Effectiveness of Blood Pressure Control in a Small Community

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ABSTRACT

The aim of this study was to examine the degree of control of blood pressure with respect to individuals on anti-hypertensive drug therapy attending a Health Centre for repeat prescription.

Despite their being on anti-hypertensive drug therapy, only 35% of the individuals were found to be normotensive, 27% were in the borderline range whereas 38% were found to be hypertensive.

The relatively high prevalence of poorly controlled patients suffering from high blood pressure is partly a reflection of the degree of non-compliance by patients to prescribed drug regimens although this is difficult to either qualify or quantify. Education of the patient vis-a-vis his medical condition and its treatment is of great importance as is regular monitoring and effective control of raised blood pressure by the family physician.

INTRODUCTION

The prevalence of hypertension among the Maltese population is high[1]. In comparison with other Mediterranean European countries the mean levels of both the systolic and diastolic blood pressures for the adult Maltese population are among the highest[2].

Although the awareness of high blood pressure is rather low (50% of all Maltese hypertensives) the use of drugs in the treatment of raised blood pressure is very widespread. Availability of treatment with all classes of hypotensive agents is facilitated by the Department of Health in that such medications are available free-of-charge irrespective of the recipient's financial means. In 1988 hypertension was by far the commonest condition for which application for supply of free-of-charge drugs was made[3].

Blood pressure control by drug therapy depends on several factors, among them the appropriate medication at the right dosage and the patient's behavior in terms of compliance with prescribed medication. The magnitude of non-compliance with anti-hypertensive medication is often great[4] and consequently it is a barrier for obtaining full benefit of therapy.

This paper seeks to address the degree of blood pressure control in a small mixed urban/rural community and suggests non-compliance to prescribed treatment as a major reason for inadequate control.

METHOD

The study was designed to investigate the degree of control of blood pressure in a defined group of persons known to suffer from hypertension. The prescribing habits with respect to individuals attending a particular Health Centre for repeat prescription of anti-hypertensive medication were studied while possible existing relationships between blood pressure levels and modalities of treatment at a community, rather than at an individual level were analysed.

A period of four weeks was chosen at random on the assumption that persons who are entitled to free medication for high blood pressure, have of necessity to attend the Health Centre every four weeks for repeat prescriptions. The period chosen was from the 12 September to the 8 October 1988 and the subsequent week was utilised in order to follow up defaulters. The field work was carried out at the Health Centre in Rabat, Malta.

All patients from the Rabat area making us of the facility offered by the Department of Health to obtain free medication aimed at lowering blood pressure, directly from the Health Centre, were enrolled into the study. This involved a total of 183 individuals; 81 males and 102 females. The overall response rate following the second recall was 89%.

A simple questionnaire was administered by one of us (W.G.) and information was sought about any regular medication taken and the time-period that the individual had been taking such medication. Information was also sought about the original prescriber and the method whereby their blood pressure was being monitored. The individuals were also asked about any other chronic intercurrent disorders. A casual blood pressure measurement was taken with the individual in the sitting position after a minimum period of five minutes rest[5]. The individuals' right arm was used for blood pressure recording. The average ambient temperature during the field work was 23°C.

RESULTS

The individuals responding to the invitation to take part in the study were 73 males (45%) and 90 females (55%). Their age ranged from 19 to 82 years with a mean age of 60 years (fig. 1). 42% of the individuals were in the age group 50-69 years. The mean systolic blood pressure (SBP) of the group was 149.5 mmHg (S.D. 22.9) and the mean diastolic blood pressure (DBP) was 89.2 mmHg (S.D. 9.4). No significant differences were found between the blood presure levels of males and females. The mean blood pressures at different age groups are presented in Table 1.

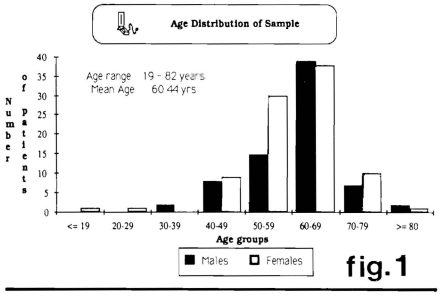

fig.1

Table 1. MEAN BLOOD PRESSURES AT DIFFERENT AGE GROUPS

Age Group	Under 39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	Over 75
Mean SBP	130.0	142.6	138.6	141.5	141.7	150.5	154.3	161.9	168.6
Mean DBP	86.5	83.7	95.7	89.5	89.4	88.5	88.1	89.2	87.0

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Blood pressure was classified as follows: normotensive (under 140/90 mmHg), borderline hypertensive (SBP 140 to 160 and/or DBP of 90 mmHg to 95 mmHg) and hypertensive (160/95 mmHg and over). Overall, 35% were found to be normotensive, 27% were in the borderline range while 38% were found to be hypertensive despite their being on therapy specifically designed to lower their blood pressure. Again there were no significant differences in this respect between males and females (fig. 2).

All individuals studied were on anti-hypertensive drug therapy: 26% of individuals were on one anti-hypertensive agent, 51% were on two different agents, 20% were on three different agents whilst 3% were on four agents (figure 3). The mean blood pressure levels were also classified by the number of agents used (Tables 2 and 3).

Figure 2. Control of blood pressure considering different cut-off points as criteria for control.

Table 2. Mean SBP and mean DBP by different drugs prescribed.

Table 3. Mean SBP and mean DBP by number of different anti-hypertensive agents prescribed.

Cognizance was also taken of the medication prescribed for reasons other than hypertension (figure 3). The mean number of tablets prescribed per person per day was 5.25. No attempt was made to compare the treatment prescribed to the treatment actually taken (i.e. compliance) as this would have been beyond our means to investigate and validate.

Fig. 3 Number of different drugs prescribed to patients in the study population.

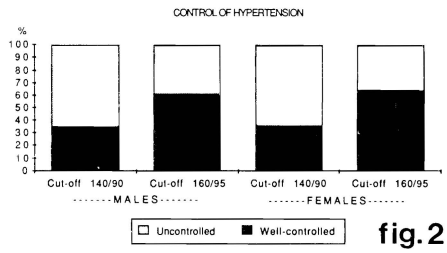


fig.2

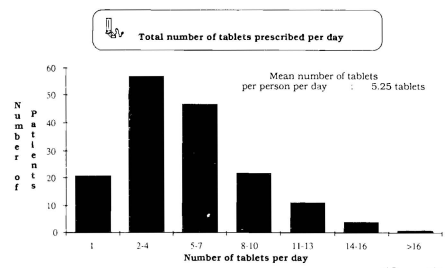
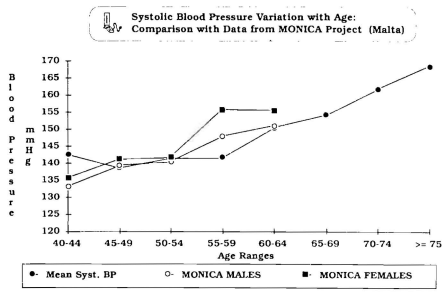


fig.3

DISCUSSION

It is a general trend that a large variety of chronic disorders are being managed by family physicians. Indeed, hypertension is probably one of the commonest chronic disorders managed in family medical practice[6]. In this respect the Maltese family physician is aided by the health service facility whereby most generic anti-hypertensive drugs are available to the patient free-of charge.

Comparisons between our study population and the randomly selected population used for monitoring of risk factors for cardiovascular diseases in Malta (MONICA) may only be made with caution because our study population was composed solely of individuals on anti-hypertensive drug therapy. Whereas in the MONICA population the rise of both the systolic and the diastolic blood pressure over the years was generally steady, in our study there was no significant rise in the blood pressures over the years (figures 4 and 5). Despite the many differences between our study population and the MONICA population (amongst them the design and age-structure but not the method of taking blood pressure) the prevalence rates of blood pressures under adequate control are practically identical (around 35%) (fig. 2).



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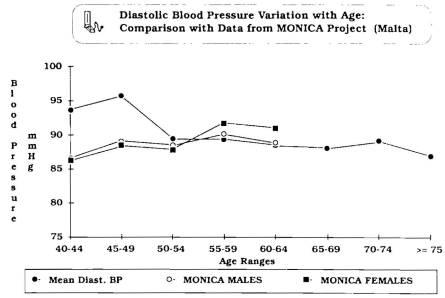

fig.5

As an outcome of our study, a major cause for concern must be the relatively high proportion of persons with high blood pressure who are inadequately controlled despite their ostensibly being on anti-hypertensive drug therapy. Only 35% could be considered as having their blood pressure under adequate control. One of the principal reasons for this lack of control is poor compliance to treatment on the part of the patient.

The magnitude of non-compliance with anti-hypertensive therapy is often large and 30 to 80% of patients on anti-hyertensive agents fail to take their medication as prescribed[7]. Compliance is also such a complex phenomenon, that it cannot be expressed unambiguously by simple rates or percentages.

Non-compliance is notoriously difficult to measure and interviews are considered unreliable because people tend to over-

Table 2: ANY DRUG TYPE

No. of Drugs	n	means Systolic	means Diastolic	STANDARD DEVIATION Systolic	STANDARD DEVIATION Diastolic
1	18.00	144.83	87.27	18.93	9.45
2	50.00	149.18	88.50	22.55	9.45
3	45.00	145.49	89.02	25.20	9.97
4	30.00	154.67	91.80	21.02	9.01
5	14.00	157.57	88.07	23.18	8.67
6	6.00	151.67	90.83	24.83	8.59

Table 3: ANTIHYPERTENSIVE DRUGS ONLY

No. of Drugs	n		means Systolic	means Diastolic	STANDARD DEVIATION Systolic	STANDARD DEVIATION Diastolic
1	43.00	26%	152.14	88.74	21.21	9.59
2	83.00	51%	146.75	89.34	21.09	9.35
3	33.00	20%	150.67	88.52	27.42	8.96
4	4.00	2%	168.75	95.50	30.65	13.20

estimate their compliance[8]. In addition, pill counting and urine analysis may not be reliable and practical methods for detection. However the reasons for non-compliance are well known. Often there are no subjective symptoms of hypertension, the presence of which would remind the individual of the need to take the medication as prescribed. Indeed, several anti-hypertensive agents may actually complicate the life-style of the individual through their side-effects.

It is possible that fear of hypotension may also be a cause for non-compliance. Such fear may also be a reason for inadequate medication on the part of the prescriber as at times treatment is scaled down when normotension is achieved. The fact that low blood pressure has been positively correlated with prolonged life-expectancy should be acted upon effectively.[9 10]

The more complicated the treatment regimen the greater is the risk of poor compliance to it. Factors which have been negatively correlated with compliance are the number of different drugs prescribed[11], the actual number of tablets to be taken per day and the number of times that the individual needs to remember to take the medication[12]. A further complication is that at times the individual has to take medications for other disorders other than raised blood pressure.

One of the factors which also affects compliance to treatment is patient education regarding the disease itself and its treatment. This is especially so when the disease is chronic and requires long term monitoring and treatment. Here the relationship between the individual and his doctor is of great importance.

Education of the patient is important both with regard to the nature of the disorder as well as the possible complications of the disorder should this be inadequately treated. However knowledge of one's own treatment regimen seems to be more important than general knowledge about hypertension. *Education of the individual is much more effective the better the doctor-patient relationship is in terms of continuity-of-care and trust between doctor and patient.* Care of blood pressure not only includes the judicious prescription of medicaments but also the prescription of certain life-style changes such as the maintenance of ideal body-weight, salt-intake reduction and adequate physical exercise[13].

As with other chronic conditions, drug therapy must be as simple as possible without compromising effectiveness while the possibility of deleterious side effects should always be kept in mind. The treatment regimen must be as uncomplicated as possible and ideally the less the number of tablets prescribed the better[14].

This could be achieved by using long-acting or sustained-release preparations in adequate dosages. The use of combined agents in one tablet may also be a useful step in this direction (e.g. a beta-blocking drug together with a diuretic or a calcium channel blocking agent).

An aim of this study has been to evaluate the need for more effective control of blood pressure at the community level; clearly such a need exists. In order that treatment for high blood pressure be more effective, certain measures have to be taken, irrespective of whether health care is delivered through a Health Centre or through the patient's chosen physician.

Monitoring and control of blood pressure must be both effective and efficient without inducing excessive anxiety. No hard and fast rules can be set with regard to the frequency of monitoring as this is often dictated by the degree of control itself. What is certain is that the incidence of all cardiovascular events is reduced even if mildly raised blood pressure is actively treated and controlled[15].

ACKNOWLEDGEMENTS

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