Worksite Hypertension Programs: Results of a Survey of 424 California Employers

JONATHAN E. FIELDING, MD, MPH
LESTER BRESLOW, MD, MPH

Dr. Fielding is professor of pediatrics, School of Medicine; professor of public health, School of Public Health; and co-director, Center for Health Enhancement, at the University of California, Los Angeles. Dr. Breslow is professor and dean emeritus, School of Public Health, at the same university.

Leslie M. Alexandre, MSPH, a doctoral student at the UCLA School of Public Health, gave technical assistance in the data handling and preparation of the paper.

Tearsheet requests to Dr. Fielding, UCLA Center for Health Enhancement, 947 Tiverton, Los Angeles, Calif. 90024.

SYNOPSIS

More than 30 million American workers 17 years of age or older have some degree of hypertension, and nearly two-thirds of these workers have blood pressure > 160/95 mm Hg. Many employer-sponsored hypertension detection and control programs have been reported, but much of the information about these programs is anecdotal and based on perceptions rather than on formal evaluation.

To gain an estimate of the number and nature of such programs among California employers, the authors surveyed 424 California organizations with more than 100 employees at one or more sites. Experienced survey researchers conducted 30-minute telephone interviews with key personnel of these firms to probe their companies' health promotion activities, including those devoted to hypertension screening and control. Of the 424 organizations, 43 (10.1 percent) had worksite hypertension programs, and 24 (5.7 percent) were planning to initiate such a program within the following 12 months. But 357 employers neither offered a hypertension program at the time of the survey nor planned to initiate one within the following year.

Survey responses indicated that during the 3 years before the survey, the number of worksite hypertension programs among the organizations surveyed had increased by 110 percent. This rapid rate of increase, together with the nearly 50 percent increase in number of programs that employers were planning for the following 12 months, suggest that the number of similar programs in other regions may also be growing at an accelerating rate. The National Heart, Lung, and Blood Institute's strong endorsement of worksite hypertension programs and employers' current interest in health promotion and disease prevention activities should act as a spur for further growth of these programs. For maximum growth, however—especially among smaller companies—active promotion by business and community groups is essential.

MORE THAN 30 MILLION MEMBERS of the American work force who are 17 years of age or older have some degree of hypertension (blood pressure > 140/90 mm Hg), and nearly two-thirds of these workers have blood pressure > 160/95 mm Hg (*1*). Hypertensives have approximately three times the age- and sex-specific incidence of coronary heart failure, and seven times the incidence of stroke (*1–3*). Lowering even moderately elevated blood pressure can reduce morbidity and mortality (*2,3*).

The percentage of the population with adequately controlled hypertension has risen over the last 15 years (*4,5*). Nonetheless, at the time of the 1974–75 National Health and Nutrition Survey, only 24.2 percent of hypertensives who had had blood pressures > 160/95 mm Hg or were taking medication for hypertension were reported to have achieved blood pressures < 160/95 mm Hg (*5*). Over the past decade, however, State and local hypertension screening programs have shown major increases in the percentages of aware, treated, and controlled hypertensives (*6,7*). These increases may have reflected initiation of the National Heart, Lung, and Blood Institute's National High Blood Pressure Education Program in 1972.

Many companies have reported on hypertension screening, treatment, or referral and followup programs, provided at the worksite, that have been effective in identifying employees with previously unknown hypertension. Some of these programs reportedly have achieved high rates of blood pressure control (*8–13*). For example, 97 percent of

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170 employees participating in a comprehensive high blood pressure control effort at the home office of General Mills were reported to have been successful in controlling their high blood pressure, although "control" was not defined (*8*). In a three-site hypertension screening, referral, and followup program, 92 percent of 120 auto workers, 138 sanitation workers, and 106 postal workers referred for high blood pressure saw their physicians, and 93 percent of those seeing a physician began treatment for the condition (*9*). Of those beginning treatment, 84 percent showed progress toward hypertension control (blood pressure < 140/90 mm Hg, or reduced since screening and < 160/95 mm Hg) after an average followup time of 16 months.

Previous Surveys of Employers

Much of the information about companies' experiences with hypertension detection and followup programs is anecdotal and based on perceptions rather than on formal evaluation. Only limited information is available regarding the number and types of companies providing hypertension programs, the format of these programs, and the percentage of the working force participating in them.

In 1978 the Washington Business Group on Health surveyed its 160 member companies—almost all among the Fortune 500—regarding their health promotion and risk reduction activities. Of 59 companies (36.9 percent) responding to the survey, 63 percent sponsored hypertension control programs for their employees (unpublished data). Although the survey was useful in demonstrating employer awareness of and concern about employee hypertension, it did nct include attention to program components, rates of employee participation, or effectiveness of the programs in achieving blood pressure control. Moreover, the small proportion of companies responding to the survey and the absence of smaller companies among the respondents do not permit use of the data from this survey to estimate frequency of similar programs among all employers.

A 1979 national survey of 3,000 companies of varying size by the National Interagency Council on Smoking and Health (*14*) yielded a 30 percent response rate. A primary purpose of the survey was to determine the existence and format of health education and promotion programs among businesses. Of the 856 companies responding to the survey, 27.1 percent sponsored high blood pressure programs.

The California Survey

The authors undertook the survey reported here with the hope of obtaining a reliable estimate of the number and nature of health promotion and disease prevention programs—including hypertension programs—among California employers, large and small. For the purposes of the survey, any high blood pressure educational, screening, or control activity—or a combination of these activities—was considered to constitute a "program."

A sample of 1,000 organizations was randomly selected from a listing of all California employers with more than 100 employees at one or more sites in the State. (The sample was stratified by number of employees to ensure a proportional draw to size.) Of the sample, 511 firms were still in business at the time of the survey and were reachable by telephone within eight attempts. Personnel of 424 (83 percent) of the 511 eligible organizations participated in 30-minute, structured telephone interviews, conducted by experienced survey researchers, during August and September 1981.

In contacts with the participating organizations, interviewers first obtained general information about each company from the person in charge of employee health programs, the medical director, or the health benefits director, then asked to speak with the person "most knowledgeable about your organization's or your particular branch's health promotion activities." When that person was reached, he or she was asked to focus on one specific worksite (if the organization had multiple sites) in answering questions about health promotion activities. Structured questions then probed each of the firm's health promotion activities, including those devoted to hypertension screening and control. Questions concerned the format and content of such activities, the length of time they had been offered, which employees they involved, rates of employee participation, and perceived effectiveness of the activities.

Respondents for organizations with plans to implement a hypertension program were asked a limited set of questions about the proposed activity.

Table 1. Number and percentage distribution of current and planned worksite hypertension programs among 424 California employers, by number of employees at worksite

Employees at worksite	Employers surveyed		Employers with current programs		Employers with programs planned	
	Number	Percent	Number	Percent	Number	Percent
0–99	10	2.3	1	10.0	0	0.0
100–249	225	53.1	8	3.6	8	3.6
250–749	126	29.7	13	10.3	11	8.7
750 or more	63	14.9	21	33.3	5	7.9
Total	424	100.0	43	10.1	24	5.7

Respondents for firms with no hypertension control activities and no plans to initiate any within the next 12 months were asked a series of "forced choice" questions about the desirability of a high blood pressure program to be sponsored by their organization.

Results

Of the 424 organizations participating in the survey, 43 (10.1 percent) offered hypertension control activities at the particular worksite that was the focus of the interview. Table 1 illustrates the relationship between number of employees at a worksite and the existence of a hypertension program. Sites with at least 750 workers were 3 times more likely to have such a program than sites with 250–749 employees, and 10 times more likely than sites with fewer than 250 employees. All the firms with hypertension control programs at the time of the survey planned to continue them, and 6.3 percent of firms without a program were planing to initiate one.

Survey responses indicated that during the 3 years just prior to the survey, a dramatic increase (110 percent) had occurred in the number of worksite hypertension programs among companies sampled (table 2). A weak positive correlation existed between age of the program and number of employees at the worksite. Sixty percent of programs at sites with 750 or more employees had been offered for at least 4 years, compared with 45 percent at sites with 250–749 employees and 11 percent at sites with fewer than 250 employees.

Employers' medical departments were responsible for initiating 47 percent of the worksite hypertension activities; personnel departments for initiating 21 percent; and health benefit, top management, safety, employee, and other groups for initiating the remainder. Eighty-six percent of the hypertension programs were provided onsite, and 95 percent were made available to all employees. Only one program was offered solely to executives. Nearly 90 percent of programs were offered on a continuous rather than an intermittent basis. Two-thirds were administered in-house or by a combination of in-house and outside personnel.

What constituted a high blood pressure program varied greatly among the 43 organizations that offered them. The majority (24) of the programs consisted of both lectures and instruction, and em-

Table 2. Worksite hypertension programs among 424 California employers, by number of employees at worksite and age of programs

Employees at worksite	Number of years program offered (employer survey responses)							
	Less than 1	1–3	4–6	7–9	More than 10	Don't know	No answer	Total
0–99	0	1	0	0	0	0	0	1
100–249	1	6	1	0	0	0	0	8
250–749	1	5	2	2	1	1	1	13
750 or more	0	8	6	2	4	0	0	[1]20
Total	2	20	9	4	5	1	1	42

[1] Number = 20 because of missing information from 1 employer for this question.

Table 3. Number and percentage distribution of California employers' planned health promotion programs, by type of program projected and number of employees at worksite

Type of program	Number of programs planned					Percent of all programs planned
	0–99 employees	100–249 employees	250–749 employees	750 or more employees	Total	
Stress management	1	11	11	8	31	14.3
Exercise, fitness	0	13	10	3	26	12.0
Hypertension screening and control	0	8	11	5	24	11.1
CPR, choke-saver	1	15	6	2	24	11.1
Smoking cessation	0	7	10	4	21	9.7
Drug, alcohol abuse	0	7	8	3	18	8.3
Weight control	0	6	7	4	17	7.8
Nutrition training	0	5	7	1	13	6.0
Accident prevention	0	5	4	1	10	4.6
Cancer risk reduction	0	2	4	3	9	4.1
Mental health counseling	0	0	5	3	8	3.7
Other	0	9	6	1	16	7.4
Total	2	88	89	38	217	[1] 100.1

[1] Due to rounding.

ployed a wide assortment of methods. Screening, referral, and followup were used in about half the programs, group sessions in 40 percent. Employers advertised their hypertension programs most frequently through posters (21 programs), newsletters (16), memos (10), fliers in paycheck envelopes (9), and supervisors' announcements (7).

With three exceptions, respondents considered all of the hypertension programs to be effective. (The exceptions involved respondents who either did not know whether a specific program was effective or believed that it had not been in operation long enough for a judgment to be made.) Fifty-five percent of the hypertension programs were deemed "very effective" and 45 percent "somewhat effective." All respondents believed that employees who participated in these programs felt they had benefited from them.

Of 27 respondents who answered inquiries about the rate of employee participation in hypertension programs, 5 reported that more than 80 percent of their organizations' employees were participants; 10 reported a participation rate higher than 50 percent; and 12 reported the rate of participation to be lower than 20 percent. There was no correlation between rate of employee participation and number of employees at the worksite.

High blood pressure ranked third among types of health promotion programs that employers planned to initiate within the 12 months following the survey (table 3). Of the 381 employers that did not offer a hypertension program at the time of the survey, 24 (6.3 percent) had plans to implement one within the next year. Twenty-two of the projected programs (92 percent) were slated to be offered to all employees, 18 (75 percent) were to be conducted onsite, and 17 (71 percent) were to be administered in-house or by both in-house and outside personnel. Among educational activities cited most often for inclusion in the planned programs were lectures (11 programs), group sessions (9), and individual counseling (7). In only 5 of the future programs was blood pressure screening to be included.

There were 357 employers that neither offered a hypertension program at the time of the survey nor planned to initiate one during the following year. Of the respondents for these organizations, 15 percent stated that such a program would be "very desirable"; 37 percent, "somewhat desirable"; 19 percent, "somewhat undesirable"; and 14 percent, "very undesirable." Fifteen percent were "unsure."

Discussion

The survey method used to collect information for this report has certain limitations. Because the interviewers directed their detailed questions about health promotion activities to only one representative from each organization, responses reflected individual perceptions and knowledge of programs and may have been affected by the respondent's

degree of involvement in planning, implementing, and evaluating his or her organization's health promotion program.

Since respondents were not provided with definitions of such terms as "screening," "treatment," "referral," and "control," it is likely that interpretations varied among the respondents. For example, one respondent might have considered a hypertension activity offered four times a year to be "continuous" while another might have described an activity of this frequency as "intermittent." Nothing about the quality of programs can be inferred from this survey, and no attempt was made to determine such effects of the program as knowledge acquisition, behavioral changes, or changes in morbidity.

To reduce variation in responses, respondents were provided with a list of possible answers for many of the survey questions; however, they were allowed to give other answers or to indicate that they did not know the answer. Many of the questions asked were generic; they were not designed specifically for high blood pressure programs. Moreover, responses to many questions, such as those regarding rates of employee participation, were based on personal estimates.

The rate of program growth implied by our findings may be exaggerated because these findings are predicated on a single cross-sectional survey. Programs started many years ago in companies no longer in business or no longer in California were not covered in the survey, and this fact may have tended to exaggerate the appearance of recent program growth. The possibility of overstatement also arises from the fact that some organizations that were surveyed have been in operation for only a few years. Nonetheless, the program growth trend that has been identified is probably valid. The extent to which the results of this California survey can be generalized to the rest of the country is unknown, although the State does account for about 10 percent of the population of the United States.

Limitations notwithstanding, this survey has produced considerable new information about worksite hypertension activities. It is surprising that only 10.1 percent of the organizations that were surveyed offered high blood pressure detection and followup programs, despite tremendous growth in public awareness of hypertension as an ameliorable health risk, and strong national encouragement of worksite programs by the National Heart, Lung, and Blood Institute. As indicated previously, high rates of blood pressure control are reported to have been achieved in employer-sponsored programs, and occupational settings would seem to favor the likelihood of a successful hypertension control program. Thus, hypertension detection and control programs would be expected to receive high priority among employer-sponsored health promotion activities. Instead, they ranked seventh in frequency among 11 types of activity and were preceded by the following programs: accident prevention (sponsored by 64.6 percent of surveyed employers), CPR and chokesaver (by 52.8 percent), drug and alcohol abuse (by 18.6 percent), mental health counseling (by 18.4 percent), stress management (by 13.0 percent), and exercise and fitness (by 11.6 percent).

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Among the possible explanations for the low number of worksite hypertension programs that were identified is the fact that relatively small organizations, which constituted a significant portion of the California firms surveyed, are much less likely than larger organizations to have a medical department or to employ full-time medical staff. Only 4.3 percent of the 235 worksites with fewer than 250 employees that were included in the survey had an onsite physician, and only 8.9 percent had an onsite nurse. Of the 63 worksites with more than 750 employees, 36.5 percent employed an onsite physician and 63.5 percent employed an onsite nurse. Without medical personnel, an organization must rely on outside resources for the administration of a hypertension screening and control program. Although these resources may be readily available, management may perceive the organization's lack of medical staff as being an insurmountable barrier to the initiation and maintenance of a worksite hypertension program. Also, some organizations—especially the smaller ones—may not have personnel, industrial relations, or employee benefits departments. Such organizations may lack individuals who give high priority to employee health programs or have sufficient time to organize them. New arrangements for services might spur faster program growth

in these organizations. For example, an outside agency, such as a local Heart Association, could provide nurses to carry out screening and referral and to provide followup services and counseling on a periodic basis, for a reasonable fee.

The rapid increase in the number of employer-sponsored hypertension programs during the 3 years before the California survey, and the nearly 50 percent increase in number of programs that were being planned by employers for the following 12-month period, suggest that the number of similar programs in other regions may also be growing at an accelerating rate. The strong endorsement of worksite programs by the National Heart, Lung, and Blood Institute and the current demonstrated interest of employers in health promotion and disease prevention programs for their employees should help spur substantial expansion of worksite hypertension programs throughout the 1980s. For maximum growth of these programs, however—especially among smaller companies—active promotion by business and community groups is essential.

References

1. National Heart, Lung, and Blood Institute: Cardiovascular primer for the workplace. NIH Publication No. 81–2210. Bethesda, Md., January 1981.
2. Veterans Administration Cooperative Study Group on Antihypertensive Agents: Effects of treatment on morbidity and mortality in hypertension. III. Influence of age, diastolic pressure, and prior cardiovascular disease: further analysis of side effects. Circulation 45: 991–1004, May 1972.
3. Hypertension Detection and Follow-Up Program Cooperative Group: Five-year findings of the Hypertension Detection and Follow-Up Program. I. Reduction in mortality of persons with high blood pressure, including mild hypertension. JAMA 242: 2562–2577, Dec. 7, 1979.
4. Office of the Assistant Secretary for Health: Health, United States, 1980. DHHS Publication No. (PHS) 81–1232. National Center for Health Statistics and National Center for Health Services Research, Hyattsville, Md., December 1980.
5. Roberts, J., and Rowland, M.: Hypertension in adults 25–74 years of age, United States, 1971–75. Vital and Health Statistics, Series 11, No. 221. DHHS Publication No. (PHS) 81–1671. National Center for Health Statistics, Hyattsville, Md., April 1981.
6. Berkson, D., et al.: Changing trends in hypertension detection and control: the Chicago experience. Am J Public Health 70: 389–393 (1980).
7. D'Atri, D., et al.: The Connecticut High Blood Pressure Program: a program of public education and high blood pressure screening. Prev Med 9: 91–107 (1980).
8. General Mills cooperates with local medical center for employee HBP. *In* Re: High Blood Pressure Control in the Work Setting (newsletter). National Heart, Lung, and Blood Institute, Bethesda, Md., fall 1980.
9. Foote, A., and Erfurt, J. C.: Controlling hypertension, a cost-effective model. Prev Med 6: 319–343 (1977).
10. Stamler, R., et al.: A hypertension control program based on the workplace. J Occupational Med 20: 618–625, September 1978.
11. Logan, A. G., et al.: Cost-effectiveness of a worksite hypertension treatment program. Hypertension 3: 211–218 (1981).
12. Logan, A. G., et al.: Work-site treatment of hypertension by specially trained nurses. Lancet 8153: 1175–1178, Dec. 1, 1979.
13. Featured programs illustrate issues, techniques in worksite HBP control. *In* Re: High Blood Pressure Control in the Work Setting (newsletter). National Heart, Lung, and Blood Institute, Bethesda, Md., winter 1980.
14. National Interagency Council on Smoking and Health: Smoking in the workplace. Business survey. New York, 1979.