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# Hypertension in Harare Hospital Out-patients: Drugs Prescribed, Drugs Taken and Control Achieved

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SUMMARY

Patient-retained records supplemented by patient interviews were used to evaluate hypertension management at Harare Hospital. One hundred and one successive hypertensive out-patients were studied. In over a third of patients diagnosis had been established during medical examination for an unrelated problem. Only one third of 435 recorded 'on treatment' diastolic blood pressures were less than 100 mm Hg, and one fifth were greater than 119 mm Hg. Thiazides, Methl-dopa and Reserpine were the most commonly prescribed antihypertensives. A step-wise approach to management was evident where two drugs were used, but the choice of a third or fourth drug showed great variation. Thirty per

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cent of patients identified a daily regimen that was different from their recorded prescription. Identification of dosage lower than that prescribed correlated with poor control. Better practitioner–patient interaction and stricter adherence to defined regimens are needed to improve blood pressure control. Patient-retained records can provide useful information for health service evaluation in developing countries.

## INTRODUCTION

Hypertension is common in Southern and Central Africa, and accounts for considerable morbidity and mortality.[1,2] Accurate prevalence figures are not available for Zimbabwe, but urban hospital statistics show a high incidence of hypertension-related disease, particularly stroke and heart failure.[3] Drug therapy in dosage adequate to control blood pressure reduces complications in moderate and severe hypertensives.[4,5] Black patients may benefit more than other groups.[6] Failure to comply with lifelong therapy remains the major obstacle to reducing morbidity. In addition, several studies have shown unsatisfactory control of blood pressure in many patients who return regularly for medication.[7,8]

For the majority of residents of Harare, hypertension is managed by nursing and medical staff at a series of municipal clinics, and by doctors at the Out-patient Department of Harare Central Hospital. Patients keep all out-patient records. This avoids the costs and difficulties of maintaining an extensive Records Department, and obviates delays to the patient while records are being retrieved.[9] Studies of out-patient services cannot, therefore, utilize hospital-based records. In this study we sought to use patient-retained records supplemented by patient interview to evaluate the pattern of blood-pressure control achieved at the hospital out-patient department. We also attempted to identify some factors adversely affecting control.

## METHODS

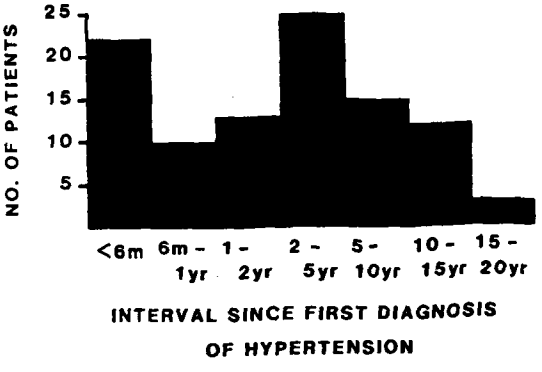
One hundred and one successive hypertensive patients, making return visits to the out-patient department (OPD) of Harare Hospital during May 1985, were studied. Interviews were conducted using a standard questionnaire prior to the patient's consultation with the doctor. Information was sought about age, occupation, educational status and duration of hypertension. Patients were asked to estimate their travelling time to and from the hospital and the time taken at various stations within the hospital. Details of blood-pressure recordings and treatment over the preceding two years were transcribed from the out-patient cards. Patients were asked to identify their current regimen from a pill chart. This was made up using all formulations of antihypertensive drugs currently used at Harare Hospital. Identified drug regimens were compared with the current prescription as recorded on the patient's out-patient cards.

## RESULTS

### 1. General characteristics of the study population

Of the 101 patients interviewed, 63 were female and 38 male. The mean age of the group was 49 years; 30 per cent were younger than 39 and only 4 per cent were older than 70. The average interval since first diagnosis of hypertension was three years ten months, but in 22 per cent this interval was less than six months (Fig. 1).

FIGURE 1 – *Duration of hypertension in the study population*



*Occupation and education status:* Twelve patients had no formal schooling, 58 had received between four and seven years of primary education and only 9 had received secondary school education. Of the 33 patients in formal employment, 18 (55%) were in unskilled or semi-skilled positions.

*Diagnosis:* Thirty-seven per cent of patients had been diagnosed as hypertensive during medical examination for another reason—most commonly diabetes, during pregnancy or during follow-up at child-spacing services. In 85 instances the diagnosis was first made by a doctor, and in 16 by a nurse, usually at a municipal clinic.

*Travelling and waiting time:* The majority of patients travelled to the hospital by bus. Patients estimated that it took on average 65 minutes to reach hospital, 70 minutes from arrival to their consultation with the doctor, 10 minutes for the consultation, and 35 minutes to collect medication.

*Number of practitioners seen:* Only 30 per cent of patients had seen the same doctor during the year for management of their hypertension, 44 per cent had seen two or three practitioners, and 26 per cent had seen four or more.

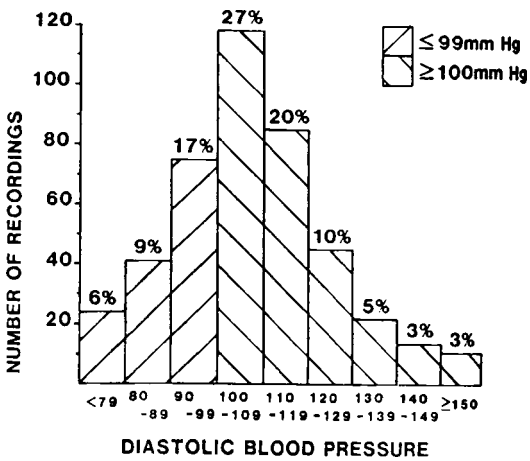
*Preference for place of treatment:* Sixty-six per cent of patients indicated that they would have preferred to be treated at a municipal clinic rather than at the hospital. Almost all of this group cited easier accessibility as the reason for preferring clinics. Regular availability of all anti-hypertensives was the chief reason for preferring hospital OPD treatment; only one patient objected to municipal clinics on the grounds that they were staffed by nurse practitioners.

## 2. Blood pressure measurements

(a) *Recordings and digit preference:* Records for the study period were incomplete in 26 per cent of patients, though in 19 per cent the total gap in records was less than four months. A total of 531 blood-pressure recordings were abstracted from the OPD cards. Ninety-three per cent of all readings ended in 0, 6 per cent ended in 5, and only 1 per cent ended in another digit.

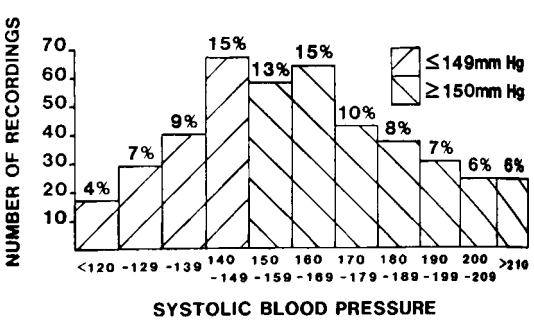
(b) *Distribution of 'on treatment' blood pressures:* Of the 531 recordings, 96 had been made at first visit or after a patient had run out of medication. It was, therefore, possible to analyse 435 blood-pressure measurements while patients were receiving treatment. Only 32 per cent of 'on treatment' diastolic blood pressures were less than 100 mm Hg, 40 per cent were 110 mm Hg or more, and 21 per cent were greater than 119 mm Hg (Fig. 2).

FIGURE 2 – *Distribution of 'on treatment' diastolic blood pressures. n = 435*




Systolic blood pressures were more widely scattered. Twenty-six per cent were less than 150 mm Hg (Fig. 3).

FIGURE 3 – *Distribution of 'on treatment' systolic blood pressures. n = 435*



### 3. Drug regimens

The most recent recorded prescriptions were analysed. The majority of patients were taking two anti-hypertensive drugs. Twenty-seven per cent were taking three drugs or more, and three patients (3%) with mild hypertension were on no anti-hypertensive drugs, but had returned for BP monitoring (Table I).

TABLE I – *Last recorded prescriptions: Number of anti-hypertensive drugs used in 100 patients*

| No. of anti-hypertensive drugs | No. of patients | % |
|---|---|---|
| 0 | 3 | 3 |
| 1 | 22 | 22 |
| 2 | 54 | 54 |
| 3 | 20 | 20 |
| 4 | 1 | 1 |
| | 100 | 100 |

1 patient excluded as data incomplete

Thiazides were the most commonly prescribed drugs followed by Methyl-dopa and Reserpine (Table II).

TABLE II – *Last recorded prescription: Anti-hypertensives prescribed in 100 patients*

| Drugs | No. of patients |
|---|---|
| Hydrochlorthiazide | 78 |
| Methyl-dopa | 56 |
| Reserpine | 22 |
| Prazosin | 14 |
| Bethanidine | 8 |
| Propranolol | 4 |
| No anti-hypertensive drugs | 3 |

1 patient excluded as data incomplete

*Drug availability:* During the study period there were no major shortages of the listed anti-hypertensive agents at Harare Hospital pharmacy.

*Combinations:* Most patients receiving two or more drugs were treated with Thiazides and Methyl-dopa (40 patients) or Thiazides and Reserpine (16 patients). The choice of a third drug showed wide variation, however, with five drugs used. In four instances Methyl-dopa and Reserpine were prescribed together.

### 4. Pill chart identification

Records of the current prescription were available in 96 patients. In 29 (30%) there was a difference between the total daily dosage prescribed and that identified by the patient. Twenty-four (83%) of this group were taking less medication than prescribed; most frequently this involved taking tablets less often. Patients identified a higher total dosage than that prescribed in only five instances (Table III).

TABLE III – *Discrepencies between recorded prescriptions and regimens identified from pill charts*

| | No. of patients | % |
|---|---|---|
| Tablets taken less often (e.g. 250 mg bd rather than tds) | 17 | 59 |
| Smaller dosage taken as frequently as prescribed | 7 | 24 |
| Greater dosage than prescribed | 5 | 17 |
| Total | 29 | 100 |

### 5. Predictors of control

In an attempt to seek factors that predicted control, patients making more than three return visits were divided into two groups; those whose mean 'on treatment' diastolic blood pressures were 100 mm Hg or less (the 'well controlled' group), and those whose mean diastolic pressures were greater than 100 mm Hg (the 'poorly controlled' group).

There was no difference in age, sex, educational status or duration of hypertension between the two groups. Discrepancies between identified regimens and recorded prescriptions were significantly different — ($p < 0,05$) —34 per cent of patients in the 'poorly controlled' group identified a lower total daily dosage than prescribed, whereas only 11 per cent of the 'well controlled' group did so (Table IV). In addition all five discrepancies where excessive daily dosages were identified were in the 'well controlled' group.

TABLE IV – *Discrepancies between prescribed and identified drug dosages by mean diastolic blood pressure (x̄ DBP) category*

| | 'Well controlled' x̄ DBKP < 100 mm Hg n (%) | 'Poorly controlled' x̄ DBP > 100 mm Hg n (%) | Total |
|---|---|---|---|
| Lower dosage identified than prescribed | 4 (11) | 15 (34) | 19 |
| Correct or excessive dosage identified | 32 (89) | 29 (66) | 61 |
| Total | 36 (100) | 44 (100) | 80 |

Chi-squared = 4,58 p < 0,05

## DISCUSSION

The majority of hypertensive patients attending the out-patient department were relatively young and potentially economically active. Diagnosis had often been established during examination for an unrelated problem, suggesting that incidental screening of adults attending health services might detect large numbers of undiagnosed hypertensives. Screening would be useful only if hypertensives identifed would benefit from therapy. This would depend on patients complying with lifelong therapy, and on good blood-pressure control being achieved by drug treatment.[10] This study showed that even for known hypertensives, the long-term control of their blood pressure was poor.

We were unable to assess compliance with ongoing therapy in this cross-sectional study. The large number of patients on treatment for less than six months can be explained in two ways. Hypertensives might be referred from the hospital to municipal clinics once stabilized on therapy. Alternatively, many may 'drop out' from therapy during the first few months—a pattern that has been observed elsewhere.[11]

Compliance with attendance dates was found to be poor in another study conducted in the same out-patient department and involving patients with various chronic conditions. Patients' attitudes, beliefs, lack of schooling, and social environment were implicated as causes of poor compliance, as was poor communication between doctor or pharmacist and patient.[12] The quality of practitioner–patient interaction does significantly influence compliance,[13] and obvious obstacles to good interaction exist in the clinic studied. Over a quarter of patients saw more than four different doctors during the course of a year. This is an unfortunate consequence of the high turnover of junior medical staff, and of the lack of a formal appointments system. In addition, many of these doctors communicate with their patients through an interpreter. This further reduces the limited time available for each patient, and introduces extra barriers to effective two-way communication. Patients estimated that they saw practitioners on average for 10 minutes which does compare favourably with estimates in other settings.[14]

Compliance may also relate to the accessibility of medical care. Our patients estimated that they took an average of two hours to travel to and from the hospital and two hours in the out-patient department and pharmacy. This is far from ideal, though again, better than in Finnerty's study of an inner city Chicago clinic.[14]

Those in formal employment did not encounter resistance from employers to their attending the clinic, but we have no idea of whether this is true for those who have defaulted from therapy.

Interestingly, most patients preferred to be treated at municipal clinics which are staffed by nurse practitioners but which are more accessible than the central hospital. This is a very important finding. In Zimbabwe much of the burden of hypertensive management will inevitably fall on nurses and medical assistants.

Since Independence the health service has seen a vigorous expansion, and clinics staffed by medical assistants or nursing sisters are now accessible to most rural and urban people. Further training programmes in hypertension

tection and follow-up should concentrate on ese categories of health workers. Suitably trained rses have been highly effective in managing pertension in Western settings.[15]

**lood-pressure control**

he pattern of blood-pressure control achieved in e hospital out-patient department was clearly satisfactory. Only one third of 'on treatment' lood pressures were less than 100 mm Hg. More portantly, 20 per cent of recordings were 120 m Hg or greater—a range that confers a high k of morbidity and mortality.

There are several possible explanations for these ndings. Inaccurate blood pressure measurement, evidenced by the skewed digit preference, may not have reflected actual control. In addition, most hypertensives are referred to municipal clinics for ongoing care once stabilized; those continuing to attend the hospital represent a relatively selected population of poorly controlled patients. Poor control of a lesser but very significant order has been described in Western clinics which are much better resourced and serviced than our own.[7,8] Remediable factors must also be considered. Drugs prescribed may have been inadequate to control blood pressure or may have been taken incorrectly or intermittently.

The anti-hypertensives most commonly used in the out-patient department were strikingly similar to those used in a clinic staffed by general practitioners in the United Kingdom in 1972, but quite different from recent prescribing practice in that country, where B blockers have become increasingly popular.[16] This difference is partly a result of cost. In addition B blockers may be less effective in Black patients.[17] There was evidence of a stepwise approach to therapy when two drugs were used, but considerable variation existed when a third or fourth drug was introduced. In four instances the unfavourable combination of Reserpine with Methyl-dopa was identified. Clear treatment policies may obviate some of these problems. A stepwise approach to management of hypertension is detailed in the *Essential Drugs List for Zimbabwe* recently produced by the Ministry of Health, and we would advocate stricter adherence to its suggested regimens.

An alarming number of discrepancies existed between the regimens prescribed and those identified by the patient, and this did correlate with poor control. The general tendency seemed to be to take medication less often, suggesting that once or twice daily regimens should be used whenever possible. An assessment of what the patient is actually taking should be made before medication is changed. Any alterations in regimens should be explained, preferably using a drug identification chart, and should be confirmed at the pharmacy. Discussions have now been held with medical and pharmacy staff to try and correct some of these problems.

In this study we wished to test whether, in the absence of hospital-based records, analysis of patient-retained records complemented by patient interviews could be used to evaluate aspects of management of hypertensives. This method does have several deficiencies. For instance, we have no information about patients who had completely defaulted therapy. In addition the assessment of blood pressure control is likely to have been biased in favour of those patients who brought complete records.

Despite these reservations we were able to abstract useful information about prescribing habits of medical staff and the pattern of blood-pressure control achieved, and to identify some remediable factors that adversely affected good control. Similar evaluations might be usefully performed for other chronic conditions such as diabetes and epilepsy that are common in our context.[12] Such studies can be undertaken in developing countries without major expenditure, and should be regularly performed as part of ongoing health service evaluation.

## REFERENCES


1. Matenga J, Kitai I, Levy L. Strokes among Black people in Harare. Results of computed tomography and associated risk factors. *Br Med J* 1986; 292: 1649–51.
2. Seftel HC. Epidemiology of hypertension in developed and developing populations. *S Afr Med J* 1978; 53: 957–9.
3. Ministry of Health, Zimbabwe. *Report of the Secretary for Health for the year ended 1981*. Harare: Government Printer, 1984: 8–18.
4. Veterans Administration Cooperative Study Group on Anti-hypertensive Agents. Effects of treatment on morbidity in hypertension. Results in patients with diastolic blood pressures averaging 115 through 129 mm Hg. *JAMA* 1967; 202: 1028–34.

5. Veterans Administration Cooperative Study Group on Anti-hypertensive Agents. Effects of treatment on morbidity in hypertension. II: Results in patients with diastolic blood pressure averaging 90 through 114 mm Hg. *JAMA* 1970; 213: 1143–52.
6. Hypertension Detection and Follow-up Programme Cooperative Group. Five-year findings of hypertension detection and follow-up programme. I: Reduction of mortality of persons with high blood pressure, including mild hypertension. *JAMA* 1979; 242: 2562–71.
7. Banner LI, Beevers DG, Jackson SH, Wright N. ABC of blood pressure reduction: Difficulties and developments in treating hypertension. *Br Med J* 1981; 282: 811–12.
8. Aberg HA, Hedstrand H, Lithell H. Blood pressure control in a middle-aged male population. *Acta Med Scand* 1980; 208: 467–71.
9. Stephens B, Gowers P, Kennedy I. Patient-retained health records in a rural health care system. *J Trop Med Hyg* 1977; 80: 244–8.
10. Sackett DL. Screening for diseases: Cardiovascular disease. *Lancet* 1974; 2: 1189–91.
11. Kitai IC, Irwig LM. Hypertension in urban Black out-patients. Who gets treated and for how long? *S Afr Med J* 1979; 55: 241–4.
12. Nyazema NZ. Towards better patient drug compliance and comprehension: A challenge to medical and pharmaceutical services in Zimbabwe. *Soc Sci Med* 1984; 18: 551–4.
13. Finnerty FA Jr, Shaw L, Himmelsback CK. Hypertension in the inner city. II: Detection and follow-up. *Circulation* 1973; 47: 76–8.
14. Finnerty FA Jr, Mattie EC, Finnerty FA. III: Hypertension in the inner city. Analysis of clinic drop-outs. *Circulation* 1973; 47: 73–5.
15. Finnerty FA Jr. The nurse's role in treating hypertension. *N Engl. J Med* [Editorial]. 1975; 293: 93–4.
16. Beevers DG, Nelson CS, Duncan S, Padfield PL. A blood pressure clinic in a health centre. *Postgrad Med J* 1976; 52: 683–6.
17. Anonymous. Diuretic or beta blocker as first line treatment for mild hypertension [Editorial]. *Lancet* 1982; 2: 1316–17.

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