

Smoking Control; Stress Management

Depressive Symptoms and Cigarette Smoking in American Workers

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Abstract

Purpose. This study examined the relationship between depressive symptoms and cigarette smoking in a large sample of American workers.

Methods. We used data from the National Survey of Midlife Development in the United States. Seventy percent of individuals completed a telephone survey. The present study focused on 2593 individuals working for pay. Measures included depressive symptoms, job level, and current smoking status.

Results. In a logistic regression analysis, depressive symptoms significantly predicted smoking status among workers ($p < .01$). In follow-up χ^2 analyses, the link between depressive symptoms and smoking was consistent across gender ($p < .01$) and job levels ($p < .01$).

Discussion. Depressive symptoms among workers present an underlying obstacle to the success of worksite smoking cessation efforts. Findings highlight the need for increased cooperation between workplace mental health and medical health promotion programs and for tailoring smoking cessation programs to depressed workers. Limitations include self-report cross-sectional data and an underrepresentation of minority group members and individuals of low socioeconomic status. (*Am J Health Promot* 2006;20[3]:179-182.)

Key Words: Depressive Symptoms, Comorbidity, Cigarette Smoking, Worksite, Prevention Research. Manuscript format: research; Research purpose: modeling/relationship testing; Study design: nonexperimental; Outcome measure; behavioral; Setting: workplace; Health focus: smoking control; Strategy: skill building/behavior change; Target population: adults; Target population circumstances: education/income level

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PURPOSE

Cigarette smoking is central to worksite health promotion efforts, which range from focused intervention programs on smoking cessation to broad smoke-free workplace policies.^{1,2} Growing interest in the comorbidity between depression and

cigarette smoking represents a promising addition to behavioral theories of smoking.³⁻⁶ Although knowledge about depression and cigarette smoking is highly relevant to worksite health promotion, we are unaware of any previous research that has examined this issue in the context of the workplace.

The purpose of this study was to examine the relationship between depressive symptoms and cigarette smoking in a large sample of American workers. We used data from the National Survey of Midlife Development in the United States (MIDUS), which was conducted to identify biopsychosocial factors associated with health and well-being during adulthood.⁷ We predicted that depressive symptoms would be significantly associated with smoking status among American workers. By demonstrating the strength of the link between depression and cigarette smoking in the workplace, we hoped to make this issue more salient to health promotion practitioners. We examined this issue in the context of gender and job level to demonstrate the breadth of relevance of this concern across work groups.

METHODS

Design

The MIDUS data are from a national probability sample of English-speaking U.S. residents surveyed in 1995. Households were contacted by phone by using random-digit dialing procedures, and an adult from each household was selected randomly for a 30-minute telephone survey. Seventy percent of individuals who were contacted completed the telephone survey. The present analyses use data from the telephone survey. The Human Studies Committee of Harvard Medical School approved the original survey protocol.

Sample

The overall sample included 4242 respondents, with 2087 (51%) wom-

Table 1
Multiple Logistic Regression Analysis Predicting Current Status as a Smoker
(n = 2234)

Variable	Odds Ratio	95% Confidence Interval	
Moderate depressive symptoms	1.74*	1.37	2.21
High depressive symptoms	2.63*	1.84	3.77
Intermediate job level	0.84	0.66	1.07
High job level	0.47*	0.35	0.63
Gender (male = 0, female = 1)	0.71*	0.57	0.89
Age	0.99	0.98	1.00

* $p < 0.01$.

en and 2155 (49%) men. The overall sample was predominantly white (85%), and ages ranged from 25 to 74 years (46.37 ± 13.37). After preliminary analyses examining working status and smoking in the overall sample, the present study focused on the 2593 individuals in the MIDUS sample currently working for pay and included 1228 (47%) women and 1365 (53%) men.

Measures

In addition to sociodemographic data, measures used in the present study included depressive symptoms, job level, and current smoking status.

Depressive Symptoms. We indexed depressive symptoms as the total number of "yes" responses to 13 symptoms experienced for 2 weeks or longer during the previous 12 months (Cronbach $\alpha = .85$). Five symptoms reflected depressed mood and ideation (e.g., feeling sad, blue, or depressed; feeling down on one's self, no good, or worthless; thinking a lot about death). Eight symptoms reflected depressive behaviors (e.g., losing interest in most things, feeling tired out or low on energy, having trouble concentrating). These symptoms are similar to those indexed in commonly used questionnaire measures of depressive symptoms, such as the Beck Depression Inventory. For the present study, depressive symptoms were coded into three levels: low, moderate, and high.

Job Level. For the present study, we developed a three-level index of job level based on an item that asked,

"What was your own personal earnings income in the past 12 months before taxes?" The job level codes were as follows: low (0: annual personal earnings below \$20,000), intermediate (1: annual personal earnings from \$20,000 to below \$40,000), and high (2: annual personal earnings of \$40,000 or more).

Current Smoking Status. We coded current smoking status as current nonsmoker (code 0) vs. current smoker (code 1) on the basis of an item that asked, "Do you smoke cigarettes regularly NOW?" If respondents asked for clarification, "regularly" was defined as "at least a few cigarettes every day." We coded past smoking status as past nonsmoker (code 0) vs. past smoker (code 1) on the basis of an item that asked, "Have you ever smoked cigarettes regularly?" (one individual who began smoking in the past year was excluded from the past-smoker analysis).

Analysis

Initial analyses used logistic regression. Follow-up descriptive analyses with subsamples of workers used χ^2 analyses.

RESULTS

Frequencies were as follows: depressive symptoms variable = low (no symptoms, $n = 1864$), moderate (1–6 symptoms, $n = 550$), and high (7 or 8 symptoms, $n = 175$); job level = low ($n = 668$), intermediate ($n = 859$), and high ($n = 648$); workers on current smoking status = current nonsmoker ($n = 1948$) and current

smoker ($n = 645$); and workers on past smoking status = past nonsmoker ($n = 1260$) and past smoker ($n = 1331$).

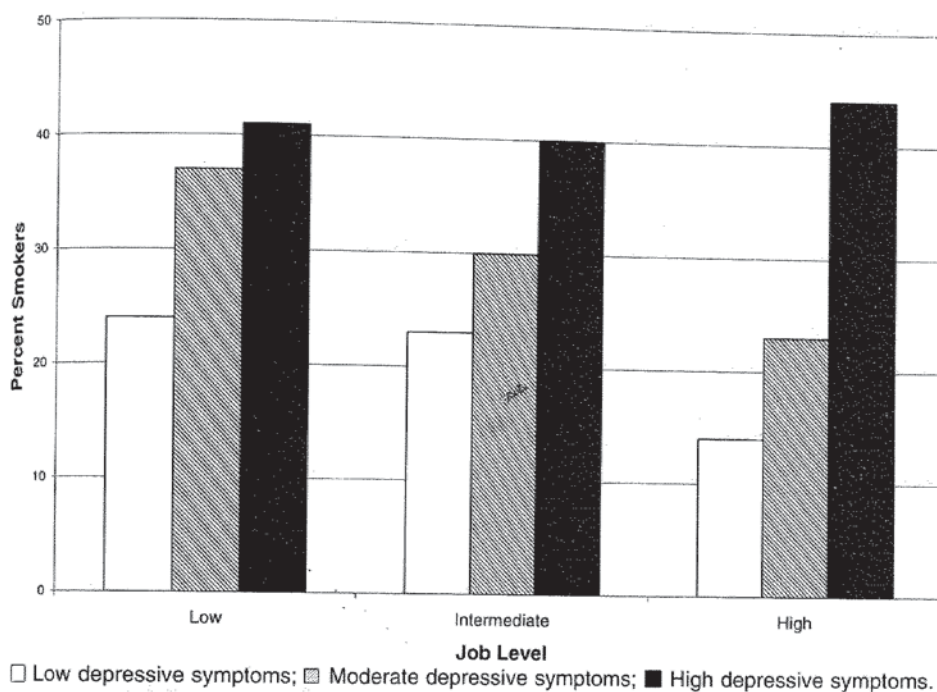
Working and Smoking in the Overall Sample

We conducted a preliminary logistic regression to examine whether working status related to the likelihood of smoking in the overall sample of respondents. Status as a worker significantly predicted being a current smoker (odds ratio [OR] = 1.19, $p < .05$, 95% confidence interval [CI] = 1.03, 1.38). Because the age of workers (42.53 ± 11.17 years) was significantly lower than that of nonworkers (52.39 ± 14.26 years) ($F(1, 4176) = 600.45$, $p < .01$), we repeated the logistic regression controlling for age. In this model, working status no longer significantly predicted being a current smoker. Thus, in the MIDUS sample, workers are more likely than nonworkers to be current smokers, but this association is explained by age: younger individuals are both more likely to be employed and to be current smokers. The following analyses examine the link between depressive symptoms and cigarette smoking among workers.

Depressive Symptoms and Smoking Among Workers

We conducted a multiple logistic regression analysis to examine the association between depressive symptoms level and the likelihood of current cigarette smoking among workers. We dummy coded moderate depressive symptoms and high depressive symptoms, with low depressive symptoms as the reference group. Age, gender, and job level were entered as covariates. We dummy coded intermediate job level and high job level, with low job level as the reference group. Both moderate and high depressive symptoms significantly predicted being a current smoker, independent of age, gender, and job level (Table 1). In addition, gender and high job level significantly predicted current smoking status, controlling for one another, age, and depressive symptoms. Men smoked more than women, and a high job

Figure 1
Current Smoking by Depressive Symptoms and Job Level



level was inversely associated with smoking. Moreover, in a more conservative analysis that excluded individuals who had never smoked ($n = 1098$), both moderate depressive symptoms ($OR = 1.45, p < .05, 95\% CI = 1.08, 1.94$) and high depressive symptoms ($OR = 2.14, p < .01, 95\% CI = 1.35, 3.37$) continued to predict being a current smoker, independent of age, gender, and job level.

Depressive Symptoms by Gender

We conducted χ^2 analyses to examine the relationship of depressive symptoms and smoking across gender and found that the level of depressive symptoms was significantly positively associated with smoking status for both female ($\chi^2[1, n=1227] = 20.15, p < .01$) and male ($\chi^2[1, n=1362] = 31.65, p < .01$) workers.

Depressive Symptoms by Job Level

We conducted χ^2 analyses to examine the relationship of depressive symptoms and smoking across job levels and found that the level of depressive symptoms was significantly

associated with smoking status at every job level: workers earning less than \$20,000 a year ($\chi^2[2, n=667] = 14.34, p < .01$), workers earning from \$20,000 to less than \$40,000 a year ($\chi^2[2, n=857] = 10.46, p < .01$), and workers earning \$40,000 or more a year ($\chi^2[2, n=647] = 21.21, p < .01$). Figure 1 presents a graphic summary of this analysis.

DISCUSSION

Summary

As predicted, depressive symptoms significantly predicted smoking status among workers, independent of age, gender, and job level. Compared with a low level of depressive symptoms, a moderate level of depressive symptoms increased the odds of being a current smoker by three-fourths, and a high level of depressive symptoms increased the odds of being a current smoker between two and three times. In addition, being male was positively associated with the likelihood of being a current smoker, and a high level job was negatively associated with the likelihood of being a

current smoker. Moreover, underscoring the breadth of relevance of this issue to health promotion practitioners, the link between depressive symptoms and cigarette smoking was consistent across gender and across job levels.

The relevance of these findings is further increased because we found that workers are more likely than nonworkers to be current smokers; younger individuals were both more likely to be employed and to be current smokers. In this sample of adult smokers, current depressive symptoms may play a role in maintaining established smoking. Depressive symptoms may undercut attempts at smoking cessation by reducing smoking-related self-efficacy, which is positively associated with cessation attempts and cessation success and negatively associated with relapse to smoking.⁸

SO WHAT? Implications for Health Promotion Practitioners and Researchers

By demonstrating the strength and scope of the link between depression and cigarette smoking in the workplace, the present study highlights the relevance of this issue to health promotion practitioners. The lessons learned are:

- Depressive symptoms among workers present an underlying obstacle to the success of workplace efforts at smoking cessation;
- This concern cuts across women and men and across job levels;
- Addressing coping skills for depression can enhance the effectiveness of workplace smoking cessation interventions; and
- Workplace efforts by medical health and mental health practitioners need to be designed and implemented in a more collaborative way.

Limitations

Self-report measures are subject to both social desirability and common method variance. In addition, these cross-sectional findings do not support causal inference. Smoking may

cause depression, and unmeasured third variables may influence both depressive symptoms and smoking. Also, the MIDUS data underrepresent minority group members and individuals of lower socioeconomic status. Future research is needed to extend our findings to prospective designs with more representative samples of workers, using objective indexes of depressive symptoms and cigarette consumption.

Implications

Cigarette smoking is a common focus in worksite health promotion efforts, ranging from broad smoke-free workplace policies to more focused intervention programs. However, according to the present findings, depressive symptoms among workers present an underlying obstacle to the success of such efforts at smoking cessation. The present findings highlight the need for increased coopera-

tion between workplace mental health services and medical health promotion programs in addressing smoking cessation.

Accumulating evidence indicates that addressing coping skills for depression can enhance the effectiveness of smoking cessation treatments for smokers with a history of depression.^{9,10} Our finding that more than one-quarter of workers reported depressive symptoms indicates that smoking cessation programs addressing dysphoric mood would be relevant to a substantial number of workers. Providing self-help tools for coping with emotional distress and utilizing existing mental health resources could enhance the effectiveness of smoking cessation efforts with minimal additional resources.

References

1. Eriksen MP, Gottlieb NH. A review of the health impact of smoking control at the workplace. *Am J Health Promot.* 1998;13:83-104.

2. Heloma A, Jaakkola MS, Kähkönen E, Reijula K. The short-term impact of national smoke-free workplace legislation on passive smoking and tobacco use. *Am J Public Health.* 2001;91:1416-1418.
3. Breslau N, Novak SP, Kessler RC. Psychiatric disorders and stages of smoking. *Biol Psychiatry.* 2004;55:69-76.
4. Burgess ES, Brown RA, Kahler CW, et al. Patterns of change in depressive symptoms during smoking cessation: who's at risk for relapse. *J Consult Clin Psychol.* 2002;70:356-361.
5. Covey LS, Glassman AH, Stetner F. Cigarette smoking and major depression. *J Addict Dis.* 1998;17:35-46.
6. Lasser K, Boyd JW, Woolhandler S, et al. Smoking and mental illness: a population-based prevalence study. *JAMA.* 2000;284:2606-2610.
7. Brim OG, Ryff CD, Kessler RC. The MIDUS national survey: an overview. In: Brim OG, Ryff CD, Kessler RC, eds. *How Healthy Are We? A National Study of Well-Being at Midlife.* Chicago, Ill: University of Chicago Press; 2004:1-34.
8. Shiffman S, Balabanis MH, Paty JA, et al. Dynamic effects of self-efficacy on smoking lapse and relapse. *Health Psychol.* 2000;19:315-323.
9. Brown RA, Kahler CW, Niaura R, et al. Cognitive-behavioral treatment for depression in smoking cessation. *J Consult Clin Psychol.* 2001;69:471-480.
10. Haas AL, Munoz RF, Humfleet GL, et al. Influences of mood, depression history, and treatment modality on outcomes in smoking cessation. *J Consult Clin Psychol.* 2004;72:563-570.