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Drug Utilization Study of Antihypertensive Agents in an Urban Primary Health Care Center in South India

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ABSTRACT

The objective of the study is to evaluate drug utilization for the treatment of hypertension attending an urban primary health care center. A prospective observational study was conducted for a period of 06 months at Urban Primary Health Care Center, Guntur and the data collected was analyzed for various drug use indicators. A total of 47 prescriptions were collected with 40% belonging to males and 60% to females. The average number of drugs per prescription ranged from 1 to 3. 72.5% of generics and 92% of essential drugs were prescribed. The Beta blockers were commonly prescribed to the patients who were attending to the health center followed with calcium channel blockers. No instruction was given on how to administer the drugs in 74.7% of the total prescriptions. This study has revealed that beta blockers were the most utilized anti-hypertensive drugs. The incidence of polypharmacy was low, generic and essential drug prescriptions were high which depicted that the drug use in this zone was quite rational.

Key words: Prescribing indicators, Drug utilization, Hypertension.

INTRODUCTION

Drug utilization research was developed by the spark initiative taken during the mid of 1960 in the United Kingdom and Northern Europe (Wade O, 1984; Dukes MNG, 1982). The revolutionary work by Arthur Engel in Sweden and Pieter Siderius (Engel A *et al.*, 1968) in Holland comparing drug utilization between different countries and regions alerted many investigators the importance of it. They revealed significant differences in the sales of antibiotics in six European countries between 1966 and 1967 which inspired World Health Organization (WHO) to organize its first meeting on Drug consumption in Oslo in 1969 (Oslo, 1969). The ultimate goal of drug utilization studies focus on the factors related to the prescribing, dispensing, administering, and taking of medication, and its associated events, covering the medical and non-medical determinants of drug utilization, the effects of drug utilization, as well as studies of how drug utilization relates to the effects of drug use, beneficial or adverse

(Lunde PK *et al.*, 1988; Strom BL, 2005; Costa J *et al.*, 2001). The therapeutic use is expected to be primarily based on data provided by premarketing clinical trials, but complementary data from post marketing studies are also needed to provide a satisfactory basis for improving drug therapy (Strom BL *et al.*, 1985). Hypertension is a chronic disease that affects 10-15% of adult population in India (Gupta R, 2004). One third of who are unaware of their condition. It is a significant risk for cardiovascular morbidity and mortality and may also lead to stroke, myocardial infarction, blindness and renal failure (The World Health Report, 1999). In India, one among three deaths is caused by hypertension. Concerning hypertension control, blood pressure is controlled in less than 20% of patients with hypertension in many countries (Ghaffar A *et al.*, 2004). With this projected increase in prevalence rates in Hypertension, the prescription volume of anti-hypertensive drugs, morbidity and mortality rates are expected to assume an upward trend especially in India where healthcare services are sub-optimal for the rapidly expanding populations (Rodgers A *et al.*, 2000). The above mentioned issues motivated us to undertake the present study which is aimed at determining the outpatient utilization of anti-hypertensive drugs in south India.

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MATERIALS AND METHODS

A prospective observational study was carried out in an urban primary health care center at Guntur, South India, which covered the period from 1st August 2012 to 31st January 2013. We used the following inclusion/exclusion criteria for the study:

Inclusion criteria:

1. All patients who attended the Primary health care center from 1st August 2012 to 31st January 2013.
2. All patients who were diagnosed with Hypertension according to JNC guidelines (Anonymous 1).

Exclusion criteria:

1. Patients who did not receive antihypertensive drugs.
2. Patients continuing on only those antihypertensive drugs which were prescribed outside the hospital.

Case records of the Hypertensive outpatients were taken from patients during interaction with them. The data were entered into a pre-designed proforma. The filled proforma was analyzed for various parameters like age distribution and gender of patients, duration of hypertension, number of drugs per prescription, average number of drugs prescribed, therapeutic category of drugs, class of antihypertensive and the prescribing indicators.

RESULTS

A total of 47 patients aged between 30-90 years who met the initial inclusion criteria were included in this study. Table.1 shows the gender wise distribution of the patients there were more females than males

Table.1 Categorization of study population based on Gender

Gender	No of patients (n=47)
Male	19 (40.4%)
Female	28 (59.5%)

Figure.1 Patients categorization based on gender

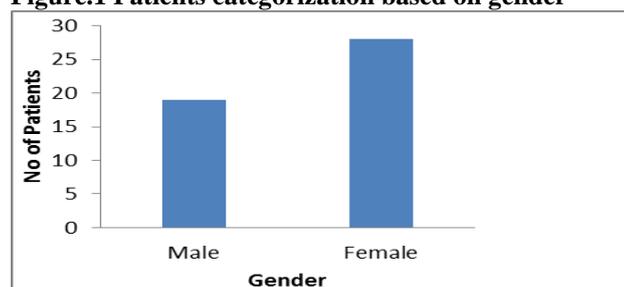


Table.2 Categorization of hypertensive patients based on age

Age in years	No of patients (n=47)
30 – 39	7 (14.9%)
40 – 49	11 (23.4%)
50 – 59	14 (29.7%)
60 – 69	10 (21.2%)
70 – 79	4 (8.5%)
80 – 89	1 (2.12%)

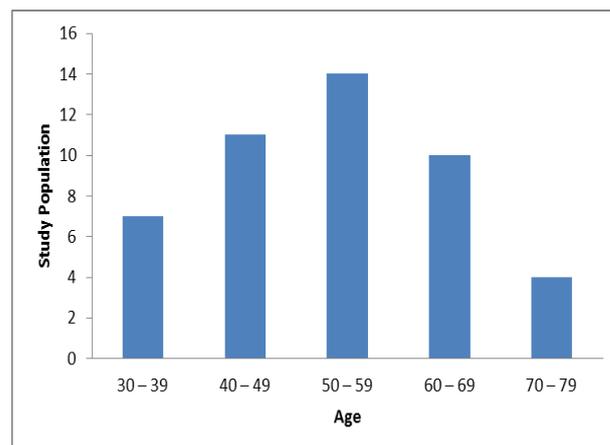


Figure.2 Hypertensive patients categorization based on age

The mean age was 50.9±17 years the maximum numbers of patients were 14 (29.7%) who are between 50-59 years age group.

Table.3 Demographic data of hypertensive patients based on education

Education	No of patients (n=47)
Illiterate	18 (38.3%)
Middle School	6 (12.7%)
High School	13 (27.6%)
College	10 (21.3%)

Regarding the educational background of the patients included in our study, majority of patients were illiterate 18 (38.3%).

Table.4 Categorization of hypertensive patients based on occupation

Occupation	No of patients (n=47)
House wife	24 (51%)
Business	13 (27.65%)
Employee	9 (19.14%)
Labour	1 (2.12%)

On observation of occupation in hypertensive patients, majority of patients included in the study were housewives and they are 24 (51%).

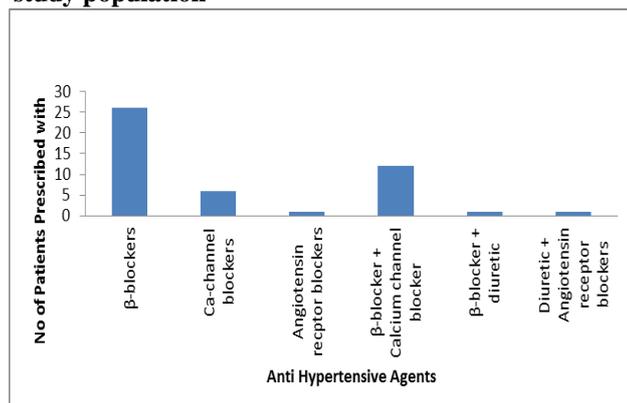
Table.5 Demographic data of hypertensive patients based on social habits

Social habit	Assessment	No of patients (n=47)
Smoking	Yes	5 (10.6%)
	No	42 (89.3%)
Alcohol	Yes	3 (6.4%)
	No	44 (93.6%)

Social habits of the patients were studied and very less percentage of patients were alcoholics and smokers, they were 3 (6.4%) alcoholics, and 5 (10.6%) smokers.

Table.6 Antihypertensive drugs prescribed during the study

Antihypertensive drugs	No of patients (n=47)
β-blockers	26 (55.32%)
Ca-channel blockers	6 (12.76%)
Angiotensin receptor blockers	1 (2.13%)
β-blocker + Ca ²⁺ channel blocker	12 (25.53%)
β-blocker + diuretic	1 (2.13%)
Diuretic + Angiotensin receptor blockers	1 (2.13%)

Figure.3 Anti-hypertensive agents prescribed in the study population

The most commonly used combination therapy regimen included β-blockers with calcium channel blocker (25.53%) followed by β-blockers with diuretic (2.13%) and diuretic with angiotensin-II inhibitors (2.13%). The number of drugs per prescription was between 1 and 3, with mean value of 1.3. While three drugs per prescription were the commonest, one drug per prescription was the least.

The pattern of drug therapy in patients were on monotherapy 33 (70.02%), 14(29.7%) were on

combination therapy Of those patients who were receiving single antihypertensive agents, the three most commonly used drug classes were β-blockers (55.32%), calcium channel blockers (12.76%) and angiotensin receptor blockers (2.13%).

This study showed that 57.3% of the patients had adequate knowledge of their dosage schedules. Pharmacists should take an opportunity to outline and explain patients on how each drug should be taken to make sure that the patient understands his/her dosage schedule. 72.5% of prescriptions written in generic name. Potential Drug-drug interactions were found in 9.2% of the total prescriptions and involved mostly Beta blockers. Pharmacists play a pivotal role in detection of these potential drug interactions and communicate it to the physicians to improve accurateness of prescription and prevent unexpected adverse effects which might lead to emergency and increase burden of hypertension on unsuspecting patients (Anonymous 2). No instruction was given on how to administer the drugs in 74.7% of the total prescriptions. All the prescribed anti- hypertensive drugs were in the National Essential Drugs List.

CONCLUSION

This study has revealed that beta blockers were the most utilized anti-hypertensive drugs. The incidence of polypharmacy was low, generic and essential drug prescriptions were high which depicted that the drug use in this zone was quite rational. Lack of adequate knowledge of dosage schedule was high; therefore improving patients' knowledge on correct dosage would conceivably improve the present state of health care in this zone. Also, continuous medical education with focus on rational drug use and evidence based medicine should form part of the programme of the hospitals. Government should come up with appropriate policies such as free health care for hypertensive patients, provide free anti-hypertensive drugs.

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