

Hypertension screening in general practice

Report on behalf of the General Practitioner Hypertension Study Group

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SUMMARY. In 1974 eight general practitioners decided to co-operate in a hypertension screening exercise in their practices. The reasons for the survey and the methodology are described and the results of screening over 28,000 patients are given. The cut-off point for normal diastolic blood pressure was 89 mmHg and 23,979 (85 per cent) patients were considered to be normosensitive on this criterion, 694 (2.5 per cent) patients were already known by their doctors to have hypertension; 991 (3.5 per cent) had an initial abnormal reading but subsequent readings were normal. The survey identified 2,018 patients (7.12 per cent) as being hypertensive and 575 (2 per cent) failed to complete the survey. Because of the ever-changing population in the practices, 100 per cent surveillance was not achieved. It is considered necessary to carry out continuous case finding for the presence of hypertensive patients in general practice.

Introduction

IN 1974 a group of eight general practitioners considered that the large number of patients with undiagnosed hypertension constituted the most pressing problem in community medicine. They were uncertain about the number of patients who should be treated, above which level of blood pressure should treatment be considered, whether treatment would be beneficial in terms of morbidity or mortality and what time lapse would be needed to observe such effects, and whether or not screening for hypertension would create unnecessary anxiety in patients.

With these uncertainties in mind, and using Adler's¹ definition of case finding as identifying a disease when the patient and not the doctor initiates the consultation, the group decided to measure the prevalence of raised blood pressures in their practice populations.

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Method

Doctors in eight practices agreed to screen for hypertension in patients between the ages of 18 and 65 years. The types of practice ranged from rural through suburban and new town communities to an inner city practice with a high immigrant population.

Each doctor organized the survey to suit his particular practice. Two practices did virtually all the survey through special screening clinics, while another practice confined itself almost exclusively to case finding. The other five members of the group did almost equal amounts of screening and case finding. The protocol was structured so that the screening could be performed by practice nurses with the assistance of ancillary staff. The patients (age range 18-65 years) were identified by using age-sex registers and were either invited by letter to attend special screening clinics or their notes were tagged and they were referred to the nurse from surgeries and clinics, etc. Notices were also placed in surgeries, inviting patients to request an appointment with the nurse.

On the initial visit, the following data were collected. Smoking habits, both past and present, and current symptoms were noted. Patients were asked specifically if they had chest pain, breathlessness or wheeziness. Any diagnosis or treatment was also recorded. There was also space on the form to indicate whether the patient had been screened during normal surgery hours or in a special screening clinic. After sitting at rest for five minutes, the patient had his/her blood pressure taken by a nurse trained in the use of a Random Zero sphygmomanometer and amplifying stethoscope. Both systolic and diastolic 4th sounds, and the pulse, were recorded, and the patients were weighed and measured.

It was decided arbitrarily that a diastolic 4th sound above 90 mmHg would, for the purposes of the survey, be considered abnormal. If the 4th sound was 89 mmHg or below, the patient was informed of the result and told of the intention to rescreen in five years' time. If the systolic blood pressure was above 250 mmHg or the diastolic 4th sound was above 110 mmHg, the patient was given an early appointment to see the doctor. The blood pressure was then rechecked, and if the diastolic reading was above 130 mmHg then the patient was admitted to hospital. Those patients with a diastolic 4th sound between 90 and 129 mmHg were rescreened twice more, and if the diastolic 4th sound remained above 90 mmHg on either occasion the patient was investigated further, as were those who were already known to be hypertensive. Although these latter patients might not be on treatment, they were designated 'known hypertensives' if the diagnosis was currently known to the doctor and/or the patient. The term 'transient hypertensives' was given to those patients who had an initial screening reading above 90 mmHg but whose subsequent readings were normal. Those patients who would have fitted into either 'new' or 'transient' categories but for incomplete data (that is, all had at least the initial screening form which showed a diastolic blood pressure of 90 mmHg or above but had not

attended for subsequent follow-up) we have labelled 'at-least transient'.

Tests carried out for patients with newly diagnosed and patients with previously diagnosed hypertension included routine haematology, biochemistry, including serum electrolysis, uric acid, serum cholesterol, urinalysis and a chest radiograph. After these investigations the patient was seen by the doctor, who then made and recorded decisions regarding treatment and follow-up.

Results

Over the period of the study, 28,377 people were screened. The breakdown of cases of hypertension into the four main categories is illustrated in Figure 1; 120 patients had to be excluded from the analysis because, although information from the second and/or third screening visits was available, no trace could be found of the initial screening form. Thus data on a total of 28,257 patients were available for analysis (Table 1).

The frequency and distribution of the diastolic blood pressure in all patients except those with previously diagnosed hypertension is shown in Figure 2. The survey revealed 689 (2.4 per cent) previously untreated patients with a diastolic blood pressure above 110 mmHg (357 women and 332 men) and 1,746 (6.2 per cent) with an initial diastolic blood pressure between 95 and 109 mmHg (818 women and 928 men).

More women than men were screened, though more men than women were diagnosed as new hypertensives and transient hypertensives (Table 1). The normotensive patients tended to be young (mean age 37 years) while those previously diagnosed as hypertensive were older (mean age 53 years). Both the new hypertensive and transient hypertensive groups had an average age in the mid to late forties. All these figures are significantly different at the 5 per cent level.

Table 2 shows the mean measurements of weight, blood pressure and mean pulse obtained from the survey. No significant differences were noted between

the groups for height but there were statistically significant differences in weight between the normotensives and the other four groups ($P < 0.05$). The actual levels of blood pressure for normotensive and known hypertensive values were based on one reading only, while the values for those patients who were labelled new hypertensives and transient hypertensives were the means for each of the three readings. There was a statistically significant difference between the means of the first reading for both the systolic and diastolic blood press-

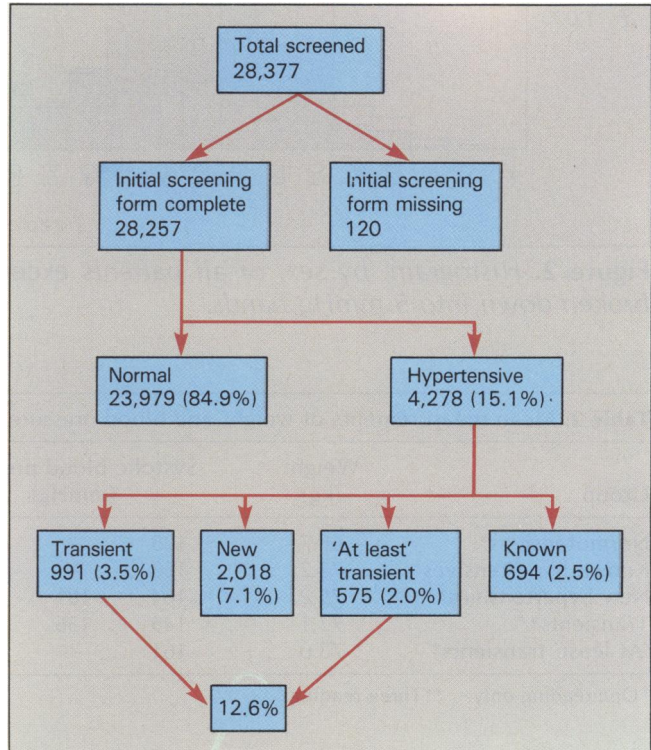


Figure 1. Population screened, showing breakdown of cases of hypertension into the four main categories.

Table 1. Numbers of patients screened, classified by outcome. (Percentages in parentheses.)

Group	Males			Females			Total
	Age range 18-34 years	Age range 35-65 years	Total number of men	Age range 18-34 years	Age range 35-65 years	Total number of women	
Normotensives	4,520 (16.0)	5,582 (19.8)	10,102 (35.8)	7,225 (25.6)	6,652 (23.5)	13,877 (49.1)	23,979 (84.9)
Known hypertensives	16 (0.06)	273 (0.97)	289 (1.02)	19 (0.07)	386 (1.37)	405 (1.43)	694 (2.5)
New hypertensives	169 (0.6)	874 (3.09)	1,043 (3.69)	119 (0.42)	856 (3.03)	975 (3.45)	2,018 (7.1)
Transients	120 (0.42)	405 (1.43)	525 (1.86)	96 (0.34)	370 (1.31)	466 (1.65)	991 (3.5)
'At least' transients	80 (0.28)	196 (0.69)	276 (0.98)	52 (0.18)	247 (0.87)	299 (1.05)	575 (2.0)
Total	4,905 (17.36)	7,330 (25.94)	12,235 (43.29)	7,511 (26.58)	8,511 (30.12)	16,022 (56.7)	28,257

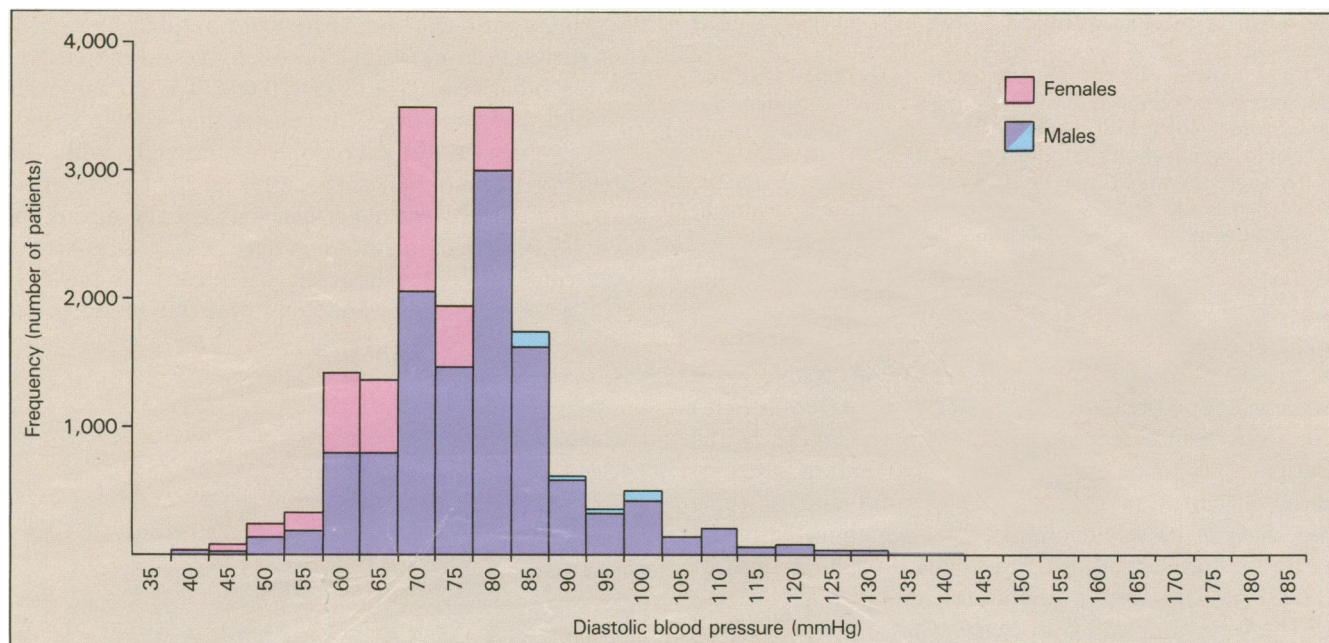


Figure 2. Histogram, by sex, of all patients except known hypertensives for diastolic blood pressure broken down into 5 mmHg bands.

Table 2. Mean measurements of weight and blood pressure and mean pulse, by outcome.

Group	Weight (kg)	Systolic blood pressure (mmHg)			Diastolic (IV) blood pressure (mmHg)			Pulse rate (beats/min)		
Normotensives*	66.7	125	—	—	75	—	—	78	—	—
Known hypertensives*	73.2	163	—	—	100	—	—	79	—	—
New hypertensives**	75.2	164	161	159	104	102	100	82	82	81
Transients**	73.1	149	136	133	97	81	81	82	80	79
'At least' transients*	73.0	161	—	—	99	—	—	82	—	—

*One reading only. **Three readings.

ures in the normotensive, transient and new hypertensive groups. In contrast, there was a close similarity between the mean blood pressures in the new and the known hypertensive groups. It is interesting to note that the mean pulse rate of the whole population screened was about 80 beats/min and that there was no significant difference between the four groups.

The results of the investigations and discussions of the regional and ethnic variations will be presented in future papers.

Discussion

It was originally planned that the study would take three years but during the initial phase of the survey it became obvious that this ideal would not be achieved. There were a number of reasons for this, the main one being the constantly changing population of the practices. One practice amalgamated with another and, instead of being a small three-man practice with 3,000–4,000 patients to screen, it suddenly became a seven-man practice with over 11,000 patients to screen. Another

practice has virtually doubled in size since the idea of the survey was first mooted. One of the members of the group decided not to continue with the survey and was replaced, but the replacement practice did not begin screening until well after the others. Thus, from an initial population at risk of 30,000, the growth of practices meant that over 42,000 patients would have to be screened to give the ideal of 100 per cent surveillance. This was never likely to be achieved, so it was decided to close the survey when the number of screened patients approached 30,000, the number originally intended. The final number of screenings represents 95 per cent of the revised target but only 69 per cent of the population at risk.

The increase in the sizes of the practices involved could not have been foreseen. In order to screen most of the patients at risk in a practice, a continuous case-finding or screening exercise is necessary. In 1970 Tudor Hart² showed how he managed to take the blood pressure of 98 per cent of the population of an industrial village. His patients were aged between 20 and 64 years. It would seem that he obtained this high percentage

through both case-finding and screening since 'advantage was taken of as many doctor-patient contacts as possible'. The change in population mobility and consequent practice turnover since that time makes a repetition of his work impossible in the sort of urban and overspill practices with which we are dealing. Although there has been a reduction in average list size since 1970, the turnover of patients in most practices is between 10 and 20 per cent. If we had realized how our practices were going to grow and change over the five years of the survey, we would have been better adopting Tudor Hart's policy for the selection of patients.

Word of mouth played an important part in the early stages of the survey. If a man was asked to attend for screening, his wife might request that she be screened also, or his brother might ask why he had not been sent for. The notices in the surgery did not seem to produce much effect, confirming the observation of Gau.³

The size of the task that we had set ourselves did not become apparent until long after the survey was underway. The decision to set the lower age limit for screening at 18 years was possibly a mistake. It would seem that the most suitable group of patients in whom the general practitioner should look for hypertension is the over 35 years age group.

Organizing the survey around multiple centres produced problems that might have been overcome better by the group meeting more regularly and by the members adopting a more self-critical attitude at the meetings that were held, usually yearly.

There is now some concern regarding the long-term follow-up of patients discovered through screening to have hypertension. What becomes of these patients and how well is their blood pressure controlled once such exercises are over? Two reports from Canada^{4,5} showed that 13-14 per cent of patients had stopped taking medication for hypertension, while the situation would appear to be far worse in the United States^{6,7} where two thirds of patients stopped medication after three months. It will therefore be necessary to follow up all those patients diagnosed and treated as hypertensive and to see whether these extremely disappointing figures are true for our practices.

More women than men were found to have had hypertension already diagnosed in the past, and this may be due to the likelihood that high blood pressure will be noticed at antenatal, well-woman and family planning clinics.

The results seemed to indicate that the mean blood pressure values for the known hypertensives were no different from those for the newly diagnosed hypertensives. This picture may be accounted for in part by those patients who were rediscovered as a result of the survey. It may also suggest that the treatment given for blood pressure reduction was far from ideal. It is our intention to examine the rule of halves⁹ in another paper.

We have shown that 15 per cent of the patients screened were known, new or transient hypertensives. It

will be interesting to follow those we have labelled as transient hypertensives to see what proportion eventually develop hypertension. All those patients in the three categories (known, new, transient) have been matched with normotensive controls of similar age who were screened at about the same time. The hypertensive patients have been registered with the Office of Population Censuses and Surveys (OPCS), who will provide mortality statistics so that comparisons can be made between the groups. This is a logical and exciting outcome of five years extremely hard and time consuming but interesting research in general practice.

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Live births during the March quarter

The number of live births in England and Wales during the period January to March 1983 is estimated to have been 152,000, around 1 per cent fewer than during the same period of 1982. The seasonally adjusted total period fertility rate for the quarter is estimated to have been 1.74, a little lower than the estimate of 1.77 for the whole of 1982.

Source: Office of Population Censuses & Surveys. *OPCS Monitor* 1983; FMI 84/4: 10 May.