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ORIGINAL RESEARCH

Evaluation of drug utilization in cardiovascular disease at tertiary centre

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Abstract
Background: Cardiovascular disease (CVD) is the major reason of mortality among noncommunicable diseases (NCDs), constituting 26% in India. The present study was conducted to assess drug utilization in cardiovascular diseaseat tertiary centre.
Materials & Methods: 120 medical practitioners of both genders.Prescription pattern was assessed using the WHO prescribing indicators. Parameters such as average number of drugs per prescription, percentage of the drugs prescribed by their generic names, percentage of the prescriptions with antibiotics prescribed, percentage of the prescriptions with injections prescribed, and percentage of the drugs prescribed from the essential drug list was recorded.
Results: Average number of drugs prescribed per prescription (≤3) was seen in 12%, percentage of drugs prescribed by generic name (100%) in 28%, percentage of prescriptions with an antibiotic prescribed (≤30%) in 37%, percentage of prescriptions with an injection prescribed (≤10%) in 99% and percentage of drugs prescribed from the national EDL (100%) in 97%. Cardiovascular drugs prescribed were antiplatelets in 85%, anticoagulants in 54%, thrombolytics in 12%, ACE inhibitors in 70%, beta blockers in 41%, calcium channel blockers in 10%, diuretics in 66% and statin in 78%. The difference was significant (P< 0.05).
Conclusion: Cardiovascular drugs prescribed were antiplatelets, anticoagulants, thrombolytics, ACE inhibitors, beta blockers, diuretics and statin.
Key words: Cardiovascular disease, anticoagulants, diuretics

Introduction

Cardiovascular disease (CVD) is the major reason of mortality among noncommunicable diseases (NCDs), constituting 26% in India. Relative to other NCDs, deprived quality of life and high mortality rate is mounting with CVDs regardless of highly developed health-care facilities.[1] In India, patients with acute coronary syndrome (ACS) have higher rate of ST-elevation myocardial infarction (STEMI) than do patients in developed countries; the treatment options differ between rich and poor which significantly altered mortality and

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morbidity. Women develop CVD at older age and have greater comorbidities than men, though treatment and outcome did not differ after adjusting potential confounders.[2]
Cardiovascular diseases are responsible for 1.5 million deaths in India annually. Hypertension is linked to 57% of all stroke deaths and 24% of all coronary event deaths.[3] Hypertension is ranked as the third most important risk factor for attributable disease burden in South Asia. Hypertension is arguably the single most important risk factor for cardiovascular, cerebrovascular, and renal disease that can be modified by timely detection as well as decisive therapeutic intervention.[4]
Drug utilization research facilitates identification of clinical drug utilization and its impact on health-care system.[5] 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]The present study was conducted to assess drug utilization in cardiovascular disease.

Materials & Methods

The present study comprised of 120medical practitioners of both genders. All gave their written consent for the participation in the study.
Data such as name, age, gender etc. was recorded. Prescription pattern was assessed using the WHO prescribing indicators. Parameters such as average number of drugs per prescription, percentage of the drugs prescribed by their generic names, percentage of the prescriptions with antibiotics prescribed, percentage of the prescriptions with injections prescribed, and percentage of the drugs prescribed from the essential drug list was recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I Pattern of prescription writing using the World Health Organization prescribing indicators

Prescribing Indicators	Percentage
Average number of drugs prescribed per prescription (≤3)	12%
Percentage of drugs prescribed by generic name (100%)	28%
Percentage of prescriptions with an antibiotic prescribed (≤30%)	37%
Percentage of prescriptions with an injection prescribed (≤10%)	99%
Percentage of drugs prescribed from the national EDL (100%)	97%

Table I shows that average number of drugs prescribed per prescription (≤3) was seen in 12%, percentage of drugs prescribed by generic name (100%) in 28%, percentage of prescriptions with an antibiotic prescribed (≤30%) in 37%, percentage of prescriptions with an injection prescribed (≤10%) in 99% and percentage of drugs prescribed from the national EDL (100%) in 97%.

Table II Type of cardiovascular drugs prescribed

Cardiovascular drugs	Percentage	P value
Antiplatelets	85%	0.05
Anticoagulants	54%	
Thrombolytics	12%	
ACE inhibitors	70%	
Beta blockers	41%	
Calcium channel blockers	10%	
Diuretics	66%	
Statin	78%	

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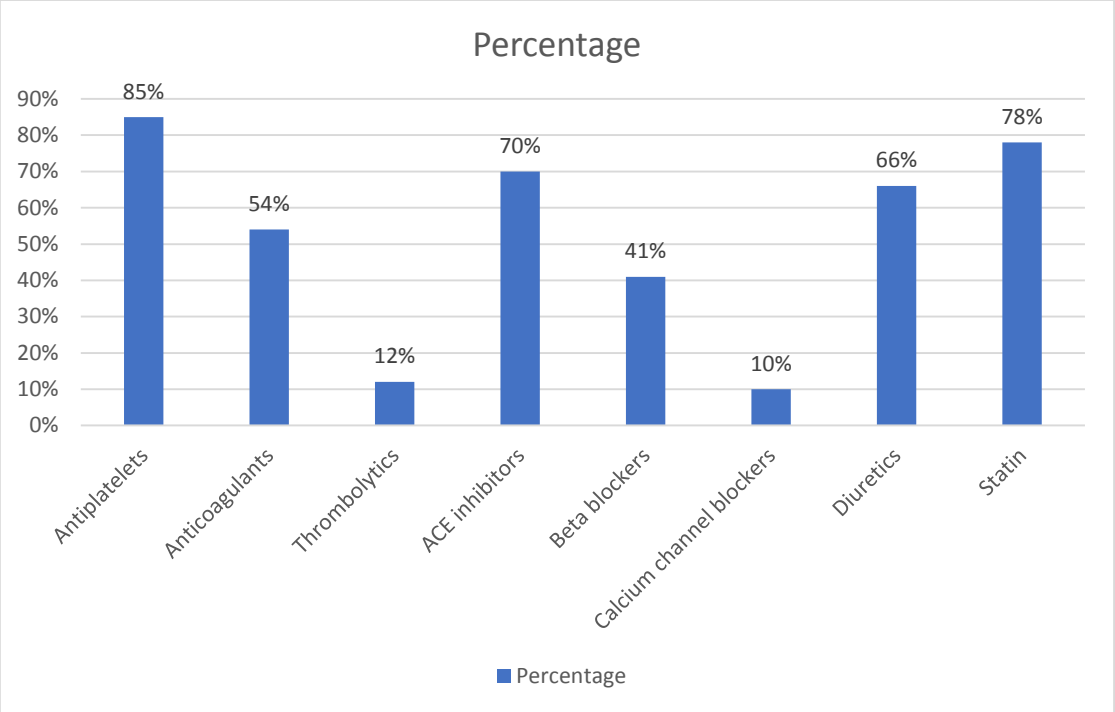
Table II, graph I shows that cardiovascular drugs prescribed were antiplatelets in 85%, anticoagulants in 54%, thrombolytics in 12%, ACE inhibitors in 70%, beta blockers in 41%, calcium channel blockers in 10%, diuretics in 66% and statin in 78%. The difference was significant (P< 0.05).

Graph I Type of cardiovascular drugs prescribed



Discussion

Hypertension represents an enormous global public health-care challenge. The World Health Organization (WHO) has projected that 1.5 billion people globally are likely to suffer from hypertension by 2025. The overall prevalence of hypertension in India is estimated at 29%.[7] Pharmacoepidemiological studies such as drug utilization and prescription pattern studies are an important research tool by which the impact that such guidelines have on the selection of therapeutic agents can be assessed and analyzed.[8] It has been observed that evidence-based clinical research is not adequately incorporated into clinical practice, which can in turn result in suboptimal patient health-care practices.[9,10]The present study was conducted to assess drug utilization in cardiovascular disease.

We found that average number of drugs prescribed per prescription (≤3) was seen in 12%, percentage of drugs prescribed by generic name (100%) in 28%, percentage of prescriptions with an antibiotic prescribed (≤30%) in 37%, percentage of prescriptions with an injection prescribed (≤10%) in 99% and percentage of drugs prescribed from the national EDL (100%) in 97%. Datta et al[11]aimed at analyzing the utilization pattern of antihypertensives used for the treatment of hypertension at a tertiary care hospital. The calcium channel blockers were the most frequently used antihypertensive class of drugs (72.3%). Amlodipine (55.6%) was the single most frequently prescribed antihypertensive agent. The utilization of thiazide diuretics was 9%. Adherence to the National List of Essential Medicines (NLEMs) was 65%. The combination therapy was used more frequently (51.5%) than monotherapy (48.8%). The use ofangiotensin-converting enzyme inhibitors/angiotensin 2 receptor blockers was 41.4% in diabetes.

We found that cardiovascular drugs prescribed were antiplatelets in 85%, anticoagulants in 54%, thrombolytics in 12%, ACE inhibitors in 70%, beta blockers in 41%, calcium channel

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blockers in 10%, diuretics in 66% and statin in 78%. Kolwalkar et al[12] found that the average number of drugs prescribed per person was 4.95. The most commonly prescribed top three drugs were antiplatelets (21.46%), beta-blockers (14.76%), and statins (13.78%). Most drugs were prescribed as single drugs (90.98%), whereas 9.02% were fixed-dose drug combinations (FDC). The combination of aspirin and clopidogrel was the most common prescribed FDC. The majority (72.44%) of the drugs prescribed were as per the NLEM 2015 list, whereas the generic name was low (2.8%). We measured Patient-Care Indicators and Facility-Specific Indicators also. The average consultation time and dispensing time were 7.76 and 3.23 min, respectively. The in-house pharmacy dispensed 82% of drugs. 93.75% of the key drugs were available in the facility. A copy of the essential drugs list was readily available in the facility. 96.67% of the patients knew the correct dosage of drugs.

Naliganti et al[13] in their study a total of 1120 medical records were analyzed for drug utilization for a period of 7 months. Prescription pattern was assessed using the WHO prescribing indicators and DDD to measure individual drug utilization categorized under anatomical–therapeutic–chemical classification.Of the total admissions, 58.57% (55.19 ± 15.19 years) were male and 41.43% (56.64 ± 15.28 years) were female where coronary artery disease was the most common cause of admission followed by cardiomyopathy. Among prescribing indicators, percentage of drugs with generic names was least accounted with 26.86% and 18.95% during hospitalization and discharge, respectively. A mean of 11.55 (hospitalization) and 6.55 (discharge) drugs were prescribed per prescription. Antiplatelet (72.86%) and statin (80.62%) use was predominate during complete therapy. The DDD of furosemide (109.33) was found to be high, followed by atorvastatin (64.6), enalapril (58.44), aspirin (58.14) and clopidogrel (53.2).

The limitation the study is small sample size.

Conclusion

Authors found that cardiovascular drugs prescribed were antiplatelets, anticoagulants, thrombolytics, ACE inhibitors, beta blockers, diuretics and statin.

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