		2.5	1.6, 3.7		1.0	0.6, 1.7	
College or higher	0.6	0.4, 0.8		0.5	0.4, 0.7		1.4	1.1, 1.8	
Number of chronic conditions, excluding pain	1.6 ^e	1.5, 1.8	8.96	2.2 ^e	1.9, 2.4	12.36	1.4 ^e	1.3, 1.6	5.82
Problem alcohol use	0.8	0.4, 1.4	-0.88	0.4 ^d	0.3, 0.7	-3.18	1.3	0.8, 2.0	0.94
Problem drug use	1.7	0.8, 3.7	1.36	1.6	0.9, 2.9	1.56	1.7 ^c	1.0, 2.9	1.98

^a Among those currently working

^b degrees of freedom=1226 for analyses with the outcome, 'no work in past 12 months,' 1218 for 'ability to work limited because of health,' and 1036 for 'any work missed in past month because of health'

^c p<0.05

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$100 > 0 > d$
 $100 > d$
 p

Table 5

Linear regression model: effect of the presence of a chronic pain and/or mental health disorder on days of work missed in the past month due to health in those age 18 ~ 64

Days of work missed ^a in past month due to health				
Risk factors	Regression coefficient	SE	t ^b	p value
Presence of mental health disorder	-0.08	0.2	-0.45	0.650
Presence of a chronic pain condition	-0.09	0.2	-0.50	0.614
Interaction effect of mental health disorder and chronic pain	1.5	0.6	2.47	0.014
Covariates				
Age	0.01	0.01	0.62	0.537
Gender (reference= male)	-0.5	0.2	-2.46	0.014
Race (reference=Caucasian)			F _{3, 1038} =3.12	0.025
Black/African American	-0.6	0.2	-2.81	0.005
Hispanic	-0.3	0.3	-0.91	0.363
Other race	-0.4	0.2	-1.69	0.092
Marital status (reference=married)			F _{2, 1038} =2.57	
Single	-0.09	0.2	-0.52	0.601
Unmarried partner	-0.4	0.2	-2.26	0.024
Education (reference=high school graduate or some college)			F _{2, 1038} =1.87	0.155
Less than high school	0.6	0.7	0.78	0.436
College or higher	-0.2	0.1	-1.74	0.082
Number of chronic conditions, excluding pain	0.7	0.2	3.23	0.001
Problem alcohol use	-0.3	0.2	-1.63	0.103
Problem drug use	0.7	0.5	1.36	0.175

^a Among those currently working

^b degrees of freedom=1038