Research Study   **Medical research**

Study of Prescribing Patterns of Drugs in Coronary Artery Disease in a Tertiary Care Hospital: A Prospective and Observational Study

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ABSTRACT

Aims and objectives
The current study aims to study the prescription pattern of drugs in coronary artery disease patients in a tertiary care hospital.

Method
This is a prospective observational study conducted for six months. The study was conducted at AWAREGLENEAGLES GLOBAL HOSPITAL, L.B NAGAR. Patients who were admitted to the inpatient cardiology unit of the hospital for six months from December 2020 to May 2021 were enrolled in the study. A total of 80 patients were included in the study that fulfilled both the exclusion and inclusion criteria. The study-related data was collected from the patient care record in a specially designed patient profile form which included all the details of the patients such as demographics, prescriptions, medical records, doctor's notes, nursing notes etc.

Results
The incidence of occurrence of coronary artery disease was more in male patients who are smokers and alcohol consumers. The risk for coronary artery disease mostly belonged to the age between 51-60 years. Hypertension and type II diabetes mellitus were among the most common co-morbid conditions that were associated with the increasing incidence of coronary artery disease. The most commonly prescribed drug classes from main indications in coronary artery disease were anti-platelets 132 (16%) followed by the use of anti-hyperlipidemic drugs104 (12%), vasodilators 62 (7%), and anti-coagulants 50 (6%). Among the hyperlipidemic drugs, Rosuvastatin 58 (55.76%) was prescribed most commonly. Among the anti-coagulants used enoxaparin 32 (64%) was most commonly prescribed followed by heparin 14 (28%), acenocoumarol 4 (8%), and 64 (48.5%) patients anti-platelet clopidogrel was given.

Conclusion
The results of this study on drug prescribing patterns will give a framework for continuous prescription audits during a hospital in-patient setting. This can facilitate prescribers to improve patient management by prescribing practices. Moreover, time to time studies is needed to assess drug utilization pattern for upgrading disease treatment strategy and improving quality of life of patients.

Keywords: Coronary artery disease, Anti-platelets, Anti-coagulants, Anti-hyperlipidemic

INTRODUCTION

Coronary artery disease (CAD) is also called with other names such as coronary heart disease (CHD) or also called as ischemic heart disease (IHD) [1] or it is a heart disease that causes decreased blood flow to the muscles of the heart due to accumulation or build-up of plaque(atherosclerosis)in the arteries of the heart.[2][3][4] It is the most common cardiovascular disease. [5]

Coronary artery disease (CAD) is one of the most common causes of death and morbidity in developed as well as developing countries. In India, it is a leading cause of death, and its contribution to the death rate is rising: the number of deaths because of CAD in the year 1985 is anticipated to have doubled by the year2015. [6]

EPIDEMIOLOGY

The American Heart Association (AHA) estimates that 81,100,000 American adults have one or more types of cardiovascular disease (CVD) based on data from 2003 through 2006.It is believed that approximately 2,300 Americans die every day due to CVD, every 38 seconds 1 death takes place on an average basis. [7] There are marked variations in the epidemic of CAD among regions of the world, nations, and even between regions with in a country. [8]

The occurrence of definitive cardiovascular risk factors such as hypertension, dyslipidemia, obesity, and diabetes, varies widely from one country to another and shows some important secular trends. The major risk factors that account for causing CAD can be differentiated into both non-modifiable and modifiable risk factors. The non-modifiable risk factors include age, sex, and family history, while the modifiable risk factors include diabetes mellitus (DM), smoking, dyslipidemia, hypertension, and obesity. [9]

Aim

The current study aims to study the prescription pattern of drugs in coronary artery disease patients in a tertiary care hospital.

Objectives

To evaluate the different existing drugs used in the management of coronary artery disease.

To facilitate the rational use of drugs used in the treatment of coronary artery disease.

To determine the average number of drugs used per prescription.

Methodology

Sample size

A total of 80 patients were included in the study from the cardiology in-patient departments of Gleneagles Global Hospital.

Study period

The study was conducted for six months.

Study criteria

Inclusion Criteria:

- Patients aged between 20 years to 90years.
- Patients of either sex having a prescription of mentioned drugs.
- Patient's with and without co-morbidities.
- Patients diagnosed with CAD

Exclusion Criteria:

- Age <20 years
- Out-patients
- Pregnant patients.

RESULTS

Table1: Distribution of subjects based on alcoholics and non-alcoholics

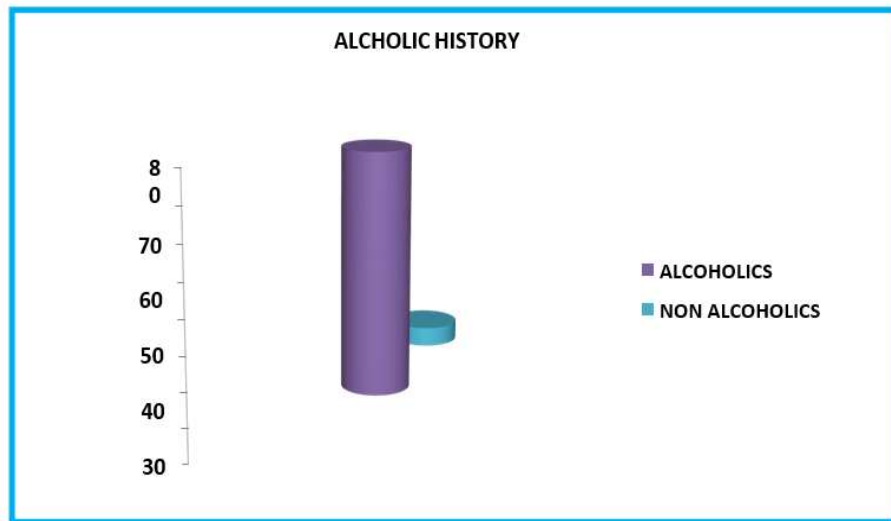| S.no	Social history of Alcoholism	No. of patients	Percentage (%)
1	Alcoholics	74	92.5
2	Non-alcoholics	6	7.5
	Total	**80**	**100**

Figure 1: Column presentation of distribution of subjects based on alcoholics and non-alcoholics
Among the study population, 74 patients were alcoholics and 6were non-alcoholics.

Table 2: Distribution of subjects based on smoking history

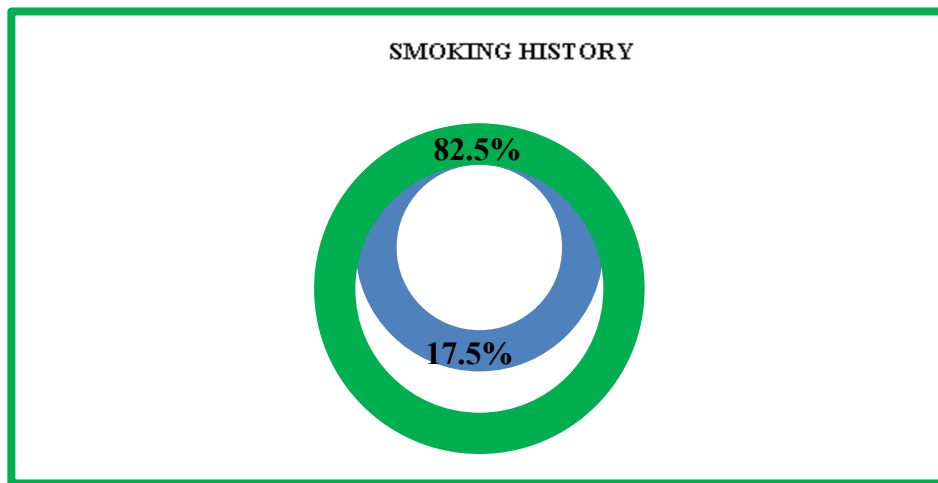| S.no	Smoking history	No. of patients	Percentage (%)
1	Smokers	66	82.5
2	Non-smokers	14	17.5
	Total	**80**	**100**

Figure2: Doughnut presentation of distribution of subjects based on smoking history
Among the study population, 66 patients were smoker's and14were non-smokers.

Table3: Distribution of subjects based upon co-morbidities in CAD

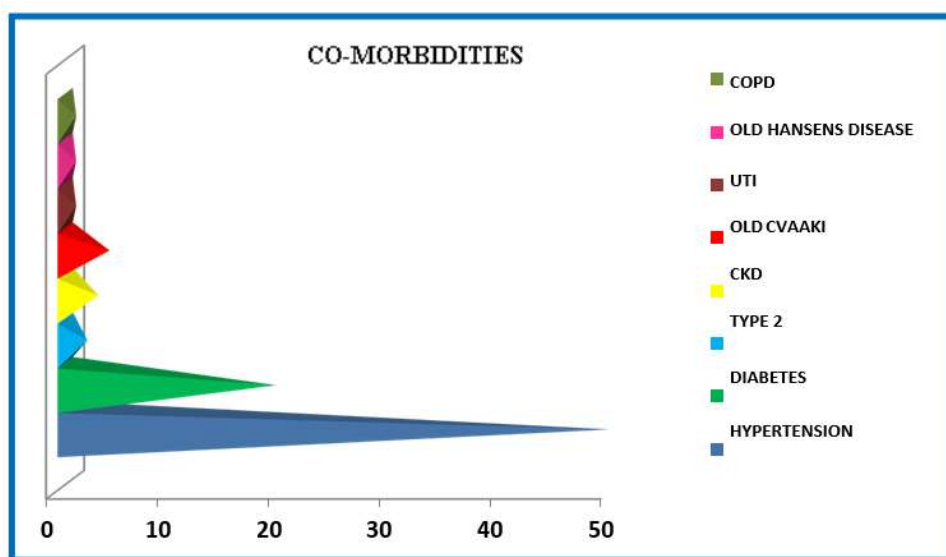| S.no	COMORBIDITY	NO. OF PATIENTS
1	Hypertension	49
2	Type 2 Diabetes	19
3	CKD	2
4	AKI	3
5	Old Cerebrovascular disease	4
6	UTI	1
7	Old Hansen's disease	1
8	COPD	1
	TOTAL	**80**

Figure3: Column graph presentation of Distribution of subjects based upon co-morbidities in CAD
Among the study population hypertension was seen in 49 patients followed by type2 diabetes mellitus in 19patients.

Table 4: Percentage of cardiovascular and other class of drugs used in CAD

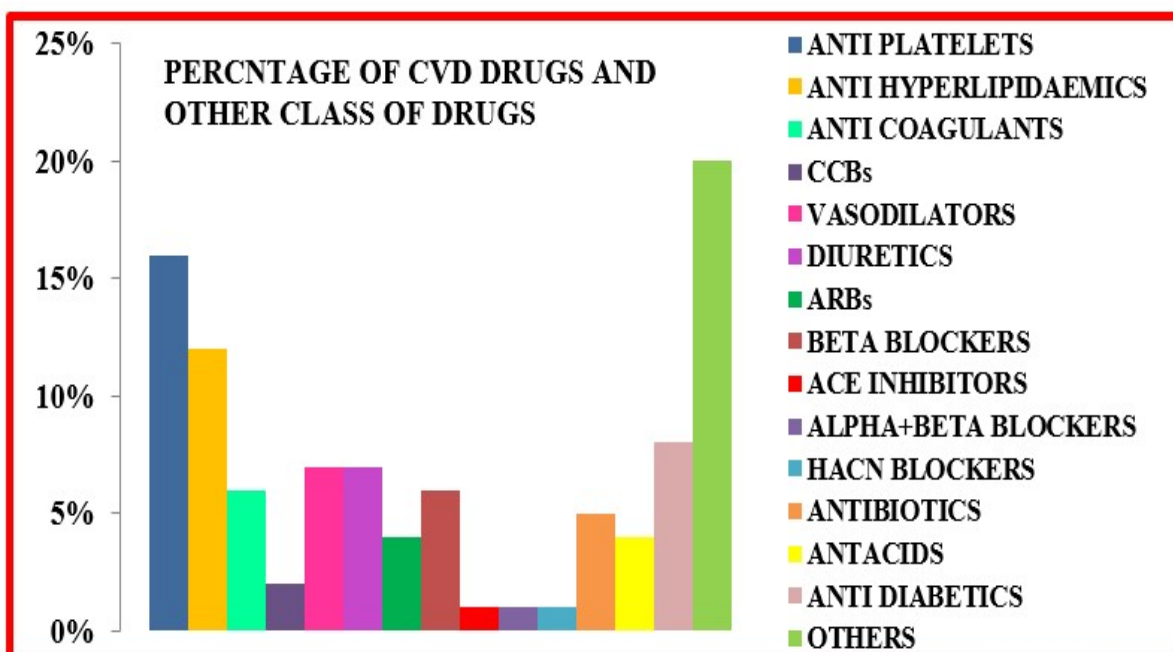| S.NO	CLASS OF THE DRUG	NO. OF DRUGS	PERCENTAGE (%)
1	Antiplatelets	132	16
2	Ant hyper lipidemic	104	12
3	Anticoagulants	50	6
4	CCBs	16	2
5	Vasodilator	62	7
6	Diuretics	62	7
7	ARBs	34	4
8	Beta blockers	46	6
9	ACE Inhibitors	6	1
10	Alpha+ beta blockers	8	1
11	HACN blockers	8	1
12	Antibiotics	40	5
13	Antacids	68	4
14	Antidiabetics	34	8
15	Others	164	20
	TOTAL	**834**	**100**

Figure 4: Bar graph presentation of percentage of cardiovascular and other class of drugs used in CAD
Among the study population the highest number of CVDs drugs used was anti-platelets 132.

DISCUSSION

In our study conducted on prescribing patterns of drugs in coronary artery disease, statins prescribed were Rosuvastatin and Atorvastatin where as in the study conducted by Jenna Johny et al (2017),the different statins that were prescribed were Atorvastatin, Rosuvastatin, Simvastatin, and Lovastatin.[10]In the recent work done by Shruti Dawalji et al (2014), it was found that the percentage of encounter of antibiotics prescribed was 92.94%,[11]where as in our study the percentage of antibiotic used was found to be 5%.In the same study carried out the commonly prescribed classes of drugs in coronary artery disease were anti-platelet drugs followed by anti-hypertensives and antibiotics, but in our study, the most commonly prescribed cardiovascular drugs for CAD were found to be anti-platelet drugs followed by the use of anti-hyperlipidemic drugs. In our current study carried out among the anti-coagulants used enoxaparin 32(64%) was most commonly prescribed followed by heparin 14 (28%), Acenocoumaril 4 (8%), and to 64 (48.5%) patients anti-platelet clopidogrel was given, whereas in the study conducted by A. Jonathan et al (2019) among the anti-coagulants Low molecular weight heparin was prescribed to 30 patients and Unfractionated heparin was prescribed to 12 patients and to 78 patients in clopidogrel was given [12]

According to the study that was conducted by Shamna C et al (2019), the prescription pattern of various drugs was found to be anti-platelet drugs2 5 (100%),anti-hyperlipidemic drugs 25 (100%),and anti-coagulants 20

(80%).[13]In our study that was carried out the drugs prescribing coronary artery disease were found to be anti-platelets 132 (16%), anti-hyperlipidemic drugs 104 (12%), and anti-coagulants 50 (6%).As per the work done by Sreelekshmi V. S et al (2020), the percentage of use of nitrates was76.6% and nicorandil was 36.2%, [14] but in the recent research conducted in our study the use of nitrates (vasodilators) was 55% and that of nicorandil was 45%.According to the study conducted by us, the most common co-morbidities found in the patients were hypertension 49, Type II Diabetes mellitus 19 followed by CVA 4, where as in the recent study conducted by Dr. Swapna Phukan et al (2019) Hypertension (68.09%) and diabetes (42.34%) were the most commonly observed associated co-morbidities. [15] In the study conducted by Dr. Pravin S. Rathod et al (2017) the most commonly prescribed drugs were Isosorbide dinitrate (67.74%), atenolol (20.97%), Atorvastatin (75.81%). [16] In our study isosorbide di nitrate accounted for 3%, metoprolol74% and atorvastatin 44.23%. As per the study conducted by Pranay Wal et al (2013) CAD was more commonly found in the age group of 65-74 years (33.34%)[17],where as in our study carried out ,the subjects belonging to the age group of 51-60years (38%)had CAD. In the recent study conducted by Battu Rakesh et al (2016) out of the total prescriptions that were analyzed male were 60 (60.6%) and females were found to be 39 (39.4%) [18], but in ours study out of all the prescriptions that were taken males were found to be 62 (77.5%) and females were found to be 18 (22.5%).

CONCLUSION

In our study conducted, we have carried out a prospective observational study in the in-patient cardiology department of Gleneagles Global Hospital. In the current study carried out, it has been observed that the incidence of occurrence of Coronary artery disease was more in male patients when compared to female patients. It was observed that the risk for coronary artery disease mostly belonged to the age between 51-60 years. It was also observed that hypertension and type II diabetes mellitus were among the most common co-morbid conditions that were associated with the increasing incidence of coronary artery disease. It was observed that the risk for coronary artery disease was mostly seen in alcoholics (92.5%) and smokers (82.5%)in comparison to non-alcoholic (7.5%) and non-smokers (17.5%).The most commonly prescribed drug classes from main indications in Coronary artery disease were anti-platelets

132 (16%) followed by the use of anti-hyperlipidemic drugs 104 (12%),vasodilators 62 (7%), and anti-coagulants 50 (6%).Among the hyperlipidemic drugs, Rosuvastatin 58 (55.76%) was prescribed most commonly followed by Atorvastatin 46 (44.23%).Among the anti-coagulants used enoxaparin 32(64%) was most commonly prescribed followed by heparin 14 (28%), Acenocoumaril 4 (8%), and 64 (48.5%) patients anti-platelet clopidogrel was given. The results of this study on drug prescribing patterns will give a framework for continuous prescription audits during a hospital in-patient setting. This can facilitate prescribers to improve patient management by prescribing practices. Moreover, time to time studies is needed to assess drug utilization pattern for upgrading disease treatment strategy and improving quality of life of patients.

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