

Results of the 2004 National Worksite Health Promotion Survey

Laura Linnan, ScD, CHES, Mike Bowling, PhD, Jennifer Childress, MS, CHES, Garry Lindsay, MPH, CHES, Carter Blakey, Stephanie Pronk, MEd, Sharon Wieker, and Penelope Royall, MSW, PT

Worksites are important public health settings because the majority of US adults spend considerable amounts of time at work, and the work environment exerts an independent influence on employee health. Addressing both the work environment and individual health behavior is essential to producing gains in employee health.^{1–3} In addition, the “health” of a business depends on strategies that manage both business costs and employee health care costs. Thus, tracking employer efforts to promote health is warranted.

In the United States, the first national worksite health promotion survey was conducted in 1985, and follow-up surveys were conducted in 1992, 1999, and 2004. These surveys serve as national benchmarks and as indicators of change over time. One major worksite health–related goal included in *Healthy People 2010* is to increase to at least 75% the number of employers that offer a comprehensive health promotion program for employees.^{4,5} We examined data from the 2004 National Worksite Health Promotion Survey to monitor the prevalence of worksite health promotion programs, policies, services, and supportive environments and to assess the implications of the survey’s results for public health practice and research.

METHODS

Study Design and Sample

The 2004 National Worksite Health Promotion Survey gathered information from a cross-sectional, nationally representative sample of US worksites. The sample was drawn from the Dun & Bradstreet database⁶ of all private and public employers in the continental United States. To the extent possible, the survey’s procedures followed those used in previous national surveys^{7,8} so that between-survey comparisons could be made.

Questions addressed specific worksites rather than the companies to which the worksites belonged. The survey involved a disproportionate stratified sampling design

Objectives. We examined worksite health promotion programs, policies, and services to monitor the achievement of the *Healthy People 2010* worksite-related goal of 75% of worksites offering a comprehensive worksite health promotion program.

Methods. We conducted a nationally representative, cross-sectional telephone survey of worksite health promotion programs stratified by worksite size and industry type. Techniques appropriate for analyzing complex surveys were used to compute point estimates, confidence intervals, and multivariate statistics.

Results. Worksites with more than 750 employees consistently offered more programs, policies, and services than did smaller worksites. Only 6.9% of responding worksites offered a comprehensive worksite health promotion program. Sites with a staff person dedicated to and responsible for health promotion were significantly more likely to offer a comprehensive program, and sites in the agriculture and mining or financial services sector were significantly less likely than those in other industry sectors to offer such a program.

Conclusions. Increasing the number, quality, and types of health promotion programs at worksites, especially smaller worksites, remains an important public health goal. (*Am J Public Health*. 2008;98:1503–1509. doi:10.2105/AJPH.2006.100313)

with 35 strata defined according to 2 categories: number of employees (fewer than 50, 50–99, 100–249, 250–749, 750 or more) and US Standard Industrial Classification code (agriculture/mining/construction, finance/insurance/real estate, transportation/communications/utilities, business/professional services, manufacturing, wholesale/retail trade, public administration/government).

Because of the preponderance of worksites with fewer than 50 employees, we oversampled sites with more than 50 employees to ensure that estimates would be appropriate for all sites of all sizes. We report results only for nongovernmental worksites with 50 or more employees because (1) point estimate variances were unstable for sites with fewer than 50 employees and (2) previous national surveys omitted government workplaces.

Data Collection Procedures

Trained interviewers conducted the 2004 survey by telephone (each interview required approximately 20 minutes). At each worksite, respondents were identified as being “directly responsible for health promotion or wellness” or as having an “in-depth knowledge of these types of programs at the worksite.”

Response rates were enhanced via several techniques. For example, respondents were provided with a fact sheet describing the importance of participating in the survey, answers to typically asked questions, and a toll-free telephone line to establish a convenient interview time. Also, interviewers were provided access to a telephone number lookup service to assist in contacting employers that did not answer after 5 call attempts. Finally, standardized guidelines⁹ were used to recontact sites initially unwilling to take part to enlist their participation.

Measures

Key measures included worksite size (total number of full- and part-time employees), industry type (Standard Industrial Classification code), number of years the worksite had offered a health promotion program (labeled “experience”), and barriers to offering a health promotion program. “Comprehensive” health promotion programs were defined as those that incorporated all of the 5 key elements outlined in *Healthy People 2010*: (1) health education (i.e., skill development and lifestyle behavior change, along with information dissemination and awareness building), (2) supportive social and physical work

environment (i.e., support of healthy behaviors and implementation of policies promoting health and reducing risk of disease), (3) integration (i.e., integration of the program into the organization's structure), (4) linkage (i.e., linkage to related programs such as employee assistance programs), and (5) worksite screening and education (i.e., programs linked to appropriate medical care).

Data Analysis

All analyses were carried out with the SURVEYFREQ and SURVEYLOGISTIC procedures in SAS/STAT,¹⁰ in which Taylor expansion approximations are used to calculate standard errors and their corresponding 95% confidence intervals for stratified weighted data.¹¹ Weights were computed as the inverse of selection probabilities and were adjusted for nonresponse. Twenty-three worksites from the 7 strata representing sites with fewer than 50 employees were misclassified and thus were reallocated and weighted to the correct size strata. Analyses excluding and including these 23 reclassified sites yielded identical results.

We calculated point estimates with 95% confidence intervals for all of the measures examined and used the Rao–Scott χ^2 statistic to assess differences according to size and industry type.¹¹ The level of significance was set at $\alpha \leq .05$. We used the Wald χ^2 statistic to compare logistic regression models fit to groups with and without a comprehensive health promotion program.¹²

RESULTS

Sample Description

We conducted a total of 1553 interviews with worksites from the different size and industry categories. Respondents were weighted across industry and size categories, and sample distributions reflected those in the population of all eligible worksites. The overall response rate (corresponding to response rate 3 of the American Association for Public Opinion Research¹³ guidelines) was 59.7%.

The sample size was 730, excluding governmental worksites and those with fewer than 50 employees. The site size breakdown was as follows: 179 sites with 50 to 99 employees, 229 sites with 100 to 249 employees, 211

sites with 250 to 749 employees, and 111 sites with more than 750 employees. Industry categories represented were manufacturing (n=198), finance (n=85), wholesale or retail (n=117), transportation (n=73), agriculture (n=86), and business or professional (n=171).

Most survey respondents were directors or managers (60.5%) and were members of either a human resources or benefits department (52.7%). Approximately 39% of respondents reported a 10% to 15% increase in health care costs in recent years; 31.0% reported an increase of less than 10%, 18.7% reported an increase of more than 20%, and 8.5% reported an increase of 15% to 20%. Overall, 2.5% indicated that they did not offer health care benefits.

Staffing, Experience, and Funding

The majority of worksites (64.6%) employed at least 1 full- or part-time staff person who was directly responsible for health promotion and worksite wellness. Of the sites with health promotion programs, 60.8% indicated that their program had been in place for 5 years or less, 8.7%, for 6 to 9 years, and 30.5%, for 10 or more years. The health plan was identified as the leading source of funding for programs (e.g., health screenings, health risk appraisals, disease management) other than health awareness and information programs, which were most frequently funded by the employer (47.7%). In all cases, 2% or fewer of responding worksites identified employees or outside vendors as primary sources of funding.

Approximately 26% of worksites reported using incentives to increase employee participation. Incentives involving gifts and discounts were mentioned most often, followed by cash incentives. The 48 sites that offered cash incentives reported that the mean amount offered (before taxes) per person per year was \$556.88 (SD=\$176.70). No differences according to worksite size or industry type were observed in regard to use of incentives.

Evaluation Methods, Support, and Barriers to Success

When asked about methods used in program delivery, respondents most frequently reported using printed materials, followed by

the Internet, in-person strategies, and the telephone. For example, in the health awareness and information programming category, 46.0% of sites reported using printed materials, 28.1% reported using the Internet, 24.4% reported using in-person methods, and 11.4% reported using telephone approaches. This pattern was consistent in the different program categories with the exception of health risk appraisals; in this category, an identical percentage of respondents (11.0%) reported use of print materials and in-person strategies, whereas 7.8% reported use of the Internet, and 6.4% reported use of telephone approaches.

Approximately 70% of respondents indicated that their health promotion program supported the organization's business strategy, 67.5% believed that the program was integrated into the overall strategy the employer used to address health care, and 66.2% reported that it was linked to other key organizational areas. However, only 49.5% of sites used data to guide program direction, and only 30.2% had a 3- to 5-year strategic plan in place for worksite health promotion.

The most commonly reported barriers or challenges to the success of health promotion programs were lack of employee interest (63.5%), staff resources (50.1%), funding (48.2%), participation on the part of high-risk employees (48.0%), and management support (37.0%). No differences in barriers were reported on the basis of industry type or worksite size, with the single exception that worksites with more than 750 employees were significantly more likely than were smaller sites to report lack of participation among high-risk employees ($P=.002$).

Overall, 19.4% of worksites reported using health risk appraisals, and there were statistically significant differences according to worksite size. For example, only 11.3% of sites with 50 to 99 employees used health risk appraisals, as compared with 45.8% of sites with more than 750 employees ($P<.001$). When asked about what they used to evaluate program success, respondents most often cited employee feedback (73.2%), employee participation (57.4%), workers' compensation costs (57.1%), health care claims costs (57.0%), and time lost or

absenteeism (43.9%). Approximately 44.1% of sites expected a return on investment for their program; of these sites, 36.2% expected a return on investment within 12 to 17 months, 23.9% expected it within 18 to 23 months, and 13.4% expected it in less than 12 months.

Programs, Activities, Screenings, and Disease Management

The most common types of programs offered were employee assistance programs (programs typically offering mental health or counseling services; 44.7%), followed by back injury prevention programs or activities (45%), stress management programs (24.9%),

nutrition programs (22.7%), health care consumerism programs (21.6%), and weight management programs (21.4%). There was a clear dose–response relationship in that worksites with more employees offered more programs, classes, and activities (Table 1). The only exception to this pattern was HIV/AIDS education and health care consumerism; no differences by worksite size reached statistical significance.

Respondents were asked whether, in the past 12 months, they had offered health screenings to their employees and their families through the worksite, health plan, or both. Blood pressure screenings were most frequently offered (36.4%), followed by alcohol

or drug abuse support (35.9%), blood cholesterol screenings (29.4%), diabetes screenings (27.4%), and cancer screenings (21.8%). Again, sites with more employees consistently offered more screening services. Between 70% and 85% of worksites with more than 750 employees reported offering all of these services (blood pressure screening, 84.9%; blood cholesterol screening, 80.5%; alcohol or drug abuse support, 70.7%; cancer screening, 70.2%; and diabetes screening, 70.2%) (Table 1).

In terms of disease management programs, 26.1% of sites offered cardiovascular disease programs, 25% offered diabetes programs, 16.4% offered obesity programs, and 15.6%

TABLE 1—Selected Health Promotion Programs and Services, by Worksite Size: National Worksite Health Promotion Survey, 2004

	Total (n = 730), % (95% CI)	50–99 Employees (n = 179), % (95% CI)	100–249 Employees (n = 229), % (95% CI)	250–749 Employees (n = 211), % (95% CI)	≥ 750 Employees (n = 111), % (95% CI)
Programs or activities					
Employee assistance	44.7 (39.28, 50.13)	32.4 (23.49, 41.28)	48.07 (39.03, 57.12)	63.3 (52.40, 74.24)	84.2 (69.70, 98.62)
Smoking cessation	18.6 (14.51, 22.46)	8.8 (3.51, 14.12)	19.4 (12.66, 26.08)	32.0 (21.92, 42.17)	68.1 (53.13, 83.14)
Physical activity	19.6 (15.54, 23.67)	9.0 (3.67, 14.30)	23.6 (16.11, 31.11)	28.5 (19.50, 37.42)	66.1 (49.15, 83.10)
Cholesterol reduction	19.9 (15.55, 24.14)	16.4 (9.02, 23.87)	17.5 (11.41, 23.55)	29.3 (19.78, 38.86)	42.1 (23.80, 60.45)
Nutrition	22.7 (18.16, 27.24)	11.0 (4.61, 17.34)	30.4 (21.92, 38.85)	34.0 (23.50, 44.45)	43.0 (24.71, 61.35)
Stress management	24.9 (20.10, 29.86)	17.6 (9.92, 25.19)	27.7 (19.44, 35.92)	32.3 (22.20, 42.49)	54.3 (35.18, 73.39)
Weight management	21.4 (16.94, 25.93)	11.3 (5.11, 17.40)	24.8 (16.79, 32.86)	34.1 (23.81, 44.43)	56.1 (37.14, 75.14)
Back injury prevention	45.0 (39.28, 50.65)	37.2 (27.70, 46.67)	46.1 (37.08, 55.11)	55.7 (44.88, 66.56)	81.5 (71.80, 91.17)
Health care consumerism ^a	21.6 (16.76, 26.48)	16.5 (8.64, 24.34)	27.0 (18.59, 35.35)	22.7 (14.69, 30.69)	27.6 (13.20, 42.02)
HIV/AIDS ^a	14.6 (10.53, 18.70)	11.3 (4.55, 18.12)	14.2 (7.54, 20.92)	24.9 (15.51, 34.38)	16.8 (6.97, 26.72)
Screenings or counseling services					
Cancer screening	21.8 (17.45, 26.09)	14.3 (7.82, 20.74)	22.1 (14.90, 29.27)	29.4 (20.06, 38.67)	70.2 (55.57, 84.85)
Diabetes screening	27.4 (22.47, 32.25)	19.0 (11.50, 26.56)	27.7 (19.67, 35.68)	39.9 (29.39, 50.32)	70.2 (54.99, 85.46)
Blood pressure screening	36.4 (30.98, 41.74)	27.1 (18.22, 35.92)	35.8 (27.15, 44.35)	51.5 (40.41, 62.69)	84.9 (73.16, 96.63)
Blood cholesterol screening	29.4 (24.50, 34.39)	21.8 (13.77, 29.91)	26.8 (19.13, 34.49)	43.5 (32.94, 54.20)	80.5 (68.00, 93.01)
Alcohol or drug abuse support	35.9 (30.76, 41.09)	28.6 (20.14, 37.03)	37.3 (28.96, 45.65)	45.0 (34.20, 55.78)	70.7 (54.39, 86.94)
Disease management programs					
Diabetes	25.0 (20.10, 29.83)	21.8 (13.45, 30.08)	22.4 (15.40, 29.39)	33.6 (23.67, 43.53)	48.2 (28.63, 67.73)
Asthma ^a	19.1 (14.84, 23.39)	15.8 (8.64, 22.95)	20.8 (13.97, 27.65)	18.7 (12.08, 25.37)	39.4 (19.10, 59.66)
Cancer ^a	22.5 (17.66, 27.28)	17.5 (9.61, 25.44)	25.8 (17.78, 33.74)	27.9 (18.39, 37.38)	28.3 (14.62, 41.88)
Depression ^a	20.5 (16.11, 24.87)	15.5 (8.44, 22.64)	24.3 (16.88, 31.69)	25.6 (16.92, 34.36)	23.2 (11.51, 34.95)
Hypertension ^a	22.9 (18.10, 27.60)	20.1 (11.87, 28.31)	23.3 (15.94, 30.72)	28.1 (19.44, 36.77)	29.6 (13.94, 45.26)
Back pain ^a	20.1 (15.59, 24.57)	16.1 (8.71, 23.42)	22.3 (14.86, 29.72)	23.4 (14.75, 31.95)	32.3 (15.71, 48.96)
Cardiovascular disease	26.1 (21.14, 31.10)	20.1 (12.73, 29.22)	27.8 (20.04, 35.59)	30.3 (20.51, 40.04)	50.9 (31.34, 70.36)
Chronic obstructive pulmonary disease ^a	15.6 (11.62, 19.61)	13.3 (6.59, 19.98)	14.3 (8.55, 20.05)	21.7 (13.07, 30.25)	29.3 (9.53, 49.06)
Obesity	16.4 (12.22, 20.53)	11.9 (5.12, 18.61)	16.8 (10.00, 23.56)	29.1 (19.27, 38.92)	16.6 (7.70, 25.56)
High-risk pregnancy	18.6 (14.22, 22.94)	14.8 (7.39, 22.14)	18.8 (12.35, 25.21)	22.7 (14.43, 31.05)	41.4 (21.23, 61.49)

Note. CI = confidence interval.
^aNonsignificant between-group difference.

offered chronic obstructive pulmonary disease programs. Sites with more than 750 employees were more likely to offer cardiovascular disease (50.9%), diabetes (48.2%), and high-risk pregnancy (41.4%) programs than were other worksites. Smaller worksites were less likely to offer all types of disease management programs (Table 1). Differences according to worksite size were significant in the case of obesity, cardiovascular disease, high-risk pregnancy, and diabetes programs.

Work Environment Programs or Policies

With respect to providing an environment supporting physical activity, 27.6% of worksites offered on-site shower facilities, 14.6% had an on-site fitness facility, 13.5% offered fitness or walking trails, and 6.2% provided signage to encourage stair use. Sites with larger numbers of employees were more likely to offer a supportive environment for physical activity. For example, 63.8% of employers with more than 750 employees

offered shower facilities (vs 20.9% of those with 50 to 99 employees), 49.6% (vs 9.8%) offered an on-site fitness facility, 40.5% (vs 7.7%) offered a fitness or walking trail, and 11.4% (vs 2.1%) promoted stair use with signage.

Overall, 24% of worksites had a cafeteria (allowing them a chance to offer healthy food selections). Approximately 74% of sites with more than 750 employees had a cafeteria, as compared with 41.9% of sites with 250 to 749 employees, 24.5% of sites with 100 to 249 employees, and 12.9% of sites with 50 to 99 employees. Most sites (79.6%) had food or beverage vending services, with the largest sites more likely to provide such services. Overall, 37.4% of worksites reported labeling healthy food choices, and 5.6% offered promotions for healthy food choices (Table 2).

Approximately 40% of worksites completely prohibited smoking on worksite property, and 56.5% restricted smoking to outside

areas only; 12.4% provided employees fitness breaks at work. Overall, only 6.1% of sites offered catering policies to ensure that healthy food options were available at company events; 12.4% of sites with more than 750 employees reported having a catering policy in place. Overall, worksite policies prohibiting alcohol use (91.1%), drug use (93.4%), and firearm use (85.8%) were prevalent, whereas occupant protection policies for company vehicles (45%) were not. At each size category, the percentages of worksites that reported having a policy increased as the number of employees increased.

Programs and Policies by Industry Type

In general, no differences in health promotion programs, activities, or screenings; disease management programs; work environments; or policies by industry type were observed. However, sites in the transportation/communications/utilities and agriculture/mining/construction categories were significantly less

TABLE 2—Selected Work Environment and Policy Characteristics, by Worksite Size: National Worksite Health Promotion Survey, 2004

	Total (n = 730), % (95% CI)	50-99 Employees, % (95% CI)	100-249 Employees, % (95% CI)	250-749 Employees, % (95% CI)	≥ 750 Employees, % (95% CI)
Physical environment					
On-site fitness center	14.6 (9.97, 19.14)	9.8 (2.20, 17.30)	13.17 (5.63, 20.71)	17.5 (9.46, 25.50)	49.6 (29.98, 69.24)
On-site shower facilities	27.6 (22.87, 32.36)	20.9 (13.59, 28.15)	29.7 (21.43, 37.99)	32.4 (23.28, 41.50)	63.8 (45.54, 82.11)
Signage promoting stair use	6.2 (3.57, 8.85)	2.1 (0.12, 4.01)	11.7 (5.14, 18.32)	4.2 (1.57, 6.74)	11.4 (3.45, 19.24)
Fitness/walking trails	13.5 (9.66, 17.28)	7.7 (2.17, 13.13)	13.9 (7.22, 20.64)	22.1 (12.62, 31.59)	40.5 (21.83, 59.16)
Food/beverage services	79.6 (74.5, 84.7)	70.8 (61.47, 80.17)	82.1 (74.16, 90.01)	95.9 (92.67, 99.21)	95.4 (91.12, 99.61)
Cafeteria					
Has a cafeteria	24.0 (19.39, 28.65)	12.9 (5.92, 19.97)	24.5 (17.02, 31.95)	41.9 (30.75, 52.98)	74.1 (59.13, 88.71)
Healthy food choices labeled	37.4 (26.32, 48.56)	34.6 (6.50, 62.75)	28.8 (11.39, 46.26)	32.4 (16.50, 48.37)	73.1 (53.64, 92.63)
Special promotions offered	5.6 (3.07, 8.09)	3.9 (0.00, 8.03)	5.4 (1.37, 9.42)	7.4 (3.62, 11.12)	18.6 (4.46, 32.71)
Policies					
Fitness breaks provided	12.4 (8.59, 16.21)	11.0 (4.59, 17.48)	13.0 (7.02, 18.95)	13.5 (6.08, 20.97)	17.6 (4.21, 31.37)
Catering policy	6.1 (0.00, 11.49)	6.3 (0.85, 11.79)	5.7 (1.37, 9.93)	4.7 (0.00, 10.35)	12.4 (1.69, 23.09)
Smoking policy					
Smoking completely prohibited	39.9 (34.12, 45.65)	34.2 (24.66, 43.73)	45.6 (36.52, 54.61)	40.8 (29.98, 51.60)	48.5 (28.91, 68.26)
Smoking restricted to designated inside areas	34.7 (27.81, 41.48)	32.0 (21.01, 43.03)	36.4 (25.25, 47.46)	39.3 (25.88, 52.73)	36.3 (18.94, 53.56)
Smoking restricted to outside areas	56.5 (49.24, 63.77)	50.8 (38.90, 62.67)	56.5 (44.59, 68.35)	70.3 (59.31, 81.30)	77.4 (64.17, 90.61)
Alcohol use prohibited	91.1 (87.46, 94.75)	86.3 (79.55, 92.96)	93.2 (87.67, 98.75)	98.5 (97.02, 100.00)	99.2 (98.18, 100.00)
Drug use prohibited	93.4 (90.30, 96.54)	91.8 (86.37, 97.36)	94.4 (89.46, 99.30)	94.2 (88.36, 100.00)	99.2 (98.18, 100.00)
Occupant protection policy (vehicles)	45.0 (39.18, 50.98)	49.0 (39.22, 59.00)	38.9 (29.83, 48.00)	45.6 (34.40, 56.72)	53.2 (35.54, 71.03)
Firearms prohibited	85.8 (81.75, 90.01)	83.0 (75.66, 90.43)	87.5 (81.09, 93.97)	87.4 (79.72, 95.05)	96.3 (92.11, 100.00)
Incentives to promote participation	25.9 (20.0, 31.82)	23.4 (12.75, 34.10)	27.5 (18.11, 36.84)	27.7 (17.70, 37.63)	28.7 (12.17, 46.22)

Note. CI = confidence interval.

TABLE 3—Incorporation of Key Elements of a Comprehensive Program, by Worksite Size: National Worksite Health Promotion Survey, 2004

	Total (n = 730), % (95% CI)	50-99 Employees (n = 179), % (95% CI)	100-249 Employees (n = 229), % (95% CI)	250-749 Employees (n = 211), % (95% CI)	≥ 750 Employees (n = 111), % (95% CI)	P
Health education	26.2 (21.54, 30.84)	17.8 (10.37, 25.32)	26.2 (18.80, 33.67)	38.1 (27.61, 48.49)	70.3 (54.22, 86.40)	< .001
Supportive social and physical environment	29.9 (24.67, 35.03)	24.0 (15.28, 32.73)	32.5 (24.40, 40.68)	33.5 (23.43, 43.63)	53.7 (34.70, 72.80)	.04
Integration	28.6 (23.37, 33.74)	20.6 (12.24, 29.05)	33.3 (24.85, 41.75)	30.9 (20.62, 41.17)	61.4 (43.20, 79.54)	.002
Linkage to related programs	41.3 (35.87, 46.71)	29.6 (20.68, 38.43)	43.7 (34.66, 52.70)	59.3 (47.87, 70.82)	80.5 (65.61, 95.36)	< .001
Worksite screening	23.5 (18.68, 28.27)	15.8 (8.07, 23.49)	25.3 (17.58, 33.05)	30.5 (20.99, 39.96)	62.4 (44.10, 80.76)	< .001
All 5 elements	6.9 (3.87, 10.02)	4.6 (0.00, 9.36)	6.0 (1.72, 10.33)	11.3 (3.80, 18.76)	24.1 (4.03, 44.21)	.03

Note. CI = confidence interval.

likely to offer nutrition programs than were sites in the other industry categories, and sites in the agriculture/mining/construction category were less likely to offer diabetes screening programs (data not shown).

Comprehensive Programs

Only 6.9% of worksites offered a comprehensive worksite health promotion program (i.e., a program incorporating all 5 key elements defined in *Healthy People 2010*; Table 3). Significant differences according to worksite size were apparent with respect to provision of a comprehensive program; 24.1% of sites with more than 750 employees offered such a program, as compared with 11.3% of sites with 250 to 749 employees, 6.0% of sites with 100 to 249 employees, and 4.6% of sites with 50 to 99 employees. Sites in the manufacturing (8.7%) and business/professional services (8.3%) categories were more likely to offer comprehensive programs than sites in the wholesale/retail (5.7%), transportation (2.9%), finance (2.4%), and agriculture/mining (1.4%) categories.

When we examined each of the 5 key elements individually, we found that linkages to related programs (41.3%) were most commonly reported, followed by supportive social and physical environments (29.9%), integration of the program into the organizational structure (28.6%), health education (26.2%), and worksite screenings (23.5%). Worksites with fewer employees were less likely to offer a comprehensive program in general and were also less likely to offer any 1 of the 5 key elements. Although 80.5% of worksites with more than 750 employees offered linkages to

TABLE 4—Relative Odds of Providing of a Comprehensive Health Promotion Program, by Worksite Characteristics: 2004 National Worksite Health Promotion Survey

	Unadjusted OR (95% CI)	Multivariate Adjusted OR (95% CI)
No. of employees		
50-99 (Ref)	1.00	1.00
100-249	1.34 (0.35, 5.14)	0.97 (0.25, 3.83)
250-749	2.66 (0.70, 10.13)	1.75 (0.44, 7.03)
≥ 750	6.66 (1.42, 31.23)*	4.41 (0.92, 21.07) ^a
Experience ^b	0.59 (0.22, 1.60)	0.52 (0.21, 1.35)
Industry type		
Manufacturing (Ref)	1.00	1.00
Finance	0.26 (0.09, 0.73)*	0.29 (0.10, 0.82)*
Wholesale/retail	0.63 (0.20, 1.97)	1.06 (0.31, 3.61)
Transportation	0.31 (0.07, 1.33)	0.40 (0.09, 1.90)
Agriculture/mining	0.15 (0.03, 0.86)*	0.15 (0.02, 0.96)*
Business/professional services	0.94 (0.31, 2.83)	1.2 (0.41, 3.49)
Staff person in place	29.86 (7.13, 125.07)*	10.26 (1.97, 53.41)*

Note. OR = odds ratio; CI = confidence interval.

^aP = .06.

^bNumber of years program had been in place; the reference category was programs in place for less than 5 years.

*P < .05.

related programs, only 29.6% of those with 50 to 99 employees did so (P < .001).

Table 4 depicts the likelihood of providing a comprehensive worksite health promotion program according to worksite size, industry type, experience, and whether sites had a staff person dedicated to and responsible for health promotion. Both unadjusted (bivariate) and adjusted (multivariable) logistic regression results are shown, along with point estimates and 95% confidence intervals. Unadjusted results indicated that worksites with more than 750 employees were 6.7 times as likely as sites of all other sizes to offer a

comprehensive health promotion program and that sites in the agriculture and finance categories were significantly less likely than were sites in the other industry categories to offer a comprehensive program. Sites with a staff person dedicated to health promotion were nearly 30 times as likely to offer a comprehensive program compared with sites without such a staff person.

The adjusted model showed that even after we controlled for worksite size, experience, and industry type, sites with a dedicated staff person were 10.3 times more likely than were sites without a staff person

dedicated to health promotion to have a comprehensive worksite health promotion program ($P=.05$; Table 4). In addition, the adjusted model showed that sites in the agriculture and finance categories were significantly less likely than were sites in the other industry sectors to have a comprehensive program ($P=.05$). Although worksites with more than 750 employees were 4.4 times as likely as sites of other sizes to have a comprehensive program in place. Observed differences in worksite size only trended toward statistical significance ($P=.06$).

DISCUSSION

One of the objectives of *Healthy People 2010* was for at least 75% of worksites to offer a comprehensive health promotion program, yet only 6.9% of our responding worksites met this criterion. Sites with more than 750 employees offered more health promotion programs, services, and screening programs; had more health-promoting policies in place; and were more likely to have health-supportive work environments than were worksites with fewer employees. This pattern was consistent with previous national worksite surveys.^{7,8} Given that small businesses (those with fewer than 500 employees) represent 99.7% of all US employers and employ 50.1% of the private-sector workforce,¹⁴ it is apparent that important opportunities to improve the public's health are being missed.¹⁵

In previous worksite surveys, including the 1999 survey, metrics different from those described for the present survey were used to define types and levels of health promotion programming.^{7,8,16} In the 2004 National Worksite Health Promotion Survey, we believed that it was important to monitor progress according to the *Healthy People 2010* definition of a "comprehensive" health promotion program.

However, we also used broad, more-traditional means of documenting the extent to which worksite health promotion programs are available. Specifically, 9.7% of respondents indicated that they offered health education programming, a supportive work environment, and worksite screening programs, whereas 16.7% of respondents reported that they offered at least health education

programming and a supportive work environment (data not shown). Thus, even when more-inclusive definitions of health promotion programs were applied, a low percentage of worksites reported offering these programs. Moreover, significant differences by worksite size persisted.

Few differences in health promotion programming, policies, and work environments by industry type were observed. Worksites in the manufacturing and business categories were more likely to offer comprehensive programs, but small employers in each industry category were less likely to offer nearly all types of programs and services. Thus, different types of worksites may require different types of health promotion programs, policies, and practices, and a special emphasis on smaller worksites is needed if these worksites are to reach *Healthy People 2010* objectives.

Despite relatively stable levels of health promotion programming among sites with more than 750 employees, there was a noticeable decline from 1999 levels in programming among sites with fewer than 750 employees. This result may reflect a true decrease in programming, may represent measurement error (minor changes in the wording of questions may have generated different responses), or may demonstrate that different cross-sectional survey samples (even nationally representative samples) produce different and difficult-to-compare results.

One observation that supports a true drop in the number of health promotion programs offered is that worksites in the present survey reported significantly more perceived barriers (on identical questions) to offering health promotion programs than did worksites in the 1999 survey.⁸ In our survey, 63.5% of worksites reported that lack of employee interest was a barrier to offering health promotion programs, as compared with 49.6% of worksites in 1999 ($P=.003$). Lack of resources was cited as a barrier by 63.4% of employers in 2004 and 36.8% in 1999 ($P=.02$); lack of participation by high-risk employees, lack of management support, conflicts with work demands, and lack of access to data were also cited at significantly higher rates. These results add credence to the possibility that a real decrease in programming occurred between 1999 and 2004.

In contrast to the observed drop in programming between 1999 and 2004, reported policies and environmental supports remained stable during this period. Almost 30% of worksites reported that their social and physical environment at work was supportive of health.

Approximately 30% of worksites reported that their health promotion program had been in existence for at least 6 years. Our results also indicated that sites with a staff person dedicated to health promotion were significantly more likely to report having a comprehensive health promotion program. Although all of the factors just described (dedicated staff, policies, environmental supports, and experience) are signs of permanence, the present findings reveal significant room for improvement.

The most significant shortcoming, one that has persisted over time, is that worksites with small numbers of employees are less likely and (potentially) less able than large employers to offer health promotion programs. More work must be done with small businesses to make a "business case" for health promotion, to develop new methods for reaching employees, and to determine the employer and employee incentives (e.g., tax credits, benefit discounts) that are most effective in supporting worker health.

Limitations

Our study had several strengths as well as limitations. An important strength is that our data were derived from a nationally representative sample of worksites, allowing tentative comparisons between the present survey and the 1999 survey. However, because of the variability of weights in 2004 (resulting from the disproportionate nature of the sampling, whereby smaller sites were selected with considerably lower probabilities than larger sites), the precision of the confidence intervals for industry comparisons was less than ideal. In addition, response rates in surveys of the general population are declining, and moderate rates of nonresponse may have a negative effect on point estimates and comparisons over time. Although adjustments for nonresponse have partly addressed this issue, nonresponse bias may remain.

Our data represent, in the case of each worksite, the opinions of a single individual aligned with management; thus, caution in interpreting our results is warranted given evidence suggesting that employees' perceptions of access to and participation in worksite health promotion programs may vary considerably from employers' perceptions.¹⁷ In addition, although a standardized survey administration protocol was used, certain survey items that included definitions (e.g., "program integration" and "linkage") may have taken on different meanings for respondents across and within worksites. Because respondents answered questions with respect to their particular worksite (as opposed to the company to which the worksite belonged), their responses may not reflect the situations associated with all health promotion programs sponsored by a given company. Finally, data on intervention quality and program effects on employee health were not gathered in the survey.

Conclusions

There is a need for regular monitoring and implementation of evidence-based worksite health promotion and health protection programs. Employers can use information gathered from such programs for benchmarking purposes as they work toward achieving the objectives of *Healthy People 2010*. At a time when health care costs and work demands are rising, it is disturbing that few health promotion programs are available to employees. Our results can also be used to create partnerships between employers, employees, health plans, policymakers, and health organizations with the goal of mobilizing workplaces to improve the public's health. Additional research that helps identify or develop effective worksite-based interventions, particularly for small businesses, is essential. ■

About the Authors

Laura Linnan and Mike Bowling are with the Department of Health Behavior and Health Education, School of Public Health, University of North Carolina, Chapel Hill. Jennifer Childress and Garry Lindsay are with Partnership for Prevention, Washington, DC. Carter Blakey and Penelope Royall are with the Office of Disease Prevention and Health Promotion, Rockville, Md. At the time of the study, Stephanie Pronk and Sharon Wieker were with Watson Wyatt Worldwide, Minneapolis, Minn.

Requests for reprints should be sent to Laura Linnan, ScD, CHES, School of Public Health, University of North Carolina, CB #7440, Chapel Hill, NC 27599-7440 (e-mail: linnan@email.unc.edu).

This article was accepted February 26, 2007.

Contributors

L. Linnan developed the research questions and created first drafts of the article. M. Bowling conducted all of the analyses and drafted key parts of the Methods and Results sections. J. Childress, G. Lindsay, C. Blakey, S. Pronk, S. Wieker, and P. Royall developed the survey instruments and implementation procedures and provided extensive feedback on all drafts of the article.

Acknowledgments

The Robert Wood Johnson Foundation provided initial funding to Partnership for Prevention in support of the 2004 National Worksite Health Promotion Survey.

The survey was a joint effort of Partnership for Prevention and Watson Wyatt Worldwide, with the support of the United States Department of Health and Human Services. A workgroup convened by Partnership for Prevention guided the development, implementation, and analysis of the survey; the workgroup included experts from the Centers for Disease Control and Prevention, the National Center for Health Statistics, the Office of Disease Prevention and Health Promotion, and the University of North Carolina at Chapel Hill.

We thank Glorian Sorensen for helpful feedback on early versions of this article.

Note. The views and opinions presented in this article are solely those of the authors, and the authors assume full responsibility for any errors or misrepresentations. Statements do not necessarily represent the official position of the US Department of Health and Human Services or any other federal department or agency.

Human Participant Protection

No protocol approval was needed for this study.

References

1. Stokols D, Pelletier K, Fielding J. The ecology of work and health: research and policy directions for the promotion of employee health. *Health Educ Q*. 1996; 23:137–158.
2. DeJoy DM, Southern DJ. An integrative perspective on worksite health promotion. *J Med*. 1993;35: 1221–1230.
3. Sorensen G, Barbeau E. Steps to a healthier US workforce: integrating occupational health and safety and worksite health promotion: state of the science. Available at: <http://www.cdc.gov/niosh/worklife/steps/2004/whitepapers.html>. Accessed December 8, 2006.
4. *Healthy People 2010: With Understanding and Improving Health and Objectives for Improving Health*. Washington, DC: US Dept of Health and Human Services; 2000.
5. Partnership for Prevention. Healthy workforce 2010: an essential health promotion sourcebook for employers, large and small. Available at: http://www.prevent.org/images/stories/Files/publications/Healthy_Workforce_2010.pdf. Accessed June 13, 2006.
6. Dun & Bradstreet. Million dollar databases. Available at: <http://www.dnbmdd.com>. Accessed June 13, 2006.
7. 1992 National Survey of Worksite Health Promotion Activities: Summary Report. Washington, DC: US Dept of Health and Human Services; 1993.
8. 1999 National Worksite Health Promotion Activities: Summary Report. Washington, DC: US Dept of Health and Human Services; 2000.
9. Gwartney PA. *The Telephone Interviewer's Handbook: How to Conduct Standardized Conversations*. San Francisco, Calif: Jossey-Bass Publishers; 2007.
10. SAS 9.1.3 Help and Documentation. Cary, NC: SAS Institute Inc; 2004.
11. An AB. Performing logistic regression on survey data with the new SURVEYLOGISTIC procedure. Available at: <http://www.lexjansen.com/pharmasug/2002/proceed/sas/sas05.pdf>. Accessed March 15, 2006.
12. Kleinbaum DG, Klein M. *Logistic Regression: A Self-Learning Text*. 2nd ed. New York, NY: Springer-Verlag; 2002.
13. American Association for Public Opinion Research. Standard definitions and final dispositions of case codes and outcome rates for surveys. Available at: http://www.aapor.org/pdfs/standarddefs_4.pdf. Accessed November 1, 2006.
14. US Small Business Administration. Advocacy small business statistics and research. Available at: <http://app1.sba.gov/faqs/faqindex.cfm?areaID=24>. Accessed May 22, 2006.
15. Wilson MG, DeJoy DM, Jorgensen CM, Crump CJ. Health promotion programs in small worksites: results of a national survey. *Am J Health Promot*. 1999;13: 358–365.
16. Phillips K, Stokols D, McMahon S, Grzywacz J. Strategies for health promotion in small business. *Am J Health Promot*. 2004;19(suppl):1–7.
17. Grosch JW, Alterman T, Petersen MR, Murphy LR. Worksite health promotion programs in the US: factors associated with availability and participation. *Am J Health Promot*. 1998;13:36–45.