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# Hypertension Management in the District Hospitals in Dar es Salaam, Tanzania

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**A study was conducted in three District Hospitals in Dar es Salaam, Tanzania, namely Temeke, Mwananyamala and Amana. Six hundred prescriptions were analyzed. The average number of drugs per prescription was found to be 3.4 (range 2.9-4.1) while the average number of antihypertensive drugs per prescription was 2.2 (range 1.9-2.6). Prescribing of generic antihypertensives was low with a mean of 33% (range 25-49). The percentages of antibiotics and injections appearing per prescription were 4.8% and 9.8% respectively. The percentages of prescriptions containing both an antidiabetic and a thiazide diuretic were 18.3%, 30.8% and 50.9% for Temeke, Amana and Mwananyamala respectively. The combination of an antidiabetic and propranolol was encountered in 54.8% and 45.2% of prescriptions from Temeke and Mwananyamala respectively. Prescriptions containing a combination of an antidiabetic, a thiazide diuretic and propranolol constituted 43.5%, 39.0% and 17.5% of the total for Temeke, Amana and Mwananyamala respectively. The average patient consultation time was 3.7 minutes whereas the average dispensing time was 45.1 seconds. Overall, 91% of all drugs dispensed were adequately labelled and patients' knowledge of the correct dose was adequate. All facilities possessed most of the essential antihypertensives and antidiabetics and had adequate reference materials. The drug prescribing pattern for hypertension in the three district hospitals showed that prescribers need to be more conscious of rational prescribing algorithms.**

**Key words:** Prescribing pattern, antihypertensives, antidiabetics

## INTRODUCTION

The quality of life in developing countries can be improved by enhancing the standards of medical treatment at all levels of the health care delivery system. Medical audit oversees the observance of these standards. Rational drug prescribing is defined as the use of the least number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost. Measurement of drug use in health facilities not only describes drug use but also aids in the identification of polypharmacy and the problems associated with it. Polypharmacy is a major problem in the treatment of patients with cardiovascular disease as the disease is usually associated with co-morbid conditions such as diabetes mellitus.

The primary goal of antihypertensive therapy is to prevent morbidity and mortality related to hypertension. Selection of antihypertensive agents should therefore be based primarily on their comparative ability to prevent these complications. This ability has been well established for ß-adrenergic blockers and diuretics [1-3]. However, reduction in adverse cardiovascular events has also been reported with angiotension-converting enzyme inhibitors [4] and calcium-channel blockers [5-6].

Different pharmacological classes of drugs have in the past been compared for their effectiveness in treating black hypertensive patients. In addition to being salt-sensitive, black patients present with low renin level hypertension coupled with decreased cardiac output and an increase in peripheral resistance. Hence, the

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ideal antihypertensive drug should not only have natriuretic effects but also the ability to decrease vascular resistance [7]. Indeed some researchers have even recommended that calcium-channel blockers may be superior compared to thiazides in the initial treatment of black hypertensives [8-10].

The present study was conducted with the aim of identifying hypertensive patient parameters, associated co-morbidity and the pattern of drug prescription in a typical district outpatient medical clinic in Dar es Salaam using the WHO study indicators [11].

## MATERIALS AND METHODS

A cross-sectional hospital based survey was carried out in the three district hospitals in the Dar es Salaam region namely Amana, Temeke and Mwananyamala. A total of 600 prescriptions were collected from the three district hospitals. This was achieved by collecting prescriptions from two hundred randomly selected patients per district hospital as the patients came out of the clinic. Every other patient emerging from the clinic was recruited into the study after obtaining prior informed consent.

Data collection and recording was done using guided questionnaires and WHO medicine indicators [11]. The list of commonly prescribed antihypertensive agents in each health facility was obtained from outpatient monthly attendance records. Propranolol, bendrofluazide, methyldopa, nifedipine, atenolol, diazoxide, captopril as well as frusemide and hydralazine tablets/injections were found to be commonly prescribed in each facility during the study period. Three indicator forms were designed using Ms Excel program. Data was computed and presented as percentages.

## RESULTS AND DISCUSION

Irrational use of medicines in developing countries remains a serious problem [1]. Indicators have been developed by the WHO to quantify medicine use in health facilities [11]. These indicators can be used to monitor the quality of health care delivered to patients. The most commonly used indicators for assessing prescribing practices were employed in this study, the choice depending on the relative ease of data collection.

### Prescribing indicators

The average number of drugs per prescription was 3.4 (range 2.9-4.1) while that of antihypertensives specifically was 2.2 (range 1.9-2.6). Generic prescribing averaged 50% of the total with Temeke leading in this respect. The overall mean percentage of antibiotics and injections prescribed was 4.8% and 9.8% respectively (Table 1). The average number of drugs per prescription obtained in this study was comparable to that reported of a district hospital in Nigeria. However, it was less than the figure of 5.2 reported for Lagos University teaching hospital, Nigeria [12].

Closer inspection of the prescriptions showed that about 5.5%, 2.5% and 1.5% of those from Temeke, Amana and Mwananyamala respectively contained more than 6 drugs (Table 2). This could be accounted for by the fact that some of the patients may have presented with multiple problems. The concurrent use of several drugs however increases the chances of drug interactions. It is known that thiazides and β-adrenoceptor antagonists have a mild effect on plasma lipid profiles and glucose metabolism which is undesirable in diabetic patients [13-14].

Prescriptions having an antidiabetic-antihypertensive combination constituted 69% of the total. Table 3 summarizes the antidiabetic and antihypertensive combinations encountered in the study. The combination of an antidiabetic, thiazide diuretic and propranolol was encountered in prescriptions from all the three facilities. This is a matter of great concern since such a high number of prescriptions with this three-drug combination may result in clinical failure.

The average percentage of generic antihypertensives per prescription was 50.0% which is far below the international target of 100% [5]. Furthermore, this is in contradiction with Tanzania's medicine policy which

advocates for the teaching of pharmacology to all health professionals and recommends the purchase, prescription and dispensing of generic medicines [15].

In this study, it was also found that the average percentages of antibiotics and injections per prescription were 4.8% and 9.8% respectively. This is acceptable considering that some patients on insulin require antibiotics for prophylactic cover.

It is worthy noting that about 98% of the drugs were prescribed and dispensed in accordance with the Essential Drugs List (EDL) of Tanzania although not in generic form. This could be due to the fact that the district hospitals sometimes purchase their stocks directly from private pharmacies within the city which stock branded medicines. The Medical Stores Department, a government agency, procures generic medicines for the public health facilities. Despite the availability of the medicines listed in the EDL in all the hospitals, generic prescribing was low. This situation needs to be addressed in order to comply with WHO guidelines.

**Table 1: Drug prescribing patterns in the three district hospitals (n = 600)**

| Facility | Facility mean | Antihypertensives prescribed | | | % Antibiotics | % Injections | % EDL |
|---|---|---|---|---|---|---|---|
| | | Average prescribed | % of total | % Generics | | | |
| Temeke | 4.1 | 2.6 | 49.0 | 63.3 | 4.0 | 14.0 | 98.5 |
| Mwananyamala | 3.3 | 2.1 | 25.0 | 40.4 | 5.0 | 6.0 | 97.4 |
| Amana | 2.9 | 1.9 | 26.0 | 46.3 | 5.5 | 9.5 | 98.5 |
| Overall mean | 3.4 | 2.2 | 33.0 | 50.0 | 4.8 | 9.8 | 98.2 |

EDL – Essential Drugs List

**Table 2: Number of drugs per prescription from the three district hospitals**

| Number of drugs | Temeke | Amana | Mwananyamala | Total |
|---|---|---|---|---|
| 1-2 | 12 (6.0%) | 67 (33.5%) | 27 (13.5%) | 106 |
| 3-5 | 177 (88.5%) | 128 (64.0%) | 170 (85.0%) | 475 |
| ≥ 6 | 11 (5.5%) | 5 (2.5%) | 3 (1.5%) | 19 |
| Total | 200 (100.0%) | 200 (100.0%) | 200 (100.0%) | 600 |

**Table 3: Prescriptions containing an antidiabetic-antihypertensive combination in the three district hospitals**

| Facility | Antidiabetic-Thiazide diuretic | Antidiabetic-Propranolol | Antidiabetic-Thiazide-Propranolol | Total |
|---|---|---|---|---|
| Temeke | 42 (18.3%) | 17 (54.8%) | 67 (43.5%) | 126 |
| Amana | 71 (30.8%) | 0 (0.0%) | 60 (39.0%) | 131 |
| Mwananyamala | 117 (50.9%) | 14 (45.2%) | 27 (17.5%) | 158 |
| Total | 230 (100.0%) | 31 (100.0%) | 154 (100.0%) | 415 |

### Patient care indicators

Patient care indicators were assessed prospectively. Consultation time was considered adequate if physical examination was carried out. In the present study, this was found to be 3.7 min on average, whereas the dispensing time was 45.1 s. The percentage of drugs dispensed was high with an average of 91% and correctly labeled according to good pharmacy practice (Table 4) [16]. The consultation time was short probably because these patients regularly visit the clinics. These results are comparable to those published in other studies [17], but at a lower level in the health care delivery system. Despite the short dispensing time, patients could remember the instructions given to them. This may be due to the availability of and familiarity with the medicines following repeated use.

### Facility indicators

On inspection, the hospitals possessed most of the antihypertensives and antidiabetics which are on the Essential Drugs List [15].

**Table 4: Average patient care indicators in the three district hospitals**

| Facility | Consultation time (min) | Dispensing time (s) | % Drugs dispensed | % Adequately labeled | Patients' knowledge of correct dose (%) |
|---|---|---|---|---|---|
| Temeke | 4.1 | 55.0 | 88.9 | 96.8 | 95.5 |
| Mwananyamala | 3.8 | 41.5 | 95.5 | 90.4 | 92.0 |
| Amana | 3.2 | 38.7 | 87.2 | 85.9 | 88.5 |
| Mean | 3.7 | 45.1 | 90.5 | 91.0 | 92.0 |

## CONCLUSION

The study revealed that most of the hypertensive patients visiting the health facilities were also suffering from diabetes mellitus. The commonly prescribed antihypertensives were thiazide diuretics and β-blockers like propranolol which are likely to interact with antidiabetic agents.

It is therefore recommended that the Ministry of Health regularly organizes educational programs to educate prescribers on rational prescribing when treating patients who present with both hypertension and diabetes mellitus to avoid clinical failure.

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