

Full Length Research Paper

Comparative assessment of prescription quality among hypertensive patients in South-West Nigeria

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Rational drug use is consequential to effective management of chronic conditions such as hypertension. This study was carried out to compare the quality of prescription in patients attending the outpatient clinics of a tertiary hospital in Nigeria against standard values and to compare study findings with similar studies carried out in other parts of the country. One thousand nine hundred and seventy-two case notes were reviewed following each clinic. Quality of prescription was assessed using WHO prescribing indicators. There were 58.4% females and 41.6% males of an average aged of 59.6 ± 11.8 years. Average number of drugs per encounter was 3.9. Only 56.9% of drugs were prescribed by their generic name. Percentage of encounters containing antibiotic and injection were 3.6% and 0.9% respectively. About 87.7% of drugs prescribed were from the essential drug list. The most prescribed drug aside from antihypertensives was aspirin occurring in 843 (43.7%) of the 1927 eligible encounters. Quality of prescription in Ibadan, Nigeria as with other parts of the country was found to be low. Although, use of antibiotics and injection was low, poly-pharmacy and low prescription of drugs by their generic names were observed, educational interventions are needed to improve prescribing quality.

Key words: Prescription quality, rational drug, hypertension, WHO prescribing indicators, Nigeria.

INTRODUCTION

Hypertension is a disease with high prevalence in the black population (Hajjar and Kotchen, 2003). Adequate control of blood pressure is important to prevent end organ damage and other complications which may otherwise occur in hypertensive patients. Rational drug use is consequential to the effective management of diseases particularly life-long disease such as hypertension. Inappropriate prescription of drugs, aside from being ineffective, can be detrimental to patients often resulting to hazard. The economic implication of irrational prescribing is immense particularly in Nigeria where the cost of living is high.

The use of the appropriate drugs for the right indication, at the right dosage, for the correct period of time bearing in mind individual differences, cost and availability of the drug is vital in the management of chronic disease conditions such as hypertension (Benjamin, 2003). Minimal number of drugs that can effectively control disease condition should be prescribed to minimize adverse effects of the drugs, increase patients' adherence and reduce cost. WHO (1993) drug use indicators are valuable tools used to evaluate rational drug prescription; it

takes into cognizance the degree of poly-pharmacy, amount of injection and antibiotics used over a period of time, number of drugs prescribed by generic name and number of drugs prescribed from the Essential drug list.

Drug use studies carried out from time to time is necessary to improve the quality of prescription leading to effective patient management. Studies previously carried out in this country (Eze and Odunayo, 2010; Babalola et al., 2011; Enato and Chima, 2011; Tamuno, 2011; Joda and Aderemi-Williams, 2013) show less than optimal rational prescribing, it is necessary to study prescribing attitudes of physicians over time, comparing with standards.

In this study, we seek to ascertain the degree of change in quality of prescription among hypertensive patients in this region and to compare recent prescriptions to set standards with the aim of improving rational prescription in Nigeria.

MATERIALS AND METHOD

This study was a prospective cross-sectional survey carried out in three sub-specialty clinics of the University College Hospital (UCH), an 850 bedded teaching hospital located in Ibadan, Oyo state in South-Western Nigeria. Ethical approval for this study was given by the University of Ibadan/University College Hospital (UI/UCH) ethical review committee. The study

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Table 1. Age distribution of hypertensive patients attending the out-patient clinics of the University College Hospital between November 2011 and April 2012.

| AGE | FREQUENCY | PERCENTAGE (%) |
|-------|-----------|----------------|
| 30-39 | 113 | 5.9 |
| 40-49 | 270 | 14.0 |
| 50-59 | 501 | 26.0 |
| 60-69 | 592 | 30.7 |
| 70-79 | 381 | 19.8 |
| ≥ 80 | 70 | 3.6 |
| TOTAL | 1927 | 100 |

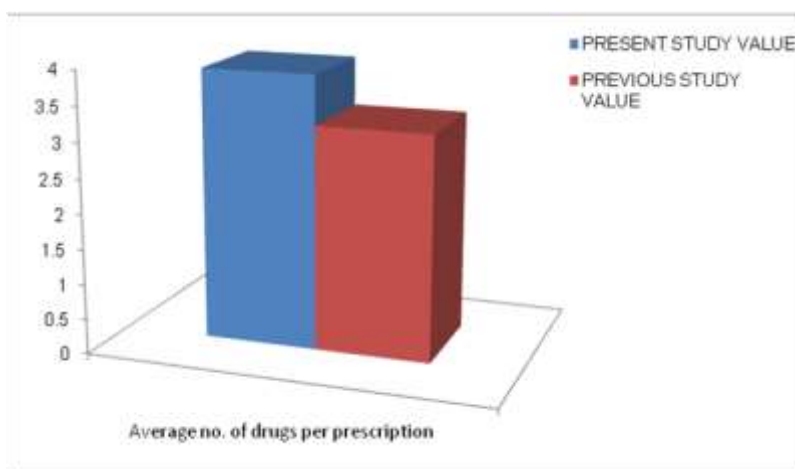


Figure 1. Comparison of average number of drugs prescribed to hypertensive patients attending the out-patient clinics of the University College Hospital in present and previous studies

was carried out for a period of six months (November, 2011-April, 2012). Prescriptions of hypertensive patients between the ages of 30 to 85 years attending the out-patients clinic of hospital for the study duration were studied; patients outside this range were excluded. The prescription of 1972 consecutive patients was reviewed. Data was collected from patients' case notes immediately after consultation. Demographic data, drugs prescribed and number of drug per prescription were obtained. Prescribing indicators such as total encounter with generics, antibiotic and injection prescribed and total drugs prescribed from the essential drug list were noted. Data was analyzed using Microsoft Excel 2006 and SPSS version 17. WHO prescribing indicators were calculated. Data was presented as frequency, percentage, means and standard deviations. Percentage of other therapeutic agents according to their ATCC classification i.e. Antidiabetics (A10), Antimalarials (P01B), Analgesics (N02), Lipid modifying agents (C10) etc were also analyzed.

RESULT

The total number of encounters reviewed was 1972, out of which 1927 were used. The remaining 35 encounters were not

used due to lack of clarity and insufficient demographic information. Females constituted 58.4% (N=1125) of the participants while 41.6% (N=802) were males; the female to male ratio was 1:0.71. The mean age was 59.6 ± 11.8 years; the age distribution of patients is shown in Table 1.

The patients attending the clinics were prescribed a total of 7424 drugs. The average number of drugs prescribed was 3.9. Figure 1 compares present study with a previous one carried out in our centre about six years ago, which reported the average number of drugs prescribed as 3.2 (Enwere et al., 2007). Out of the total prescription, 56.9% of the drugs were prescribed by generic name. Figure 2 compares the quality of prescriptions in this study with a previous study carried out in this centre where generic prescription of drugs was in 49.5% of total encounters (Enwere et al., 2007). Antibiotics and injection prescription accounted for 4.2% and 0.9% of the drugs respectively. A total of 87.7% of prescriptions were from the essential drug list Table 2. Antihypertensive drugs were the most prescribed drugs, constituting 63.1% of prescribed drugs. Antithrombotic agents (B01) made up 12.7% of the prescription. Drugs used in diabetes (A10), Vitamins/Minerals supplements (A11/A12), Lipid modifying agents (C10) and Analgesics (N02) made up 5.5%, 4.0%, 3.3% and 1.8% of the drugs. Antimalarials (P01B) were in 0.8% of all prescriptions.

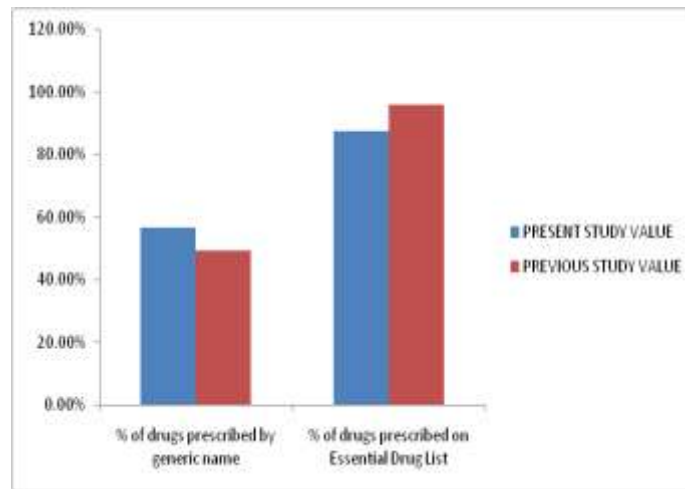


Figure 2. Comparison of Quality of prescription between present and previous studies carried out in the out-patient clinics of the University College Hospital, Ibadan, Nigeria.

Table 2. Study values against standard values of WHO prescribing indices.

| PRESCRIBING INDICATOR | STANDARD VALUE ^[13] | PRESENT STUDY VALUE |
|---|--------------------------------|---------------------|
| Average no. of drugs per prescription | 1.6-1.8 | 3.9 |
| % of drugs prescribed by generic name | 100% | 56.9% |
| % of encounters with an antibiotic prescribed | 20-26.8% | 4.2% |
| % encounters with an injection prescribed | 13.4-24.1% | 0.9% |
| % of drugs prescribed on Essential Drug List | 100% | 87.7% |

Table 3 (a). Review of studies on quality of prescription of drugs in Nigeria.

| Author, Year, Region | Study Design | Duration of Study | Total No. of Prescription | Total No. of Drugs Prescribed | Average no. of Drug per prescription | % of Drug prescribed by Generic Name | % with Antibiotic Prescribed | % of Encounters with an Injection Prescribed | % Of Drugs Prescribed from the Essential Drug List |
|---------------------------------|-----------------------------------|-------------------|---------------------------|-------------------------------|--------------------------------------|--------------------------------------|------------------------------|--|--|
| Erah et al 2003, Delta, S/S | Retrospective study | 1 year | 2000 | - | 3.4 | 35.0 | 56.0 | - | - |
| Enwere et al 2006, Ibadan, S/W | cross-sectional study | 2 months | - | - | 4 | 47.5 | - | - | 98.6 |
| Akande & Ologe 2007, Kwara, N/C | Descriptive cross-sectional study | 3 months | 303 | 1219 | 3.99 | 41.9 | 13.0 | - | - |
| Eze & Odunayo 2010, Ogun, S/W | Retrospective study | - | 777 | 3625 | 4.7 | 40.1 | 9.4 | 2.1 | - |
| Enato & Chima 2011, Kogi, N/C | Retrospective study | 1 year | - | 2124 | 2.94 | 37 | 51 | - | 82.3 |

Table 3 (b). Review of studies on quality of prescription of drugs in Nigeria.

| | | | | | | | | | |
|-------------------------------------|-------------------------------------|----------|------|------|------|------|------|------|------|
| Babalola et al 2011, Osun, S/W | Retrospective study | 1 year | 560 | - | 6.11 | 69.8 | 50.1 | 72.7 | 94.2 |
| Eze & Olowu 2011, Ogun, S/W | Retrospective study | - | 1000 | 3979 | 3.9 | 48.9 | 23 | 0.8 | 95.4 |
| Igbiki Tamuno 2011, Kano N/W | Retrospective cross sectional study | 1 year | 998 | 3162 | 3.2 | 54.4 | 43.8 | 17.9 | 91.2 |
| Joda and Aderemi-Williams, 2013 S/W | Retrospective study | 6 months | 933 | 3314 | 3.55 | 39.4 | 43.2 | 5.8 | - |
| This study | Prospective cross-sectional study | 6 months | 1927 | 7477 | 3.9 | 56.9 | 4.2 | 0.9 | 87.7 |

N/W= North-West; N/C= North-Central; S/S= South-South; S/W= South-West.

Table 3 compares our study with similar studies carried out in Nigeria (Joda and Aderemi-Williams, 2013; Tamuno 2011; Eze & Olowu 2011; Babalola et al., 2011; Enwere et al., 2007), a high degree of poly-pharmacy was observed.

DISCUSSION

The age distribution of patients in this study was similar to those obtained in the general populace (Egan et al., 2010). Most of the patients were above 50 years of age with more women seeking medical assistance than men.

Comparison of study values of prescribing indicators against standard values (Isah et al., 2008) showed that quality of prescription was not optimum. Poly-pharmacy was found to be high as the average number of drugs prescribed was 3.9 as opposed to the standard value of 1.6-1.8, this values correlates with a previous study (Enwere et al., 2007) carried out in our centre about six years ago, which reported the average number of drugs prescribed as 3.2. Similar past studies (Eze and Odunayo, 2010; Babalola et al., 2011; Tamuno, 2011) carried out in Nigeria showed high degree of poly-pharmacy with average number of drugs ranging from 3.4 to 6.11 Table 3, this implies a no shift in trend. Poly-pharmacy in this particular study could be as a result of the prevalent disease, hypertension, and presence of other co-morbidities/complications such as diabetes, stroke, heart diseases and end-stage renal disease. Most patients with hypertension would require more than one antihypertensive drug to effectively attain acceptable blood pressure levels, those patients with co-morbid/ complicated hypertension would need to be given additional drugs to improve these conditions. The number of drugs prescribed can be reduced significantly by prescribing fixed dose combinations (FDCs). Prescribing

FDCs would improve patients' adherence as the number of drugs would be reduced. Adherence of patients to prescriptions especially in chronic diseases is an important factor in improving clinical outcomes. High levels of poly-pharmacy may be responsible for factors such as drug-drug interactions, adverse drug reactions. Cost of acquiring drugs should also be taken into consideration before multiple drugs are prescribed.

Generic prescribing fell below standard value as only 56.9% of the drugs were prescribed by their generic name, most studies previously carried out (Joda and Aderemi Williams, 2013; Eze and Odunayo, 2010; Tamuno 2011) also show low generic prescription, percentage of drugs prescribed by their generic names were 39.4%, 40.1% and 54.4% respectively in these studies. Hundred percent generic prescribing is advocated as generic drugs are identical or within an acceptable bioequivalent range to their brand-name counterpart with respect to pharmacokinetic and pharmacodynamic properties (Strom, 1987).

Generic prescribing may influence patients' behavior regarding prescribed drugs because generic drugs are more cost effective than brand drugs; prescribing brand drugs may have a negative impact on effective management of diseases. As much as possible, extravagant prescribing should be curbed to increase patients' adherence. The previous study (Enwere et al., 2007) carried out in this centre showed that generic prescription of drugs was in 49.5% of total encounters; this shows a slight increase in generic prescribing. This improvement could be as a result of awareness the report created. Increase in sensitization of physicians as to the importance of generic prescription is necessary to improve the quality of prescription. The overall low generic prescription of drugs may be as a result of prescribers not being conversant with generic names of these drugs. Influence on prescribers

by pharmaceutical companies may be another reason for low generic prescription.

Antibiotic prescription was very low (3.5%) compared with standard value (20-26.8%) (Isa et al., 2008). Other studies carried out in this region (Joda and Aderemi Williams, 2013; Tamuno 2011; Babalola et al., 2011; Enato & Chima 2011) reported high antibiotic prescription, inappropriate use of this drug class creates bacterial resistance resulting to ineffectiveness of antibiotics. All antibiotic prescribed were tablets, most of them were for upper respiratory tract infections (URTIs), this finding agrees with another study in which URTI drugs were the most prescribed drugs (Eze and Odunayo, 2010). Percentage of injections prescribed compared with standard was also low, insulin was the most common injection prescribed, and this is expected as diabetes is found to commonly co-exist with hypertension (Bakris and Gonzalez, 2007). Majority of the drugs (87.7%) prescribed were from the Essential Drug List (EDL) but previous study value was higher, this could be because of a recent revision of the EDL. Periodic evidence based review of EDL using real life studies which may be an indication of drug utilization and/or demand; and appropriate sensitization of prescribers is important to improve the quality of prescription. However, High rate of prescription from the EDL indicates that prescribers have a good knowledge of drugs on the EDL and pattern their prescription as such. Prescription from the EDL should improve to the 100% standard value.

Aside from antihypertensives, majority of the drugs prescribed were antithrombotics. Aspirin constituted 92.6% of total antithrombotics prescribed. This could be as a result of their publicized cardio-protective effects particularly in patients with hypertension (Hansson et al., 1998; Strazzullo et al., 2007), aspirin usage in patients with uncontrolled hypertension could lead to hemorrhagic stroke (Staessen and Wang, 2001). Drugs used to treat diabetics were observed in 5.5% of the encounters. Statins were in 3.3% of the prescription with Lipitor® (Atovarstatin) being the most prescribed, this corresponds with a previous study (Ukwe et al., 2012) which reported that statins occurred in 3% of prescription. Statins have been shown to have an effect on blood pressure control (Bautista, 2009; Chopra et al., 2007; Strazzullo et al., 2007), however, statin prescription was low, high cost of acquiring the drug could be a cause. Antimalarial prescription was low (3.5%) this agrees with a previous study (Eze and Odunayo, 2010; Enato and Chima, 2011), This low value could be as a result of seasonal influence, interventions put in place by the government and Non-Governmental Organizations (NGOs) to prevent the spread of infection may be another reason. Findings from this study indicate sub-standard quality of prescription among hypertensive patients; this is consistent with other similar reports in this region.

CONCLUSION

The results from this study revealed high average number of drugs, low generic prescribing and insufficient prescription of drugs from the essential drug list. Low prescription of antibiotics and injection was observed. Rational drug prescription should be encouraged through educational

intervention, this would reduce cost burden on patients and improve adherence to prescription.

ETHICAL CONSIDERATION

Ethical approval for this study was given by the University of Ibadan/University College Hospital (UI/UCH) ethical review committee.

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