

Hypertension Control among Employed Persons in New York City: 1973–75

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A recent survey of 8,579 employed persons in New York City has revealed that 85.7 percent of the 1,440 hypertensives identified were already aware of their condition and 66.1 percent were being treated. These results are in marked contrast to those obtained only a few years ago, when in a similar setting only half of those with high blood pressure were aware of their condition and relatively few had entered treatment. Unfortunately, however, the potential impact of this considerable shift in behavior has not been realized because only half of those who enter treatment achieve normal blood pressure. Thus, despite far greater emphasis on the community problem of hypertension, fewer than one-third of all those with high blood pressure are controlled. These data indicate that further screening and referral can, at best, increase the rate of control only slightly. The urgent need now is for development and implementation of programs that provide effective long-term patient management.

Current dogma has it that one-half of those with high blood pressure know it; one-half of those are being treated; and of the treated, one-half are controlled (Wilber, 1973). Information obtained in a recent survey of 8,579 employed persons in New York City suggests that this litany may now be more orderly than accurate.

In contrast to previous studies (U.S. Department of Health, Education, and Welfare, 1964; Schoenberger et al., 1972; Langfeld, 1973), most (85.7 percent) identified hypertensives in this New York City study were aware of their high blood pressure and a majority (66.1 percent) were already receiving treatment. This considerably greater recognition and treatment of hypertension indicates a marked shift in public behavior. Disappointingly, however, increased patient attention to the problem has not been matched by an improvement in the efficacy of care delivered by the medical system. Indeed, fewer than one-half of treated patients in this study had achieved satisfactory blood-pressure control. This disappointing outcome of therapy is almost identical to that reported repeatedly in various settings during the past 15 years.

Thus, despite availability of suitable hypotensive chemotherapy and a high degree of public responsiveness to the problem, the fact remains that two-thirds of all hypertensives are still not adequately treated. The available data suggest that improved medical management requires neither new technology nor more rigorous identification and referral programs, but rather, development of new strategies for more effective patient care.

Methods

A union-sponsored hypertension detection and treatment program began in May 1973 (Alderman and Schoenbaum, 1975). Employees at each of eight work sites in New York City were screened for high blood pressure. There was no out-of-pocket cost to the employees, and those found to have high blood pressure were apprised of their eligibility for subsequent free antihypertensive treatment where they worked.

From May 1973 to May 1975, 8,579 (69 percent) of a potential population of 12,500 employees were examined. Included were 3,268 members of the United Storeworkers Union at Gimbels and Bloomingdale's department stores; 4,872 New York City employees who were largely members of DC-37, SCME-AFL-CIO; and 339 members of Local 32-B, Building Service Workers Union. Those screened included building and grounds maintenance staff, clerical workers, salespersons, middle-management-level employees of New York City, and academic administrators and professionals within the City University of New York. Of this population, 24 percent were black, 67.2 percent were white, and 4.5 percent were Hispanic; 40 percent were male; 26.5 percent were 18–34 years of age, 41.2 percent were 35–54 years of age, and 32.3 percent were 55 years or over. This group accurately reflects the working population of New York City, comprising both blue- and white-collar workers.

Each participating employee answered historical and demographic questions on a check-list form, which was reviewed by a union representative for accuracy and completeness. Blood pressure was measured twice in the sitting position by one of a permanent group of five nurses or specially prepared paraprofessionals (Schoenbaum and Alderman, 1976). If the average blood pressure equaled or exceeded (\geq) either 160 mm Hg systolic or 95 mm Hg diastolic, the employee was invited to be retested one week later. An

employee whose pressure continued to be ≥ 160 and/or 95 mm Hg at the second encounter was asked to return for a third set of determinations one week later. Those whose pressure remained elevated through all three encounters as well as those who reported a history of hypertension but were receiving therapy at the time of screening, were categorized as hypertensive. Of those hypertensive at the initial encounter, 79.8 percent completed the rescreening process. There was no substantial difference in screening-process compliance by any group or employee type. Prevalence of hypertension has been calculated here by distributing the 20.2 percent of employees who were hypertensive at initial encounter but failed to complete the total confirmation process into categories in the same ratio as the 79.8 percent who did complete the entire program.

All data were recorded on standardized forms and transferred to computer tapes (Conversational Systems Corporation, New York), which were edited, tested, and individually checked for error.

Results

Prevalence

Prevalence of hypertension among these employees was constant throughout the study period. When similar age, sex, and race categories were compared, differing occupational classifications and work sites yielded comparable distribution of pressures. Table 1 compares the prevalence of hypertension among New York City employees with that found in the National Health Survey of 1960-62 (U.S. Department of Health, Education, and Welfare, 1964), totaling 16.8 percent and 15.2 percent, respectively. The existence of a fairly small number of blacks in both groups as well as the fact that different diagnostic criteria were employed (in the National Health Survey all blood pressures were recorded at one encounter), may explain the different prevalence noted for blacks in the two studies. In both studies, however, hypertension was more common among blacks of each age and sex classification.

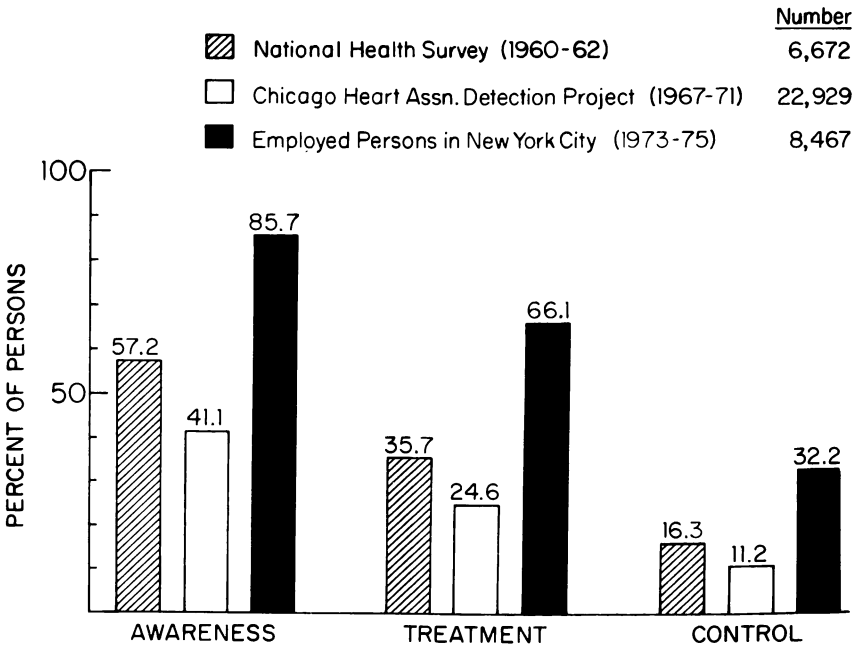
Characteristics of Defined Hypertensives

The knowledge and treatment status of the hypertensive union members in this program is compared in Fig. 1 with results of earlier

TABLE 1
Prevalence of Hypertension
by Sex and Race

| | Employed Persons in New York City—1973-75 | | National Health Survey 1960-62 | |
|----------------------------|--|-------|-----------------------------------|-------|
| | Black | White | Black | White |
| Male (%) (18-79 yrs.) | 17.8 | 12.5 | 27.6 | 13.6 |
| Female (%) (18-79 yrs.) | 20.5 | 18.3 | 27.6 | 15.6 |
| Total | 19.8 | 15.8 | 27.6 | 14.7 |

studies. Of Chicago industrial workers, 24.3 percent were labeled hypertensive on the basis of a single blood-pressure recording ≥ 160 mm Hg systolic or 95 mm Hg diastolic (Schoenberger et al., 1972). This figure is much higher than the other two studies, in which multiple blood-pressure recordings resulted in hypertension incidences of 15.2 percent (U.S. Department of Health, Education, and Welfare,



The study of employed persons in New York City and the two previous studies were found to yield a highly significant difference ($p < .001$)

FIG. 1. Diagnostic and Therapeutic Status: A Comparison of Three Studies.

1964) and 16.8 percent in the current study. The similar prevalence found in the National Health Survey and the current study suggests that the two "hypertensive" populations are similar.

While 57.2 percent of defined hypertensives in the National Health Survey of 1960-62 were aware of their condition (U.S. Department of Health, Education, and Welfare, 1964), 85.7 percent of hypertensives employed in New York City had previous knowledge of their condition. Similarly, the earlier study indicated that about one-third of known hypertensives were receiving therapy, while two-thirds of this population were receiving therapy.

In the three studies depicted as well as in others (U.S. Department of Health, Education, and Welfare, 1973), the consistent finding has been that no more than half of those in treatment attained satisfactory blood-pressure control. In the population studied, for example, this means only 32.2 percent of identified hypertensives were receiving adequate treatment.

Analysis of demographic data suggests that sex is a powerful determinant of diagnostic and therapeutic status. Women are significantly more likely to know, to be treated, and to be controlled than are men (Fig. 2). In this setting, which controls economic fac-

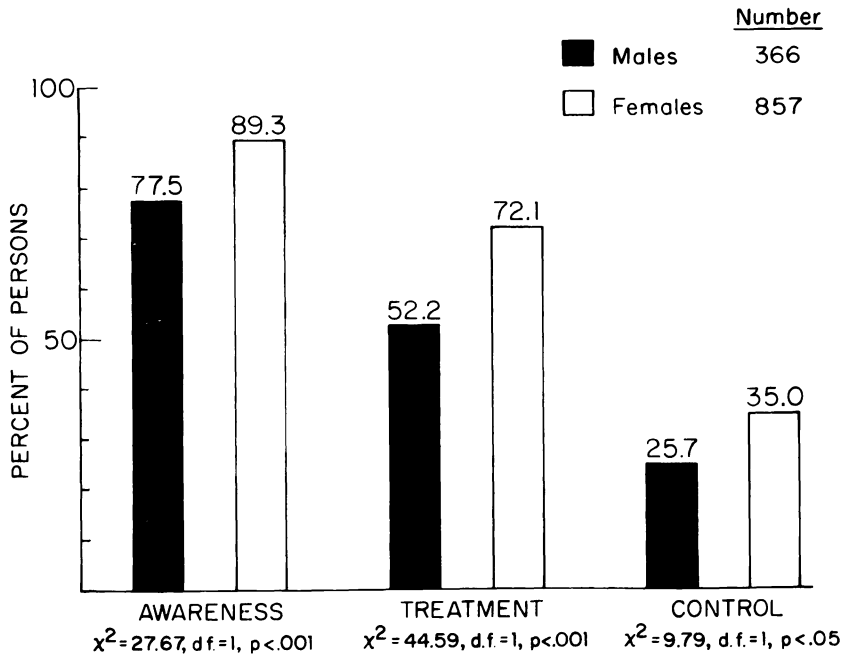


FIG. 2. Diagnostic and Therapeutic Status of Hypertensive Employees by Sex.

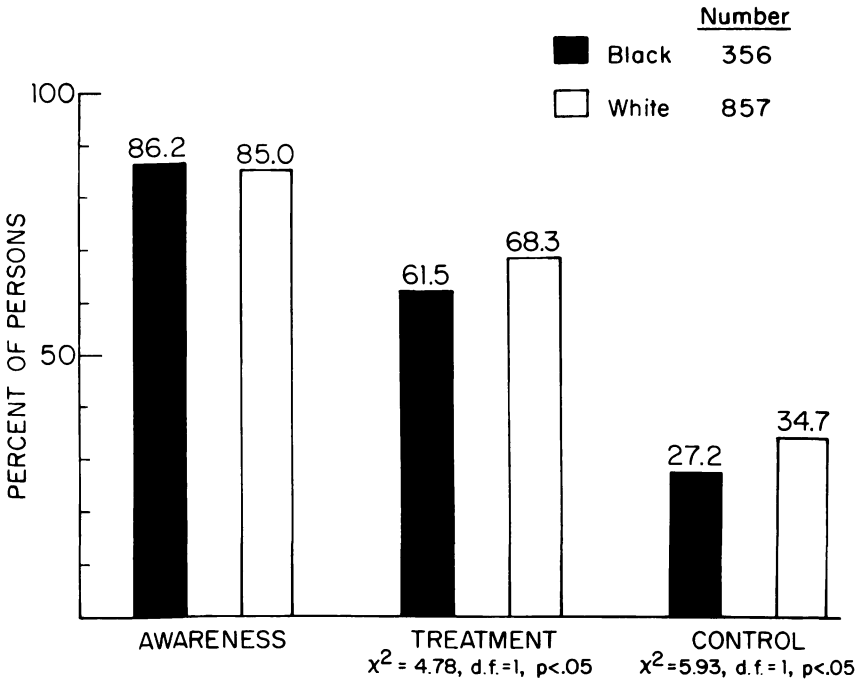


FIG. 3. Diagnostic and Therapeutic Status of Hypertensive Employees by Race.

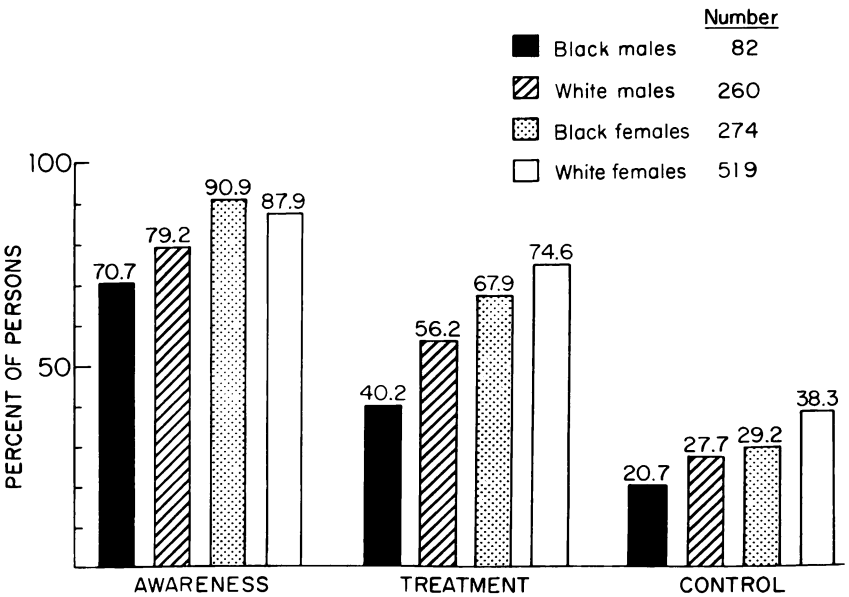


FIG. 4. Diagnostic and Therapeutic Status of Hypertensive Employees by Sex and Race.

tors, race is a less potent factor in determining status, although whites are very much more likely to be treated and somewhat more likely to be controlled than are blacks (Fig. 3). Status of men and women by race is depicted in Fig. 4. Insufficient data are available to analyze characteristics for other racial groups.

Duration of Knowledge of Hypertension

Overall, 45.2 percent of the hypertensive union members had learned of their condition during the year preceding the initial survey (Table 2). Women 55–64 years were more likely than were men of the same age to have known of their disease for more than five years, and this may reflect greater physician attention to blood pressure during the childbearing years. Type of insurance coverage and race did not influence the duration of awareness or treatment status.

TABLE 2
Duration of Awareness of Hypertension

| | <i>All Hypertensives</i> | <i>Men 55–64 Yrs.</i> | <i>Women 55–64 Yrs.</i> |
|----------------------------|------------------------------|---------------------------|-----------------------------|
| No. of hypertensives | 1224 | 146 | 393 |
| % Aware | 85.7 | 80.1 | 91.6 |
| % Aware less than one year | 45.2 | 56.5 | 42.3 |
| % Aware 1–5 years | 32.1 | 27.8 | 30.3 |
| % Aware more than 5 years | 22.7 | 15.7 | 27.3 |

Discussion

Health policy should be and often is based on data obtained through epidemiological research. Indeed, population surveys have been important determinants of the emphasis that has been placed on education, case finding, and referral for treatment in recent hypertension-control programs (U.S. Department of Health, Education, and Welfare, 1964; Schoenberger et al., 1972). According to the data presented here and elsewhere (Kotchen et al., 1976), public awareness of and willingness to seek care for high blood pressure

have increased remarkably during the past few years. It seems reasonable to conclude that recent activities have been responsible for this progress. Nevertheless, this survey shows that a persistent residue, albeit diminished, of undetected hypertension still exists and appropriate case finding continues to be necessary.

But analysis of this survey data also indicates that screening followed by referral to a conventional health care delivery system holds only limited potential for improvement in blood-pressure control. In this study, only 32 percent of hypertensive employees identified at screening had already achieved satisfactory blood-pressure control. This was true in spite of the fact that 66.1 percent of these hypertensives were participating in conventional care programs at the time of their entry into the program.

These data therefore reveal that while hypertensives have become twice as likely as they were 15 years ago to know about and to seek treatment for their high blood pressure, the care they receive is still ineffective half of the time. The persisting lack of success in therapy is reflected by the similarity in percentage of treated patients controlled in (1) The National Health Survey 1960–62 (45.7 percent), (2) the Chicago Heart Association Survey 1967–71 (45.5 percent), (Schoenberger et al., 1972) and (3) the New York City Survey 1973–75 (48.7 percent). Thus, major advance in the campaign to control hypertension cannot be expected to result simply from reliance on further screening and referral; methods of care must also be improved.

The current unacceptably high rate of treatment failure cannot be ascribed to inadequate chemotherapy. On the contrary, in specially designed hypertension-control programs utilizing conventional drugs, blood-pressure control has been achieved by more than 80 percent of patients (Alderman and Schoenbaum, 1975; Finnerty et al., 1973; Stamler et al., 1975). The problem does not seem to be with the drugs, but rather in the manner of their delivery.

Successful hypertension-control programs have modified and in some cases abandoned concepts traditionally central to the practice of clinical medicine. By adopting a categorical approach, these programs have altered the absolute privacy usually present in the doctor-patient relationship. Rather than diminishing therapeutic efficacy, this experience in common treatment appears to have enhanced patient adherence and blood-pressure control. The

development of systematic programs has also limited the degree of freedom of the physician to establish individual diagnostic and therapeutic courses. Instead, large numbers of patients have been successfully cared for according to a common protocol. In fact, the physician is no longer the sole or even the principal provider of care, but rather the leader of a team in which nurses or non-professionals are responsible for most direct patient attention. Fee-for-service financing by the patient has been abandoned, and all services including medication are usually provided at one location.

In one setting this kind of restructuring of the health care delivery system for an employee group has made possible mobilization of resources at the patient's worksite. There, group support, active interest of union officials, and treatment by specially trained nurses who require minimal physician supervision has resulted in an effective and economical model for blood-pressure control (Alderman and Schoenbaum, 1975; Schoenbaum and Alderman, 1976). Similar techniques have proved effective for inner-city residents and the rural southern poor as well (Finnerty et al., 1973; Wilber and Barrow, 1969; Stamler et al., 1975).

Variations of this model should be developed for other populations to include those who are not part of the work force. Housing projects, recreation centers, and social organizations such as Golden Age Clubs may provide suitable environments in which to establish effective treatment programs.

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