



A CROSS-SECTIONAL OBSERVATIONAL STUDY ON DRUGS USED IN CARDIOVASCULAR DISEASE AT TERTIARY CARE HOSPITAL, NAGAPATTINAM, TAMILNADU, INDIA

Lakshmi Sabapathi Sundaram^{*1}, Siddhi Ayesha Begam Halikul Zaman² and Zuhaina Afrin Sheik Allaudeen²

¹Pharm. D. (Assistant Professor), Department of Pharmacy Practice, E.G.S. Pillay College of Pharmacy, Nagapattinam-611002, Tamilnadu.

²Pharm D. Internship, Department of Pharmacy Practice, E.G.S. Pillay College of Pharmacy, Nagapattinam, 611002, Tamilnadu.



***Corresponding Author: Lakshmi Sabapathi Sundaram**

Pharm. D. (Assistant Professor), Department of Pharmacy Practice, E.G.S. Pillay College of Pharmacy, Nagapattinam-611002, Tamilnadu.

Article Received on 17/10/2023

Article Revised on 06/11/2023

Article Accepted on 27/11/2023

ABSTRACT

Background: Drug utilisation evaluation of cardiovascular diseases helps to promote the prescribing pattern in disease management which improves the patient's quality of life. The basis for assessment of cardiovascular disease management is reliable on the demographic study of cardiovascular diseases and drug utilization in a population. **Objective:** To study the prescribing pattern of cardiovascular drugs and to evaluate the type of therapy used in cardiovascular patients. **Materials and Methods:** An observation study, conducted in a government medical college hospital in Nagapattinam for six months (April to September 2022). Patient demographic details, types of cardiovascular disease, other associated medical conditions, types of cardiovascular disease drugs used in 160 patients were described. **Results:** Among 160 patients, male patients are more affected by cardiovascular risk when compared to female patients. ST elevated Myocardial Infarction (28.75%) was the commonest type among the study population of cardiovascular disease patients. The most frequently occurring comorbidity illness was Diabetes Mellitus (33.1%), Hypertension (38.7%), Hyperlipidaemia (25.6%), obese (2.5%). **Conclusion:** Our study suggests lifestyle modifications for preventing various cardiovascular diseases including control of high blood pressure, Diabetes Mellitus, hyperlipidaemia and obesity. Better management of risk factors has a major effect on the recovery of cardiovascular patients with improved quality of life and symptoms.

KEYWORDS: cardiovascular disease, hypertension, hyperlipidaemia, diabetes mellitus, Myocardial infarction, prescription pattern, drug utilization evaluation, disease management.

INTRODUCTION

Cardiovascular diseases are a group of disorders of the heart, blood vessels, blood clots and structural problems. They include coronary artery disease, acute coronary syndrome, angina (stable and unstable), myocardial infarction (STEMI, NSTEMI), atherosclerosis, arrhythmias, cardiogenic shock, congestive cardiac failure. Important modifiable risk factors for CVD such as hypertension, diabetes, hyperlipidaemia, tobacco use, physical inactivity, obesity, diet high in sodium, sugar and fat, overuse of alcohol and smoking are associated with increased prevalence of CAD in Indians. Non-modifiable risk factors are age and family history. According to WHO, CVD is the leading cause of death globally. Around 17.9 million people died from CVDs in 2019, representing 32% of all global deaths. In India, as the century progresses with all the use of technology and advancement, and lack of exercise, it progresses into

CVDs, which plays the major health concern and common cause of early mortality. In drug treatment of HT and DM, high profiles are necessary to reduce CVD risk. Various classes of drugs are available for CVD such as beta-blockers, calcium channel blockers, vasodilators, diuretics, ACE inhibitors, Angiotensin receptor blockers, lipid lowering agents and antiplatelet. The knowledge of prescription pattern can help to measure, monitor, evaluate and improve therapy. Pharmacists play an important role in addressing many issues that might arise within and during the entire period of therapy and to provide the best quality use of medicine.

METHODOLOGY

It was an observation study, conducted in a government medical college hospital, Nagapattinam. Study duration: six months from April to September 2022.

Study requirement procedure

1) Inclusion criteria

Patients of both genders and age groups from 20-90 were diagnosed by the physician as having cardiovascular disease with comorbid conditions.

2) Exclusion criteria

Pregnant and breastfeeding women were excluded.

RESULT

Table 1: Age Wise Distribution of Cvd Patients.

Sr.No	Age (in years)	No. of cases	Percentage
1.	21-30	02	1.25%
2.	31-40	08	5%
3.	41-50	32	20%
4.	51-60	46	28.75%
5.	61-70	48	30%
6.	71-80	14	8.75%
7.	81-90	10	6.25%

(table 1), most of the patients diagnosed with cardiovascular disease were of the age group of 61-70years and 51-60years followed by 41-50years. The risk for the occurrence of heart disease increases with age accordingly.

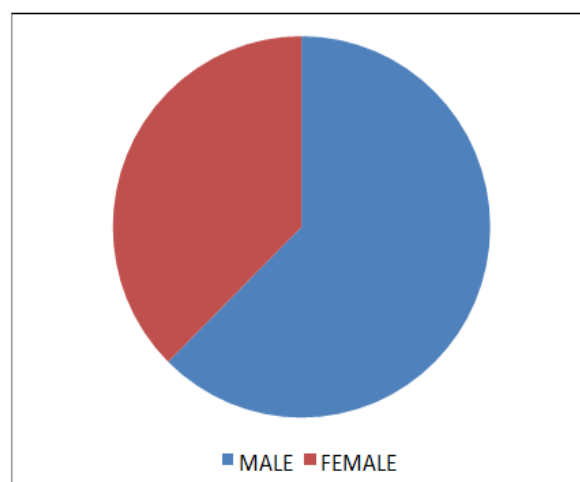


Figure 1: Gender Wise Distribution of Cardiovascular Patients.

In Fig.1, GENDER WISE DISTRIBUTION: Out of 160 cases taken, male patients are more affected by cardiovascular risk when compared to female patients.

Table 2: Pattern of Medical Conditions Among Cardiovascular Disease Patients (N=160).

Sr.No	Medical conditions	No.of cases	Percentage
1.	Coronary artery disease	40	25%
2.	Acute coronary syndrome	10	6.25%
3.	STEMI (AWMI,IWMI)	46	28.75%
4.	NSTEMI	4	2.5%
5.	Unstable angina	14	8.75%
6.	Congestive cardiac failure	12	7.5%
7.	Cardiogenic shock	12	7.5%
	Old CVD		
8.	Atherosclerosis	6	3.75%
9.	Cardiomyopathy	4	2.5%
10.	Arrhythmia	12	7.5%

In (table 2), Maximum cases were of STEMI (28.75%) which was followed by coronary artery disease (25%).

Table 3: Major Comorbid Conditions Among Cardiovascular Patients (n=160).

Sr.No	Major comorbidities	No. of cases	Percentage
1.	Hyperlipidaemia	41	25.6%
2.	Diabetes mellitus	53	33.1%
3.	Hypertension	62	38.7%
4.	Obese	04	2.5%

In (table 3), major associated medical conditions were hypertension (38.7%) which was followed by diabetes mellitus (33.3%).

Table 4: Drug Utilization Trends Among Various Therapeutic Classes For Cardiovascular Conditions.

Category of cardiovascular drugs	Most frequently prescribed drugs	Percentage
Antihypertensive agents		
Beta blockers	Metoprolol, atenolol, carvedilol, bisoprolol	76.2%
ACE inhibitors	Enalapril	70%
Calcium channel blockers	Amlodipine, nifedipine, verapamil	52.5%
Antianginal	Isosorbide dinitrate, nitroglycerin	46.2%

Antiarrhythmic drugs	Amiodarone	7.5%
Statins	Atorvastatin, rosuvastatin	48.7%
Peripheral vasodilators	Sodium nitroprusside	1.25%
Diuretics	Furosemide, spironolactone	65%
Inotropic drugs	Norepinephrine, morphine, dopamine, dobutamine, adrenaline	27.5%
Other CVD drugs	Ivabradine	1.25%
Antiplatelet	Aspirin, clopidogrel, ecospirin	98%
Anticoagulant	Heparin, LMWH, vitamin K, Enoxaparin, tranexamic acid	86.2%
Thrombolytic agents	Streptokinase, alteplase	23.7%

The drugs were prescribed by physicians, which belongs to different pharmacological therapeutic class. We have categorized all the drugs prescribed to the patients into different groups.

Prescribing trends are the major concern for cardiovascular conditions. In the present study patients most of the patients got advice to take antiplatelet (98%) and anticoagulant (86.2%). Various antihypertensive drugs were prescribed to the patients, such as beta blockers (76.2%), ACE inhibitors (70%), calcium channel blockers (52.5%), while diuretics, statins and antianginal were prescribed at 65%, 48.7% and 46.2% respectively. The most frequently prescribed antiplatelet drugs were aspirin and clopidogrel, anti-coagulants like heparin, beta blockers like metoprolol, anti-anginal like isosorbide dinitrate, statins such as atorvastatin and diuretics such as furosemide. Co-morbid conditions like hypertension, diabetes mellitus, hyperlipidaemia and obesity were also observed among cardiovascular patients. Hypertension (38.7%) and Diabetes mellitus (33.1) were the most common co-morbid conditions found in most of the patients, which increased the risk of cardiovascular disease morbidity and mortality. (table.3).

DISCUSSION

A total of 180 patient data was collected and analyzed during the six-month study period. The present study showed that the predominance of males (62.5%) with early onset of cardiovascular disease compared to females (37.5%) was variant from the compared study by Pravin S. Rathod, where females (56.64%) had a higher prevalence of cardiovascular diseases than males (43.36%).

The study usually showed major cardiovascular patients between 56-65 years (40.71%) followed by 66-75 years (21.24%). These results are in concordance with the study by S. Anandhkumar. They observed that the maximum number of patients (49%) were in the age group of 61-70 years followed by 46% in the age group of 51-60yrs. This correlates with many studies which show an increased risk of cardiovascular disease with increasing age.

According to the study, STEMI (28.75%) and CORONARY ARTERY DISEASE (25%) were the most

common medical conditions. Similar results were noted in the study conducted by Mary Ransom, where myocardial infarct (31.08%) followed by hypertension (46.62) were the most common CVDs.

In the present study, Hypertension (38.7%) and Diabetes mellitus (33.1%) were the two most common comorbid conditions found in the present study, followed by hyperlipidemia (25.6%) which is in accordance with the study conducted by Blessy Rachel Thomas in which Hypertension (28.8%) and Diabetes mellitus (23.80%) were most common comorbid condition which increase the cardiovascular disease.

According to a study conducted based on treatment strategy, the most commonly prescribed drug is antiplatelet drugs (98%), followed by beta blockers (76.2%) which was in accordance with the study done by Nilay Solanki in which, most commonly prescribed drugs were antiplatelet (aspirin-16.2%) followed by beta blockers (Metoprolol-69.5).

In our study, the most commonly given statin was atorvastatin (6.02%) followed by rosuvastatin (0.15%). These results are in concordance with the study conducted by Gebre Teklemariam Demoz where the most commonly prescribed drugs for hyperlipidemic condition among the cardiovascular patients were statins (55.7%) among which simvastatin followed by Atorvastatin and rosuvastatin were given commonly.

In our study, human insulin (1.5%) was the most hypoglycemic agent used for diabetic mellitus among cardiovascular patients and oral hypoglycemic used was Metformin (3.17%) followed by Glybenclamide (1.42%) which was in accordance with the study conducted by Akanksha Mehra and Nusrat K. Bhat in which insulin (18%) was most common prescribed hypoglycemic agent among the cardiovascular patients and oral hypoglycemic used were Metformin (5.5%) followed by Glimepiride (4.5%). In our study, dual antiplatelet drug combinations were given in 6.02% of patients, out of which aspirin alone (6.02%), a combination of aspirin and clopidogrel (6.02%), and clopidogrel alone (6.34%). In a study conducted by Shruthi Dawalji and Venkateshwarlu K various antiplatelet drugs prescribed were aspirin alone (5.92%), a combination of aspirin and clopidogrel (91.76%), clopidogrel alone (1.78%). This is

also similar to other studies conducted by Md. Abdul Muhit in which atorvastatin (75.4%) was the most commonly prescribed lipid lowering agent, followed by rosuvastatin (19.62%) and simvastatin (4.97%). In our study conducted, pharmacologically induced weight loss was not introduced. Only lifestyle modification and physical activity are advised to improve the risk factors of cardiovascular disease. Whereas when compared to the other studies, it showed the currently approved drugs for treatment of obesity were sibutramine and orlistat. Rimobant also produces similar degrees of weight loss and weight maintenance. Weight loss surgery is optional but the most effective therapy available for people who are extremely obese, which also helps to eliminate major cardiovascular risk factors.

Other findings also suggest that even moderate weight loss with lifestyle interventions can improve risk factors for cardiovascular disease in overweight and obese subjects.

CONCLUSION

In an attempt to study the prescribing trends in cardiovascular patients and associated comorbidities. We can conclude that the drug therapy management in the cardiac care unit of Nagapattinam Government hospital was well established. Most patients have multiple diseases, so drug administration is mandatory to keep the patients alive. This multiple therapy causes minor to moderate drug interaction and toxicity definitely, but it can be managed by providing low and necessary doses to avoid life-threatening adverse reactions, drug interactions and toxicity to the patients. Better patient care services in CCU. In our study, the most common age group affected were 61-70 years. The study was carried out on 160 patients, including males (n=100) and females (n=60). According to the study, most people in Nagapattinam are affected with STEMI (AWMI, IWMI), coronary artery disease, unstable angina. In our study the most commonly occurred comorbid condition was diabetes mellitus, hypertension, hyperlipidaemia, obese. The risk of cardiovascular diseases increases with increased blood pressure, increased blood glucose levels and increased lipidemic profile. The most commonly prescribed category of drugs for the cardiac diseases include antiplatelet drugs (aspirin and clopidogrel) and antihypertensive drugs (Metoprolol, Enalapril and Atorvastatin). The study shows that cardiovascular disease patients with more comorbid conditions were mostly presented with longer duration of hospitalization.

ACKNOWLEDGEMENT

It is our privilege to express our heartfelt thanks to Dr. D.Babu Anandh, Principal, and Dr.M. Murugan; Dr. K. Shahul Hameed Maraicar, Director; and Professors E.G.S. Pillay College of Pharmacy, Nagapattinam, Tamil Nadu, India.

CONFLICT OF AUTHORS: The authors declare no conflict of interest.

SOURCE OF FUNDING: None.

REFERENCE

1. S. Anandkumar, Abila T. Babu, Ancy George, Anitta Varghese, Athira S.Kumar, et al. Prescription Pattern of Cardiovascular Disorders in Type II DM Patients in a Tertiary Care Hospital. International Journal of Innovative Science and Research Technology. ISSN No :- 2456-2165, March-2019.
2. Pravin S. Rathod et al. Prescription pattern in indoor patients of cardiovascular diseases: a descriptive study in a tertiary care hospital attached to a government medical college. International Journal of Basic & Clinical Pharmacology, Apr, 2016; 5(2): 491-495. Online ISSN:2279_0780.
3. Mary Ransam et al. A STUDY ON DRUG UTILISATION REVIEW OF CARDIOVASCULAR DISEASES. Acta Biomedica Scientia, 2017; 4(2): 97-105. e – ISSN – 2348 – 2168.
4. Blessy, et al.: Prescribing Pattern of Cardiovascular Drugs – A Prospective Observation Study. Indian Journal of Pharmacy Practice, Oct-Dec, 2017; 10(4).
5. Nilay Solanki, et al. Prescribing Trends in Cardiovascular Conditions: A Prospective Cross-Sectional Study. Journal of Basic and Clinical Pharmacy, Feb-March, 2019; 10(2).
6. Md. Abdul Muhit, et al. Cardiovascular disease prevalence and prescription patterns at a tertiary level hospital in Bangladesh. Journal of Applied Pharmaceutical Science, 2012; 02(03): 80-84.
7. Gebre Teklemariam Demoz, et al. Prescribing pattern of statins for primary prevention of cardiovascular diseases in patients with type 2 diabetes: insights from Ethiopia. BMC Research Notes, 2019; 12: 386.
8. Antonio Perez Perez, et al. Obesity and cardiovascular disease. Public Health Nutrition, April, 2017; 10(10A): 1156-1165.
9. Raj Kumar venisetty, et al. Prescribing pattern in coronary artery disease: A prospective study. International journal of Pharma research & review, March, 2014; 3(3): 24-33. ISSN:2278-6074.
10. Akansha Mehra et al. Drug prescribing pattern in patients of myocardial infarction in a tertiary teaching hospital of North India. Internal journal of basic & clinical pharmacology, sep, 2020; 9(9): 1357-1363.