



DRUG PRESCRIBING PATTERN IN INDOOR PATIENTS OF CORONARY ARTERY DISEASE IN A TERTIARY CARE HOSPITAL ATTACHED TO A GOVERNMENT MEDICAL COLLEGE OF MAHARASHTRA : A RETROSPECTIVE STUDY.

Dr Pravin S. Rathod

Associate Professor, Department of Pharmacology, SBHGMC, Dhule. - Corresponding Author

Rekha P. Lohar

Statistician, Department of Community Medicine, SBHGMC, Dhule.

ABSTRACT

Background: Coronary artery disease is the leading cause of mortality in India. Hence the present study was carried out to study the drug prescribing pattern in indoor patients of coronary artery disease in a tertiary care hospital attached to a government medical college of Maharashtra.

Methods: It was a retrospective observational study of nine months duration, conducted in a tertiary care hospital attached to SBH Government Medical College, Dhule. A total of 62 Patients who were admitted under medicine department and ICU with coronary artery disease were included in the study.

Results: The present study shows that, Female patients (58.06%) had higher prevalence of coronary artery disease as compared to males (41.94%). The commonly prescribed drugs were Isosorbide dinitrate (67.74%) from antianginal drugs, Nifedipine (40.32%) and atenolol (20.97%) from antihypertensive drugs, Atorvastatin (75.81%) from hypolipidaemic agents, Aspirin and Clopidogrel combination (74.19%) from antiplatelet agents and unfractionated Heparin (41.94%) from Anticoagulants.

Conclusion: In the present study, most commonly prescribed drug classes in coronary artery disease were antiplatelet drugs followed by antianginal drugs and antihypertensive drugs. This was followed by anticoagulants and diuretics. The results of this study on drug prescribing pattern can provide guidelines for continuous prescription audit in a hospital in-patient setting.

KEYWORDS : .Prescribing pattern, Coronary artery disease, Tertiary care hospital

Introduction:

Coronary artery disease has emerged as an epidemic in India. According to the projections of National Commission and Macroeconomics and Health, Government of India, the total no. of coronary artery disease (CAD) patients in India at the turn of the century was 30 million (5.3% of adult population) which could increase to more than 62 million (8.1%) by the year 2016.^[1]

Coronary artery disease (CAD) is mainly due to atherosclerosis (plaque in artery walls) of the inner lining of the blood vessels that supply blood to the heart. CAD begins when hard cholesterol substances (plaques) are deposited within a coronary artery. The plaques narrow the internal diameter of the arteries which may cause a tiny clot to form, which can obstruct the flow of blood to the heart muscle. This may eventually result in a portion of heart being suddenly deprived of its blood leading to death of that area of heart tissue resulting in a chest pain or heart attack.

The treatment for CAD involves the use of various categories of drugs namely antiplatelet drugs, anticoagulants, anti-anginal drugs, beta-blockers, angiotensin converting enzyme inhibitors (ACEI)/ angiotensin II receptor blockers (ARBs), Calcium channel blockers, diuretics, etc. Effective screening, evaluation, and management strategies for CAD are well established in high-income countries, but these strategies have not been fully implemented in India.^[2]

In more than 90% of cases, the risk of a first heart attack is related to nine potentially modifiable risk factors such as high blood pressure, Smoking/tobacco use, Poor diet, High blood cholesterol, Insufficient physical activity, Obesity, Diabetes, Psychosocial stress (linked to people's ability to influence the potentially stressful environments in which they live), Excess alcohol consumption.^[3,4,5]

Rational drug use means patients receive medications appropriate to their medication, in doses that meet their own individual requirements, for an adequate period of time and at the lowest cost to them and their community.^[6] Accurate diagnosis, proper prescribing, correct dispensing, suitable packing and patient adherence are the five important criteria for rational prescribing of drugs.^[7]

Irrational prescribing of drugs is of common occurrence in clinical practice^[8], important reasons being lack of knowledge about drugs, unethical drug promotions and irrational prescribing habits of clinicians. Inappropriate prescribing habits lead to ineffective and unsafe treatment, prolongation of illness, distress and unnecessary economic burden to the patient.^[9] Erroneous prescriptions are recognized even in the tertiary care hospital.^[10]

There are very few studies on indoor coronary artery disease patients under government hospital settings. Therefore, the present study attempts to analyse the current prescription patterns in indoor patients of coronary artery diseases in a government tertiary care hospital in order to ensure appropriate drug use to reduce the morbidity and mortality of the disease.

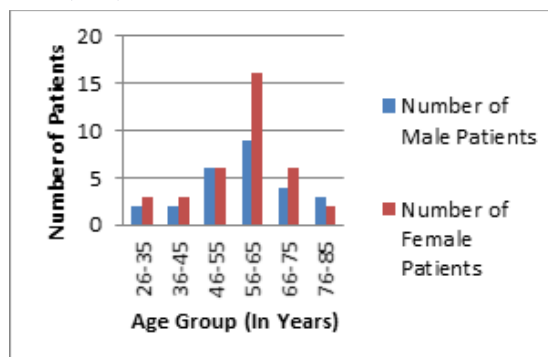
Materials and Methods:

This was a retrospective observational study conducted in a tertiary care hospital attached to SBH Government Medical College, Dhule. The study duration was nine months from January 2015 to September 2015. A total of 62 Patients who were admitted under medicine department and ICU with coronary artery diseases were included in the study. Undiagnosed patients and those with incomplete case record sheets were excluded from the study. Source of data was collected from patient's case sheets obtained from Medical Record Section. Patient's details such as name, age, sex, complaints, diagnosis, treatment details were collected. The study was approved by Institutional Ethics Committee. The data was computed using MS Excel and descriptive results were expressed as counts and percentages.

Results:

The result of present study shows that female patients (58.06%) had higher prevalence of coronary artery disease as compared to males (41.94%). Prevalence was higher in 56-65 years age group (40.32%) followed by 46-55 years (19.35%) and 66-75 years age group (16.13%) (Figure 1).

Figure1: Age-wise distribution of indoor coronary artery disease patients (n=62).



Various comorbid conditions like hypertension, diabetes mellitus, congestive heart failure, renal failure and arrhythmias were seen among these patients. Hypertension (45.16%) and diabetes mellitus (20.97%) were the two most common comorbid conditions found in most of the coronary artery disease patients which increases morbidity and mortality.

Table 1 shows the prescription pattern of various class of cardiovascular drugs for treatment of indoor coronary artery disease patients namely antianginal drugs, antihypertensive drugs, hypolipidaemic agents, antiplatelet drugs, anticoagulants, diuretics and thrombolytic agents. The usages of these drugs were recorded and analyzed. Aspirin with Clopidogrel (74.19%), Atorvastatin (75.81%), Isosorbide dinitrate (67.74%), Nifedipine (40.32%), and Heparin (41.94%) were the most commonly prescribed drugs for coronary artery disease patients.

Table 1: Prescription pattern of drugs among indoor coronary artery disease patients (n=62).

Class of Drug	No of Prescriptions	Prescription rate (%)
Antianginal Drugs		
Isosorbide Dinitrate	42	67.74
Nitroglycerine	02	03.23
Nicorandil	03	04.84
Anti-hypertensive Drugs		
Nifedipine	25	40.32
Atenolol	13	20.97
Metoprolol	04	06.45
Amlodipine	03	04.84
Telmisartan	03	04.84
Losartan	01	01.61
Hypolipidemic agents		
Atorvastatin	47	75.81
Ionotropes		
Digoxin	08	12.90
Dopamine	02	03.23
Antiplatelets		
Aspirin	07	11.29
Clopidogrel	02	03.23
Aspirin+ Clopidogrel	46	74.19
Anticoagulants		
Unfractionated Heparin	26	41.94
Diuretics		
Furosemide	16	25.81
Furosemide+Spironolactone	06	09.68
Antiarrhythmics		
Amiodarone	03	04.84
Diltiazem	02	03.23
Thrombolytic agents		
Streptokinase	01	01.61

Non cardiological drugs usage was also recorded and analysed. (Table 2).

Table 2: Different categories of drugs prescribed for comorbid conditions among indoor coronary artery disease patients.

Class of Drug	No of Prescriptions	Prescription rate (%)
Antidiabetic Drugs		
Regular Insulin	06	09.68
Metformin	07	11.29
Glibenclamide	04	06.45
Glimepiride	02	03.23
Antimicrobial agents		
Amoxicillin+Clavulanic acid	20	32.26
Ceftriaxone	09	14.52
Cefotaxime	02	03.23
Ciprofloxacin	02	03.23
Antitumor/ antiemetic agents		
Ranitidine	40	64.52
Ondansetron	04	06.45

Pantoprazole	03	04.84
Bronchodilators		
Theophylline	19	30.65
Salbutamol	02	03.23
Nebulization	22	35.48
Corticosteroids		
Hydrocortisone	06	09.68
Dexamethasone	04	06.45
Multivitamins	06	09.68

The average number of drugs per prescription was 7.5 (Table 3).

Table 3: Details of Prescriptions of indoor coronary artery disease patients expressed in Numbers (percentage).

Details of prescriptions	Number
Total no. of patient's prescriptions analysed	62
Total number of drugs prescribed	465
Average number of drugs per prescription	7.5

Discussion:

In the present study it was found that coronary artery diseases were most common in the age group of 56-65 years (40.32%) followed by 46-55 years (19.35%) and 66-75 years age group (16.13%). These results are in concordance with the study by Dawalji S et al, in which most of the patients diagnosed with coronary artery disease were of the age group of 46-66 years (72.36%).^[11]

In the present study, prevalence of CAD was higher in females (58.06%) than males (41.94%), which was variant from previous studies by Battu R et al^[12] and Swathi M et al^[13] where males had higher prevalence than females. This may be explained as cardiovascular disease risk factors become more prevalent in post menopause women^[14], as the mean age of women in the study was found to be 59 years. Inflammation, obesity, Type 2 DM and metabolic syndrome appear to play more prominent roles in the development of CVDs in women than men.^[15]

In the present study Hypertension (45.16%) and diabetes mellitus (20.97%) were the two most common comorbid conditions found in the present study which is in concordance with the previous study by Raj kumarvenetty et al, which increases the risk of coronary artery disease.^[16]

In the present study, Isosorbide dinitrate (67.74%) was the most commonly prescribed antianginal agent for prophylaxis and relief of ischemia among coronary artery disease patients. The results are in concordance with a previous study by Battu R et al.^[12]

In the present study, Atorvastatin was the most commonly prescribed hypolipidaemic drug (75.81%). Similar results were found in Battu R et al study, Atorvastatin is prescribed in 81 prescriptions out of 99 prescriptions.^[12] It decreases blood LDL cholesterol level effectively with increasing the HDL level. It also reduces the risk of coronary heart diseases, myocardial infarction and stroke effectively with fewer side effects.^[17]

In a study conducted by Tasneem Sandozi and Fouzia Nausheen the drug utilization of various antiplatelet drugs were as aspirin alone (25.71%), aspirin & clopidogrel (60.00%)^[18] Whereas in the present study, the prescription rate of Aspirin alone was 11.29% and combination of aspirin & clopidogrel (74.19%) was found most common because aspirin and clopidogrel combination is synergistic in preventing ischemic episodes and reduces cardiovascular mortality, nonfatal MI and stroke.^[19]

In the present study, the commonly prescribed anticoagulant is unfractionated heparin (41.94%). Similar results were found in Dawalji S et al study in which 40% patients were prescribed unfractionated heparin.^[11]

In the present study, the use of antihypertensives was as follows calcium channel blockers (45.16%), Beta blockers (27.42%), Angiotensin receptor blockers (6.45%). ACEIs and ARBS are the most preferred drugs because of their cardio-protective and renoprotective effects.^[20] But in the present study both drugs were prescribed in few number of patients, reason could be lack of regular

supply of these class of drugs in the remote government tertiary care hospital.

The non cardiological drugs prescribed to treat associated medical conditions were antidiabetic drugs, antimicrobial agents, antiulcer agents, bronchodilators, corticosteroids and multivitamins as per the need.

In the present study, the average number of drugs per prescription was 7.5 which was in concordance with the previous study by Battu R et al¹² Polypharmacy may be justified as this was a tertiary care hospital where the majority of patients were hospitalized with co-morbidities.

Conclusion:

The present study concludes, that most of the drugs were prescribed rationally according to the current treatment guidelines in indoor patients of coronary artery disease. In this study, it was observed that the risk for coronary artery disease increased with increasing age. The prescribing pattern can be improved by reducing the number of drugs per prescription. Despite the limitations, as it was a small sample size study conducted in a single centre, it was our sincere efforts to provide insight into the prescription pattern of indoor coronary artery disease patients in a government tertiary care hospital. Studies on drug prescribing pattern definitely help the physician to improve the prescribing patterns and efficient management delays the progression of disease and improves the quality of life. Further studies from time to time are required in drug prescription pattern and standard treatment guidelines should be circulated among practicing physicians to encourage rational prescription.

References:

1. Indrayan A. Forecasting cardiovascular disease cases and associated mortality in India. National Commission for Macroeconomics and Health, Government of India: New Delhi 2004.
2. Ajay SV, Prabhakaran D. Coronary Heart Disease in India. Implications of the INTERHEART study. Indian Journal of Medical Research. 2010; 132: 561-566.
3. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, McQueen M, Budaj A, Pais P, Varigos J and Lisheng L. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (The Interheart Study): case-control study. The Lancet. 364, 2004, 937-952.
4. Allender S, Peto V, Scarborough P, Boxer A and Rayner M. Coronary Heart Disease Statistics. London: Br. Heart Found. 2007.
5. Bela Shah and Prashant Mathur. Surveillance of cardiovascular disease risk factors in India: The need and scope. Ind. J. Med. Res. 132, 2010, 634-642.
6. Pharmacy communication In Hassan WE editor Hospital Pharmacy Lea and febiger, Philldelpia, 5th edition 1985; 154-1594.
7. The rational use of drugs: report of the conference of experts. Nairobi, 25-29 November 1985. Geneva, world health organization, 1987.
8. Ramsay LE. Bridging the gap between clinical pharmacology and rational drug prescribing. Br J Clin Pharmacol. 35, 1993, 575-576.
9. Vries MD, Heluling RH, Hogerzeil HV, Freste DA. Guide to good prescribing. A practical guide W.H.O. 1994.
10. Patil SB, Raikar SR, Patil S, Raikar DR. Prescription pattern of cardiovascular drugs in intensive cardiac care unit patients in a tertiary care hospital. Int J Basic Clin Pharmacol 2015; 4: 1100-3.
11. Dawalji S, Venkateshwarlu K, Thota S, Venisetty P, Venisetty R. Prescribing Pattern in Coronary Artery Disease: A Prospective Study. International Journal of Pharma Research & Review, March 2014; 3(3):24-33
12. Battu Rakesh, Dr. B. S. Suresha, Jaladi Himaja, Emilda. T. Joy. Assessment of prescribing pattern in coronary artery disease. Int J of Allied Med Sci and Clin Res 2016; 4(4): 698-715.
13. Swathi M. , Akhilendran R., Hima M , Fahida F , Veena V and Pradeep P ANALYSIS OF DRUG PRESCRIBING PATTERN AND SOCIODEMOGRAPHIC BACKGROUND IN PATIENTS WITH CORONARY ARTERY DISEASE IN A TERTIARY CARE HOSPITAL. EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH 2016, 3(11), 352-358
14. Ghosh A, Bhagat M. Anthropometric and body composition characteristics in pre- and postmenopausal Asian Indian women: Santiniketan women study. AnthropolAnz 2010; 68:1-10
15. Loscalzo J. Approach to the patient with possible cardiovascular Disease. In Lango DL, Harrison's Principles of Internal Medicine, 18th edition. New York, McGraw Hill; 2012:1817-20.
16. V Kumar, D Sruthi, prescribing pattern of coronary artery disease, international Journal of pharma research, 2014; 5: 120-23.
17. Muhit MA, Rahman MO, Raihan SZ, Asaduzzaman M, Akbar MA, Sharmin N et al. Cardiovascular disease prevalence and prescription patterns at a tertiary level hospital in Bangladesh. Journal of Applied Pharmaceutical Science 02; 2012: 80-84.
18. Tasneem S, Fouzia N. Drug utilization study in ischemic heart diseases associated with diabetes and hypertension. Int J Pharm Bio Sci. 2010; 1(3):1-4.
19. Tripathi KD. Drug affecting coagulation, bleeding and thrombosis. In: Tripathi KD, editor. Text Book of Essentials of Medical Pharmacology. 7th Edition, New Delhi, Jaypee Brother Medical Publication; 2013: 613-633.
20. Datta S, Udupa AL. Antihypertensive drug use in patients having comorbid diabetes: Cross sectional prescription pattern study in a tertiary care hospital. Asian Journal of pharmaceutical and clinical research 2010; 3; 43-45.