



Research Article

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Anti-hypertensive prescription pattern among general medical practitioners in Kano, Northern Nigeria

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Abstract

Background: General medical practitioners are responsible for providing care for most hypertensive patients in developing countries, including Nigeria. Concerns have been raised about the pattern of anti-hypertensive medications prescription in some countries. Most previous studies that have assessed physicians' anti-hypertensive prescription patterns were carried out in tertiary care institutions. The aim of this study was to assess the anti-hypertensive prescription pattern of non-specialist general medical practitioners in Kano State, North-western Nigeria. **Methods:** This was a cross-sectional survey carried out among non-specialist general practitioners practicing within Kano State, Nigeria. A total of 138 doctors completed questionnaires about their demographics, duration and location of practice, and anti-hypertensive prescription patterns. Continuous variables were presented as mean \pm standard deviation. Qualitative variables were expressed as proportions and percentages. **Results:** One hundred and fourteen (82.6%) doctors directly care for hypertensive patients routinely, with only 31 (22.5%) attending to less than 20 patients per month. Majority (47%) considered thiazide diuretics their first choice antihypertensive. Angiotensin converting enzyme inhibitors (ACEIs) were the commonest used drugs as single agent (55.7%) or in combination with other classes. The frequently used combinations were ACEIs/ thiazides (43.5%), ACEI/ Calcium channel blockers (CCBs) (24.6%) and CCBs/ thiazides (8.7%). The most frequently considered factors when prescribing antihypertensive medications were cost of the medications (84.7%), side effect profile of the medications (68.1%), presence of compelling indications and contraindications (57.2%), blood pressure at the time of presentation (56.2%) and the dosage frequency. **Conclusion:** The anti-hypertensive prescription pattern for the majority of the non-specialist general medical practitioners in Kano is in accordance with the current hypertension treatment guidelines.

Keywords: Pattern, Prescriptions, Anti-hypertensive medications, Nigeria.

INTRODUCTION

Hypertension is the most common cardiovascular disorder affecting over 1 billion people worldwide, and plays an important role in the causation of heart failure, heart attack, renal failure and stroke [1, 2]. Adequate control of BP was reported to reduce the incidence of stroke by an average of 35% to 40%, heart attack by 20% to 25% and heart failure by more than 50% [3].

Despite the benefits of lowering BP, data from both developed and developing countries indicates that control of hypertension remains remarkably poor [4]. In Nigeria, BP control rates ranges from 24.2% to 35.8%, and is influenced by multiple factors [5, 6]. Physician related factors, especially preferences in anti-hypertensives prescription affect patients outcome since they determine the choice and dose of antihypertensive medication prescribed [7, 8]. International and local guidelines have been produced to aid physicians manage hypertension, including evidence based, appropriate choice of anti-hypertensives for control BP. These guidelines are of immense benefit to health care providers and managers especially in the secondary and tertiary settings.

Majority of the studies that have assessed anti-hypertensive prescription pattern of physicians were carried out in tertiary health institutions [9-13]. The results obtained from these studies may not be true representation of the pattern of prescription of anti-hypertensives, as these institutions serves only a segment of the hypertensive population with the majority being attended to at other secondary, general and private hospitals. The physicians practicing in those institutions are also more likely to be abreast with the current management guidelines. Non-specialist general physicians are responsible for providing care for most of the hypertensives in the developing country including Nigeria. There is paucity of data with regards to the pattern of anti-hypertensive medication prescription among general practitioners in this part of the country. The aim of this study therefore, was to assess the

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anti-hypertensive medication prescription pattern of non-specialist general medical practitioners in Kano, North-Western Nigeria.

METHODS

This was a cross-sectional survey of non-specialist general practitioners practicing within Kano State. A total of 142 questionnaires were distributed, with 138 returning the questionnaires giving a response rate of 97.2%.

Doctors were included if had been fully registered with the Medical and Dental Council of Nigeria, had not undergone any form of residency training and consented to participate in the study. The study protocol was approved by the Kano State Hospitals Management Board before commencement of the study.

Information concerning anti-hypertensive prescription pattern was retrieved from the doctors using a self-administered structured questionnaire. Information retrieved included the participants' bio data, institution, number of years post-graduation, location of current practice, average number of hypertensive seen and pattern of prescription of anti-hypertensive medications.

The questionnaires were distributed at two different continuing medical education programs (CMEs) organized for doctors in Kano, in June and November, 2016. At these CMEs, doctors meeting the inclusion criteria were identified, informed about the study and asked if they had participated previously. Those who had not previously participated in the study and consented were given the questionnaire to fill.

Data obtained were analyzed using SPSS version 19 (Chicago, IL, USA). Continuous variables were presented as mean \pm standard deviation. Qualitative variables were expressed as proportions and percentages.

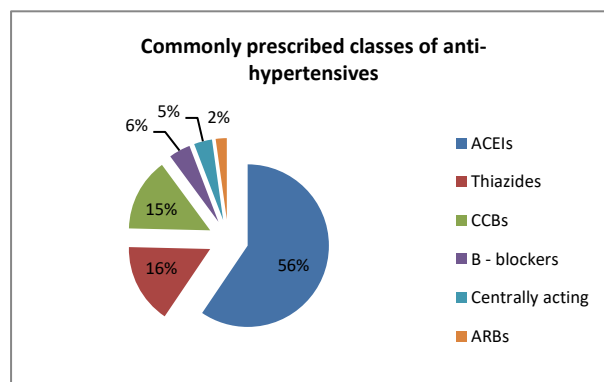
RESULTS

Out of the 138 respondents, 98 (71%) were males. The median age was 35 years with range of 25 years to 62 years. The median duration since completion of basic medical degree was 6 years with a range of 2 to 30 years. One hundred and fourteen (82.6%) doctors directly care for hypertensive patients routinely, with only 31 (22.5%) attending to less than 20 patients per month. The demographic characteristics of the respondents are as shown in Table 1.

Seventy – Five (54.3%) considered diuretics as first choice anti-hypertensive medications, while 31 (22.5%) considered Angiotensin II converting enzyme inhibitors (ACEIs), 20 (14.5%) Calcium channel blockers (CCBs), 10 (13.8%) Centrally acting drugs and 3(2.2%) B-blockers. Figure 1 shows the proportion of doctors that prescribe various classes of anti-hypertensive medications. ACEIs was the most commonly prescribed class as single agent 77 (55.7%) and in combination with other classes. The most commonly used anti-hypertensive combinations were ACEIs/ Diuretics 60 (43.7%) and ACEIs/CCBs 34 (24.6%), while the least used combinations were CCBs/ B – blockers 6 (4.3%), ACEIs/ B – blockers 6 (4.3%), Centrally acting/ACEI 2 (1.5%) and ACEI/ARB 1 (0.7%). Figure 2 shows the anti-hypertensive combinations frequently prescribed by the doctors. Table 2 shows the factors taken into consideration by the doctors when prescribing anti-hypertensive medications.

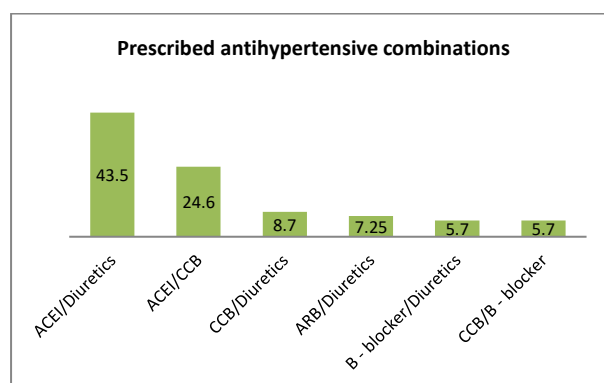
Table 1: Demographic characteristics of the respondents

| Variables | Frequency n (%) |
|--|-----------------|
| Age (years) | |
| <25 | 12(8.7) |
| 25 – 35 | 36(26.1) |
| 36 – 45 | 44(31.9) |
| >45 | 46(33.3) |
| Number of years in clinical practice (years) | |
| <5 | 50(36.2) |
| 5 – 10 | 65(47.1) |
| >10 | 23(16.7) |
| Location of practice | |
| General Hospital | 111(80.4) |
| Primary Health Care | 5(3.6) |
| Private Practice | 22(15.9) |
| Average number of hypertensive patients seen per month | |
| <20 | 31(25.5) |
| 20–30 | 29(21) |
| 31 – 40 | 14(10.2) |
| >40 | 64(46.3) |



Key: ACEIs: Angiotensin converting enzyme inhibitors; ARBs: Angiotensin receptor blockers; CCBs: Calcium channel blockers.

Figure 1: Commonly prescribed antihypertensive medications as single agents by physicians



Key: ACEI: Angiotensin converting enzyme inhibitor; CCB: Calcium channel blocker; B-blocker: β -adrenoceptor blocker.

Figure 2: Prescribed antihypertensive medications.

Table 2: Factors considered by doctors in choosing an antihypertensive medications.

| Factors taken in to consideration | Frequency n (%) |
|--|-----------------|
| Cost of the medication | 117(84.7) |
| Side effect of profile of the drugs | 94(68.1) |
| Presence of compelling indications/contraindications | 79(57.2) |
| Patients' blood pressure at time of presentation | 78(56.2) |
| Dosage frequency of the drug | 65(47.1) |
| Availability of the drug at the hospital pharmacy | 42(30.4) |
| Pressure of drug manufacturer's representatives | 3(2.2) |

DISCUSSION

The participants in this study are likely to be representative of non – specialist general practitioners in Kano, considering their age, location of practice and duration of practice since completion of basic medical training. Similar to what was previously reported in Lagos, 80.4% participants routinely cared for hypertensive patients routinely in their practice. This further reflects on the burden of hypertensive patients being cared for, in the country.

Although thiazide diuretics were considered the class of first choice among the participants, ACEIs were the most commonly prescribed class, both as a single agent, and in combination with other classes of anti-hypertensive agents. This finding is also in keeping with previous reports [10, 14-16]. Mijinyawa *et al*, reported a similar finding from the teaching hospital in same locality [13]. Some earlier studies however reported diuretics as the most commonly prescribed single agents while others reported CCBs as the most frequently prescribed single agent [10, 17-20]. The choice of ACEIs may be attributable to its advantages in treating hypertensives with cardiac or renal complications which are common with our patients. B-blockers were the least to be prescribed as observed from previous studies in other parts of the country [18, 19]. Similar to what was observed by Mijinyawa *et al*, Centrally acting agents were not prescribed as single agents. Prescription of centrally acting agents was generally low from previous reports [10, 17-19]. Babawale *et al*, in Lagos however reported that more than half of their doctors prescribe centrally acting antihypertensive drugs [20].

Doctors who participated in this study frequently prescribed combination of anti-hypertensive medications. The most frequent reasons were severely elevated baseline blood pressure, failure of monotherapy to achieve target blood pressure and the presence of compelling indications to use more than one class of drug in the patient. These reasons are in keeping with the recommendations of the current hypertension treatment guidelines [21-25]. Combination of ACEIs with diuretics was the most prescribed combination. Apart from being cheap and readily available, combinations of ACEIs and diuretics in black hypertensives results in improved BP control and target organ protection. Other frequently used combinations were ACEIs /CCBs and CCBs/diuretics, with combinations of B – blocker/ CCBs, Centrally acting/ ACEI and ACEIs/ ARBs less frequently used. This finding is also in keeping with previous reports, although some of the combinations do not align with the recommendations of the current hypertension treatment guidelines [21-25]. The most commonly considered factors by the doctors when prescribing anti-hypertensive medications were cost of the medications, side effect profile of the medications, presence of compelling indications and contraindications, blood pressure at the time of presentation and the dosage frequency. Cost of the medication was the most considered in our study because majority of our patients are poor and cater for their health care directly.

The major limitation of this study is self-reporting bias. A review of the actual pharmacy prescription sheets would give more objective

evidence of anti-hypertensive medications prescription pattern of these doctors.

CONCLUSION

The pattern of anti-hypertensive medications prescription of general medical practitioners in Kano is generally in keeping with recommended guidelines for management of hypertension and is similar to those reported from tertiary care institutions in the country. However, considering the increasing burden of hypertension, there is the need for all doctors to be conversant with the current hypertension management guidelines.

Conflict of Interest

None declared.

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