

ORIGINAL RESEARCH

Analysis of Drug Utilization in Cardiovascular Disease: An Institutional Based Study

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ABSTRACT

Background: Cardiovascular diseases are the largest cause of mortality, accounting for around half of all deaths resulting from non communicable Diseases. The prospective observational study conducted to evaluate drug utilization in cardiovascular disease.

Materials & Methods: The study included a total of 400 patients admitted to intensive coronary care unit. All the medical prescriptions were collected, and the data was used to analyze the prescription pattern by prescribing indicators and individual drug use by Defined daily dose (DDD) measure. The data was collected and analyzed for counts and percentages. The mean and standard deviation was computed for continuous variables.

Results: In the present study 400 records were assessed in which males were 60% and females were 40%. Ischemic Heart Disease (32.5%) was the most common cardiovascular disease in study population followed by Hypertension (30%). DDD was highest of Enalapril maleate i.e. 4.45. The average drugs per prescription during hospitalization were 4.20. Percentage number of drugs Prescribed by generic names was 72%. Percentage of Drugs Prescribed from National Essential Drug List was 87.5%.

Conclusion: The study concluded that DDD was highest of Enalapril maleate. The average drugs per prescription during hospitalization were 4.20. Percentage number of drugs Prescribed by generic names was 72%. Percentage of Drugs Prescribed from National Essential Drug List was 87.5%.

Keywords: Cardiovascular diseases, Drugs Prescribed, DDD.

INTRODUCTION

Cardiovascular disease (CVD) is the major reason of mortality among noncommunicable diseases (NCDs), constituting 26% in India.^{1,2} The WHO has estimated that the current burden of CVD in India would lose \$237 billion from the loss of productivity and spending

on health care over a 10-year period 2005–2015, by 2025 deaths from CVDs are predicted to rise to almost 50 million in India.³ A more worrying fact is that the incidences of CVDs have gone up significantly for people between the ages 25 and 69 to 24.8%, which means we are losing more productive people to these diseases.⁴ Drug utilization review/evaluation can be used as a tool to detect these drug related problems encountered by the patients while seeking treatment of their illness. Drug utilization research is an collection of descriptive and analytical methods for the quantification, understanding and evaluation of the processes of prescribing, dispensing, and consumption of medicines, and for the testing of interventions to enhance the quality of these processes.⁵ Drug utilization research facilitates identification of clinical drug utilization and its impact on health-care system.⁶ Defined daily dose (DDD) is one such measurement which identifies the clinical drug use and it is defined as “the assumed average maintenance dose per day for a drug used for its main indication in adults.”⁶ They are leading exploratory tools to assess whether drug therapy is rational or not and to create a sound socio-medical and economic basis for healthcare decision making.⁷ Drug utilization review combined with fundamentals of disease management expands the focus from only drug-specific problems to an approach that also uses treatment guidelines and algorithms to evaluate the appropriateness of drug therapy in the background of treating particular diseases. This requires reflection of health outcomes and pharmaco-economic findings.⁸ The present study was conducted to evaluate drug utilization in cardiovascular disease.

MATERIALS & METHODS

The prospective observational study conducted in the Department of Pharmacology, Krishna Mohan Medical College and Hospital, Mathura, Uttar Pradesh (India) to evaluate drug utilization in cardiovascular disease. The study included a total of 400 patients admitted to intensive coronary care unit. Before the commencement of the study ethical approval was taken from the ethical committee of the institute and informed consent was taken from the patient. Prescriptions of patients aged between 30 to 60 years old, both males and females with all kind of cardiovascular diseases, prescriptions of cardiology outpatient department only, prescriptions of cardiovascular disease patients with or without other complications and prescriptions of patients only those willing to participate were included in this study. Prescriptions of patients with age 60, pregnancy, lactation, critically ill patients, patients with lifestyle modification alone, prescriptions of outpatients of other departments, prescriptions of patients diagnosed with non-cardiac diseases, prescriptions of patients who were advised to hospitalize, prescriptions of patients those not willing to participate were excluded from this study. All the medical prescriptions were collected and the data was used to analyze the prescription pattern by prescribing indicators and individual drug use by DDD measure. The quantification of the individual drug was done using DDD. The data was collected and analyzed for counts and percentages. The mean and standard deviation was computed for continuous variables.

RESULTS

In the present study 400 records were assessed in which males were 60% and females were 40%. Ischemic Heart Disease (32.5%) was the most common cardiovascular disease in study population followed by Hypertension (30%). DDD was highest of Enalapril maleate i.e. 4.45. The average drugs per prescription during hospitalization were 4.20. Percentage number of drugs Prescribed by generic names was 72%. Percentage of Drugs Prescribed from National Essential Drug List was 87.5%.

Table 1: Prevalence of cardiovascular diseases in the study population

Prevalence of cardiovascular diseases	N(%)
Ischemic Heart Disease	130(32.5%)
Hypertension	120(30%)
Myocardial Infarction	60(15%)
Stable Angina (Angina pectoris)	30(7.5%)
Cardiovascular Atherosclerosis	20(5%)
Unstable Angina	40(10%)
Cardiac Arrhythmia	8(2%)
Cardiomyopathy and myocarditis	8(2%)
Congestive heart failure	2(0.5%)
Endocarditis	1(0.25%)

Table 2: DDD of some cardiovascular drugs

Name of drug	WHO DDD	DDD/ 1000/DAY
Atorvastatin	20 mg	4.20
Clopidogrel	75mg	4.25
Isosorbide dinitrate	20mg	4.20
Enalapril maleate	10mg	4.45
Metoprolol	0.15g	3.75
Furosemide	40mg	1.92
Digoxin	0.25mg	0.92
Ramipril	2.5mg	22.0
Amlodipine	5mg	1.10
Losartan	50mg	0.7

Table 3. Prescribing Indicators

Average no. of Drugs/Prescription	4.20
Percentage of Drugs Prescribed by Generic Name	72.0%
Percentage of Drugs Prescribed from National Essential Drug List	87.5%

DISCUSSION

Appropriate and safe drug use is a key factor in achieving quality health and accurate health care for hospitalized as well as ambulatory patients. Extensive disparity exists in the pharmacotherapy pattern among CVD patients where rational drug use plays a pivotal role in promoting safety and efficacy. Polypharmacy is warranted in CVDs as it results in irrationality; hence, prescribing indicators were developed to assess the prescribing performance in primary care by the International Network for Rational Use of Drugs and World Health Organization (WHO).⁹

In the present study 400 records were assessed in which males were 60% and females were 40%. Ischemic Heart Disease (32.5%) was the most common cardiovascular disease in study population followed by Hypertension (30%). DDD was highest of Enalapril maleate i.e. 4.45. The average drugs per prescription during hospitalization were 4.20. Percentage number of drugs Prescribed by generic names was 72%. Percentage of Drugs Prescribed from National Essential Drug List was 87.5%.

In a study conducted by Fahad Jibrán Siyal et al. (2014) it was reported that Females were most commonly affected than males.¹⁰

The treatment for IHD includes drug categories such as antiplatelet drugs, antianginal drugs, anticoagulants, beta-blockers, calcium channel blockers, ACE inhibitors/angiotensin II

receptor blockers (ARBs), diuretics, etc. Financially developed countries have effective strategies for screening, evaluation, and management of IHD, but these strategies are not fully established in India.¹¹

Antiplatelet drugs, antianginal drugs, anticoagulants, beta-blockers, calcium channel blockers and diuretics were mostly prescribed drugs in management of CAD according to the observations made by a study conducted in Karnataka.¹²

Gaur A, assessed 390 patients, the majority of them, 59% were males. The mean age of the study population was found to be 59.89 years. When compared to WHO core prescribing indicators 19.16% drugs administered were fixed dose combinations, 46.66% were drugs from the National Essential Medicine List, 78.50% of drugs were prescribed by brand names and 49% of drug therapy had encounters with an antibiotic. Average no. of Drugs per prescription were 8.53.¹³

CONCLUSION

The study concluded that DDD was highest of Enalapril maleate. The average drugs per prescription during hospitalization were 4.20. Percentage number of drugs Prescribed by generic names was 72%. Percentage of Drugs Prescribed From National Essential Drug List was 87.5%.

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