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Drug Utilization Evaluation of Cardiovascular Drugs

Nikhat Tabassum[1]*, Saleha Sultana[1], S.Vinisha[1], Ayesha Siddiqua[1], Marwa muzaffar[1]

1. Kamineni Hospital at King Kothi, Hyderabad, A.P

ABSTRACT

For patients suffering with different types of cardiovascular diseases, the need to understand the pattern of occurrence of the disease in a population is very essential. The goal of the present study was to understand the pattern of occurrence of the various cardiovascular diseases and bring awareness about the rational use of drugs. Total 100 patients suffering with different types of cardiovascular diseases were included in present study within a time period of 6months. It was a prospective randomized study. The tools which were used throughout the study were patient information sheets (case sheets) and questionnaire. As per the data collected from the case sheets of 100 patients it can be concluded that average prevalence of cardiovascular diseases were found to be more in males than in females. Among the various CVD high prevalence was found to be of hypertension. Common age group of CVD is observed as 40 to 60 years. We have concluded that the drugs used for the treatment of cardiac disease are almost found to be rational. Rational use of drugs minimizes poly-pharmacy, drug interactions and in turn it minimizes the hospital stay. The drugs prescribed are from national list of essential medicines. The prescribing habits, route of administration, dosage forms are found to be appropriate.

Keywords: Cardiovascular disease, Drug utilization evaluation.

*Corresponding Author Email: nikhat912@gmail.com

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INTRODUCTION

A drug, broadly speaking, is any substance that, when absorbed into the body of a living organism, alters normal bodily function. In pharmacology, a drug is "a chemical substance used in the treatment, cure, prevention, or diagnosis of disease or used to otherwise enhance physical or mental well-being.[1]

Heart disease or cardiovascular disease are the class of diseases that involve the heart or blood vessels (arteries and veins). While the term technically refers to any disease that affects the cardiovascular system , it is usually used to refer to those related to atherosclerosis (arterial disease). These conditions usually have similar causes, mechanisms, and treatments.

Most countries face high and increasing rates of cardiovascular disease. In recent years, cardiovascular risk in women has been increasing and has killed more women than breast cancer. A large histological study (PDAY) showed vascular injury accumulates from adolescence, making primary prevention efforts necessary from childhood. By the time that heart problems are detected, the underlying cause (atherosclerosis) is usually quite advanced, having progressed for decades. There is therefore increased emphasis on preventing atherosclerosis by modifying risk factors, such as healthy eating, exercise and avoidance of smoking. [3]

The primary goal of drug therapy for cardiac insufficiency is to economize the work of the heart and to raise the contraction strength of the heart muscle fibers. In so doing, cardiac irregularities, from which young persons can suffer, but which are especially typical in older persons, deserve special attention. The pathological changes underlying cardiac irregularities are based on a disturbance in the formation of excitation and/or a disturbance in the conduction. At the same time the heart rate can be too high (tachycardia) too low (bradycardia) or irregular (arrhythmia)[3]

The World Health Organization (WHO) addressed drug utilization as the marketing, distribution, prescription and use of drugs in a society, considering its consequences, either medical, social, and economic. Studies on the process of drug utilization focus on the factors related to the prescribing, dispensing, administering, and taking of medication, and its associated events, covering the medical and non-medical determinants of drug utilization, the effects of drug utilization, as well as studies of how drug utilization relates to the effects of drug use, beneficial or adverse. The therapeutic practice is expected to be primarily based on evidence provided by pre marketing clinical trials, but complementary data from post marketing period are needed to provide an adequate basis for improving drug therapy.[4]

Drug utilization studies aim to evaluate factors related to the prescribing, dispensing, administering and taking of medication, and its associated events (either beneficial or adverse).

Since the early 1960's the interest in Drug Utilization Studies has been increasing, first with market-only purposes, then for evaluating the quality of medical prescription and comparing patterns of use of specific drugs. Presently drug utilization studies are an evolving area. Their scope is to evaluate the present state and future trends of drug usage, to estimate crudely disease prevalence, drug expenditures, appropriateness of prescriptions and adherence to evidence-based recommendations.[3]

Facts About Cardiovascular Diseases (CVD's)

- CVDs are the number one cause of death globally: more people die annually from CVDs than from any other cause;
- An estimated 17.5 million people died from CVDs in 2005, representing 30% of all global deaths. Of these deaths, an estimated 7.6 million were due to coronary heart disease and 5.7 million were due to stroke.
- Over 80% of CVD deaths take place in low- and middle-income countries and occur almost equally in men and women;
- By 2015, almost 20 million people will die from CVDs, mainly from heart disease and stroke. These are projected to remain the single leading causes of death.

Importance of Drug Utilization Research[17]

The principal aim of drug utilization research is to facilitate rational use of drugs in populations. For the individual patient rational use of a drug implies the prescription of a well-documented drug in an optimal dose on the right indication, with the correct information and at an affordable price. Without knowledge on how drugs are being prescribed and used, it is difficult to initiate a discussion on rational drug use and to suggest measures to change prescribing habits for the better. Information on the past performance of prescribers is the linchpin of any auditing system.

Drug utilization research in itself does not necessarily provide answers, but it contributes to rational drug use in three important ways:

A. Description of drug use patterns

B. Early signals of irrational use of drugs

C. Interventions to improve drug use – follow-up

Types of Drug use Information[17]

Different types of drug use information are required depending on the problem being evaluated. These include information about the overall drug use, or use of drug groups, individual generic compounds or specific products. Often, information about the condition being treated, about the patient and about the prescriber will be required. In addition, data on drug costs will be important

in ensuring that drugs are used efficiently and economically. These types of drug information are described below.

1. Drug based information
2. Problem or encounter-based information
3. Patient information
4.Prescriber information

This study was used to:

- To assess the prescribing habits of Cardiologists
- Ensuring that drug therapy meets current standards of care.
- Preventing medication related problems
- Evaluating the effectiveness of drug therapy.
- Identification of areas of practice that require further education of

Practitioners.

- To promote rational use of drugs.
- To minimize anticipated drug interaction.
- To minimize the hospital stay & to provide feed back.

MATERIALS AND METHODS:

In order to attain the objectives, we have approached a renowned multispecialty hospital ie., Kamineni Hospital at King Kothi, Hyderabad, A.P. to study the cases both in-patient and out-patient. First we met the Human Resources Department of the Hospital and procured proper approval of the management to study the cases.

We have visited the patients at their bed side (in-patients), have talked and interacted with them, collected their history of illness. Studied the case sheets, noted the diagnosis, laboratory tests, and drugs/medicines prescribed and noted the progress.

RESULTS AND DISCUSSION

Source of information:

A documented information was collected from the case sheets of respective wards only in the presence of deputed Physician, though the identity of patients was confidential. An I.D. number was given to each patient.

Data collection:

A total of 100 cases were studied and the analysis of forms was done accordingly.

Inclusion criteria: all adult patients of both the gender.

Exclusion criteria: pediatric patients.

Data collection form includes the following information as

1. Name of the patient
2. Age
3. Sex
4. Consultant Doctor
5. Date of Admission and Date of Discharge
6. Chief Complaints
7. Significant Test Done
8. Physical Examinations: it includes B.P ,H.R, Temperature
9. Diet
10. Diagnosis
11. Drug Interactions
12. Treatment: It includes first line treatment and second line treatment.

Concurrent review was performed during the course of treatment and involves the ongoing monitoring of drug therapy, this may involve consideration of laboratory test result (few cases) and others monitoring data than appropriate and usually does not offer immediate benefit to the patients, it differs from prospective review in that data collection does not have to occur prior to administration of first dose. This method of data collection is convenient when Pharmacist perform a daily review of medication chart as part of routine clinical use.

Patient demographic data:

Patient demographic data for 100 patients was prepared and it includes type of disease, number of patients suffering with particular disease and percentage of patients suffering with that type of disease. The patients suffering from cardiac diseases range from 23-86years.The disease occurring mostly in patients ranges between 40-60years.

Duration of hospital stay:

Duration of hospital stay for majority of patients was found to be 12-15days. Maximum hospital stay was found to be up to one month.

History of past medical illness:

History of past medical illness for majority of cardiac patients was hypertension, sweating, chest discomfort, heaviness, difficulty in breathing, palpitation.

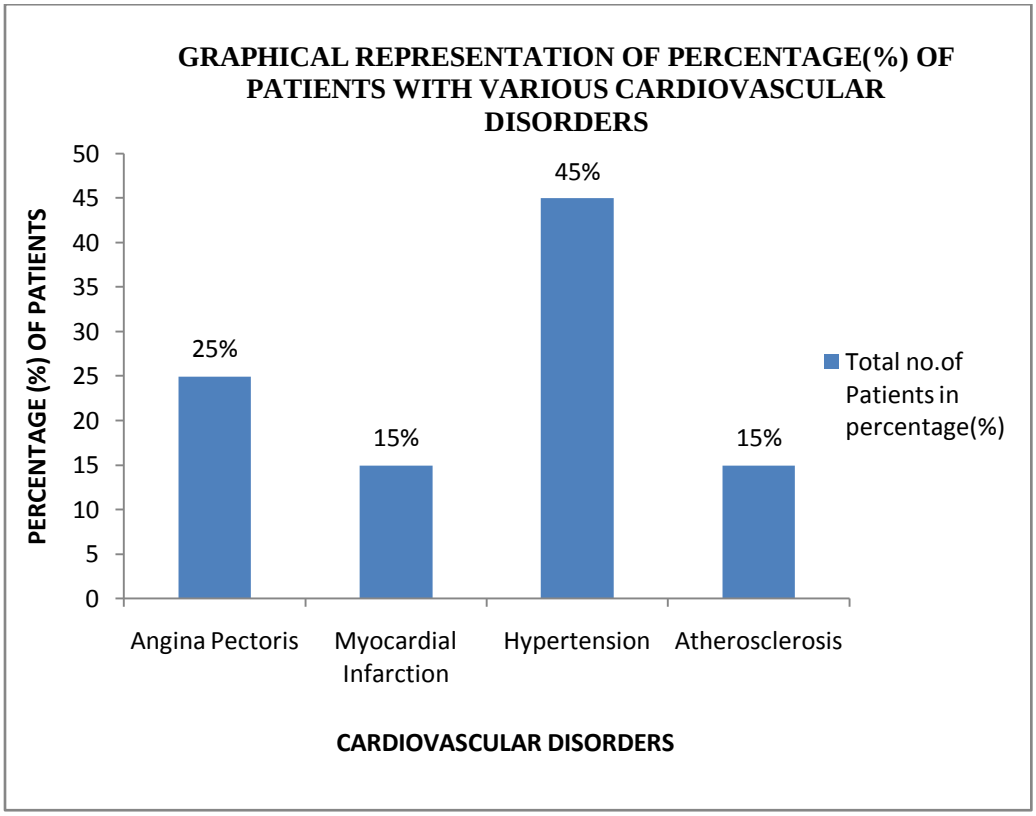

Figure I :Graphical representation of percentage of various cardiovascular disorders:

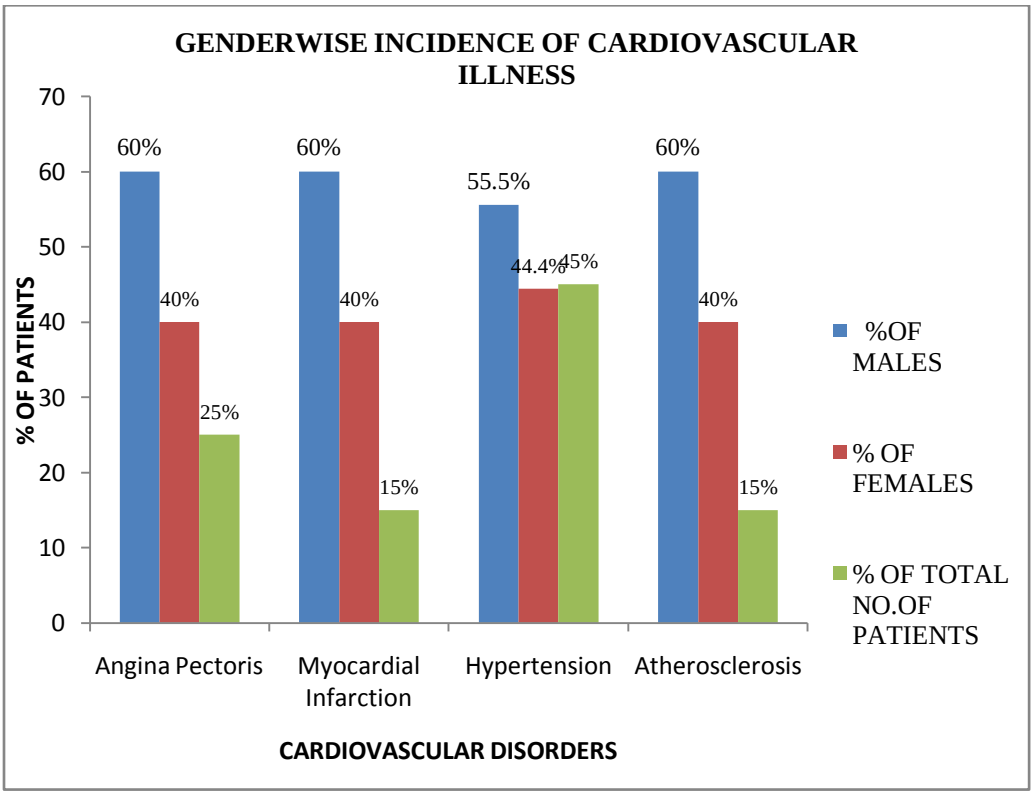

Figure II: Graphical representation of Percentage(%) of Gender wise incidence of cardiovascular illness:

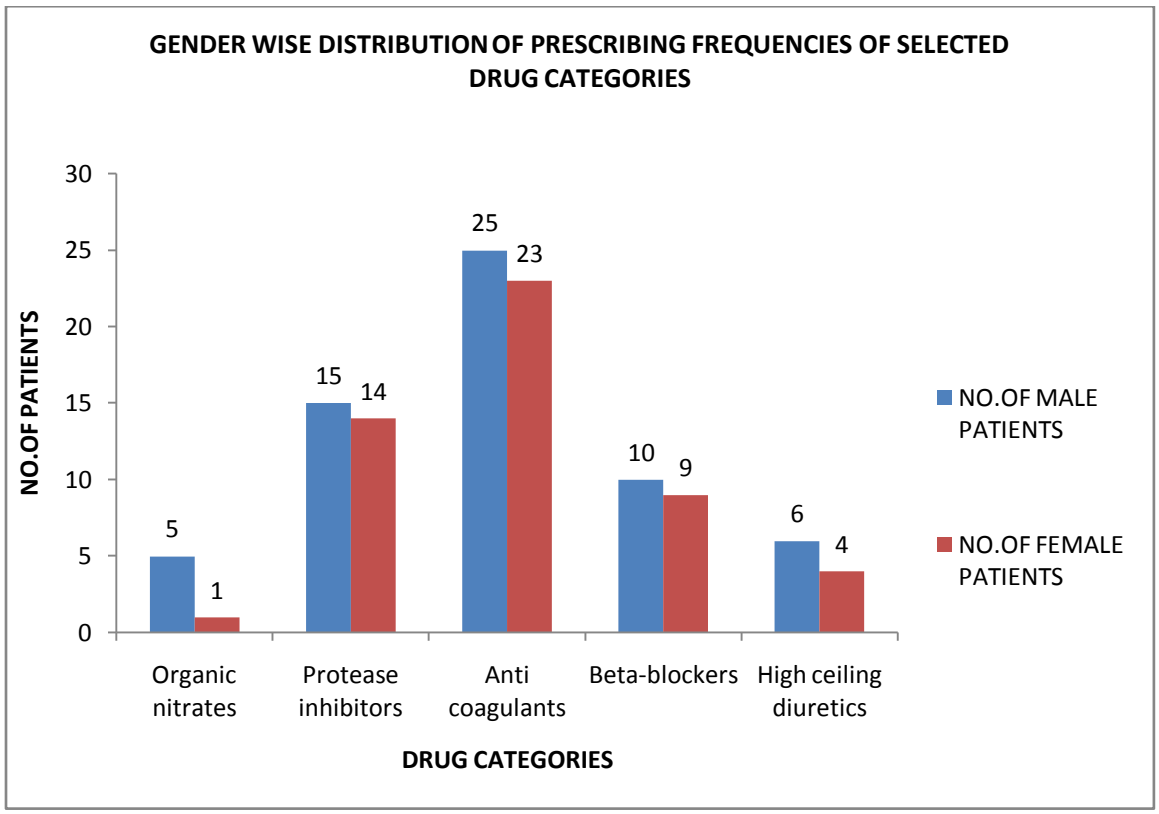

Figure III :Graphical representation of gender-wise distribution of various prescribing frequencies of selected drug categories:

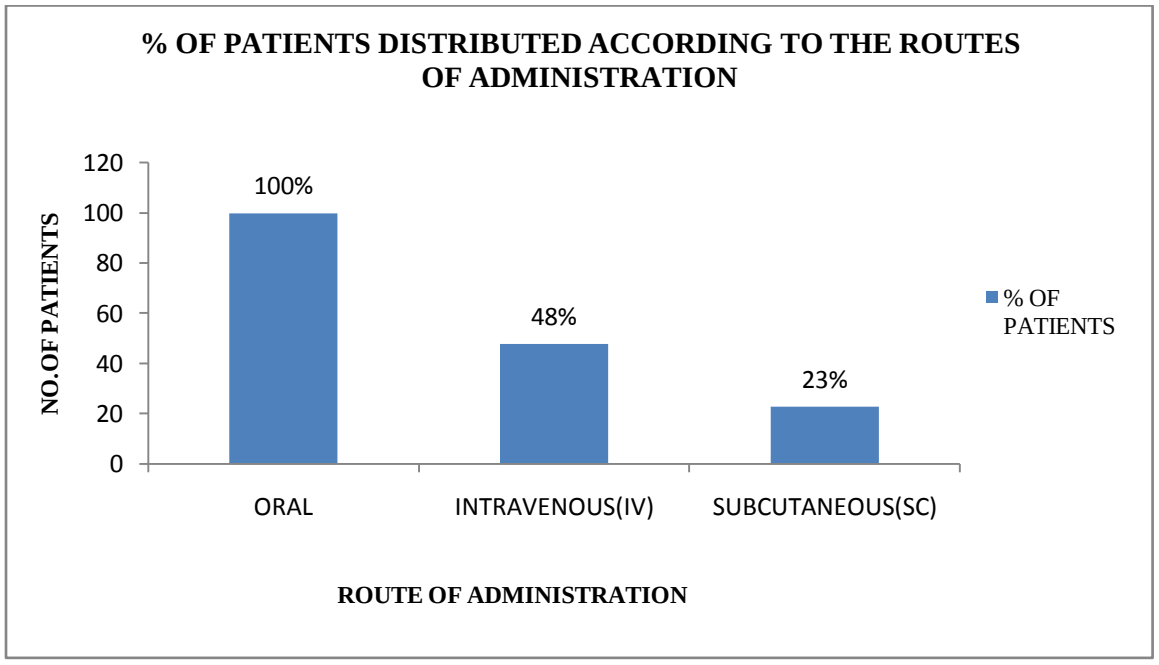

Figure IV: Percentage of Patients distributed according to the Routes of drug administration:

ANGINA PECTORIS

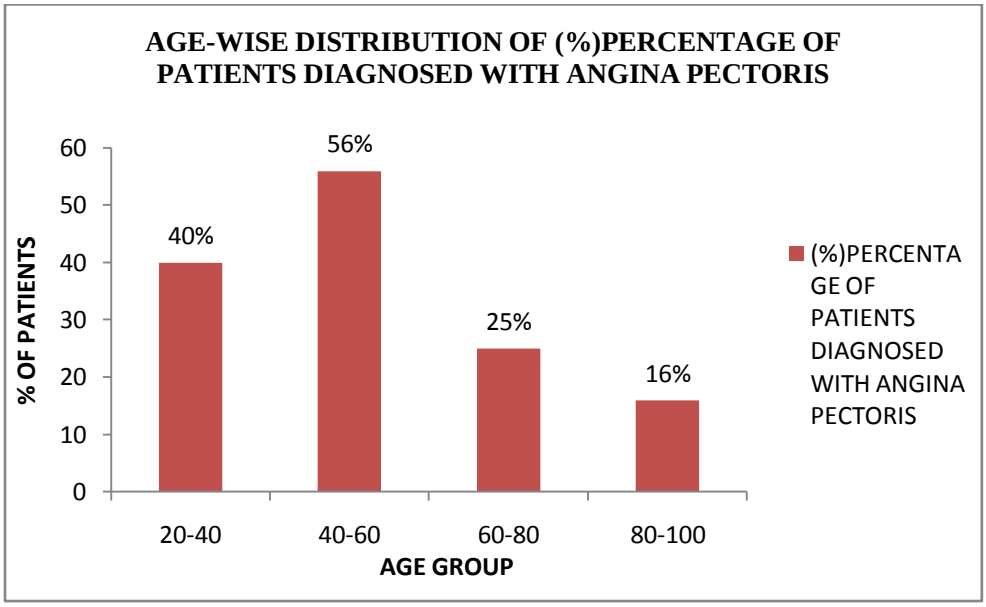

Figure V: Representation of age-wise distribution of percentage (%) of patients diagnosed with angina pectoris

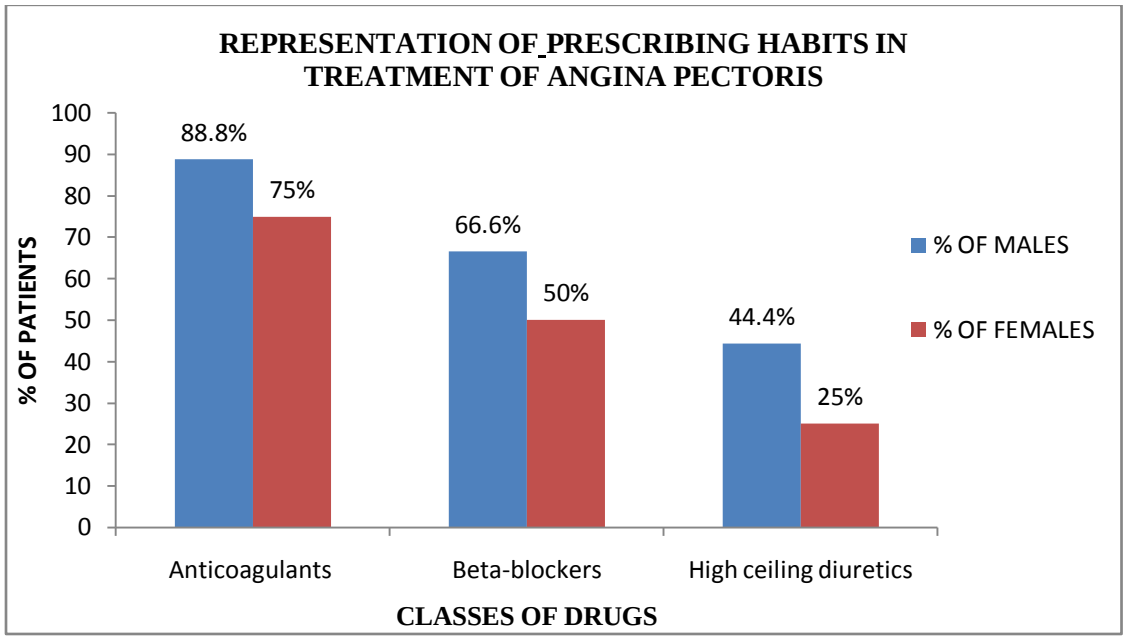

Figure VI: Representation of prescribing habits in treatment of angina pectoris:

MANAGEMENT OF ANGINA PECTORIS:

Management involves 2 steps :

1. Assessment of the severity of the problem : assessment of the severity

   Involves general checkup and routine investigations to find out any associated problem that might have precipitated or helped in the progression of coronary heart disease . Diabetes mellitus or hyperlipidemia if present have to be managed.

2. Measures to control the symptoms: Education of the patient regarding the cause of angina a mismatch between coronary blood supply and the cardiac need. Stress on the natural process of repair by the development of anastomosis of small vessel to overcome the reduced blood supply to a particular area. Patients have to learn to help themselves by avoiding stressful situations.

MYOCARDIAL INFARCTION

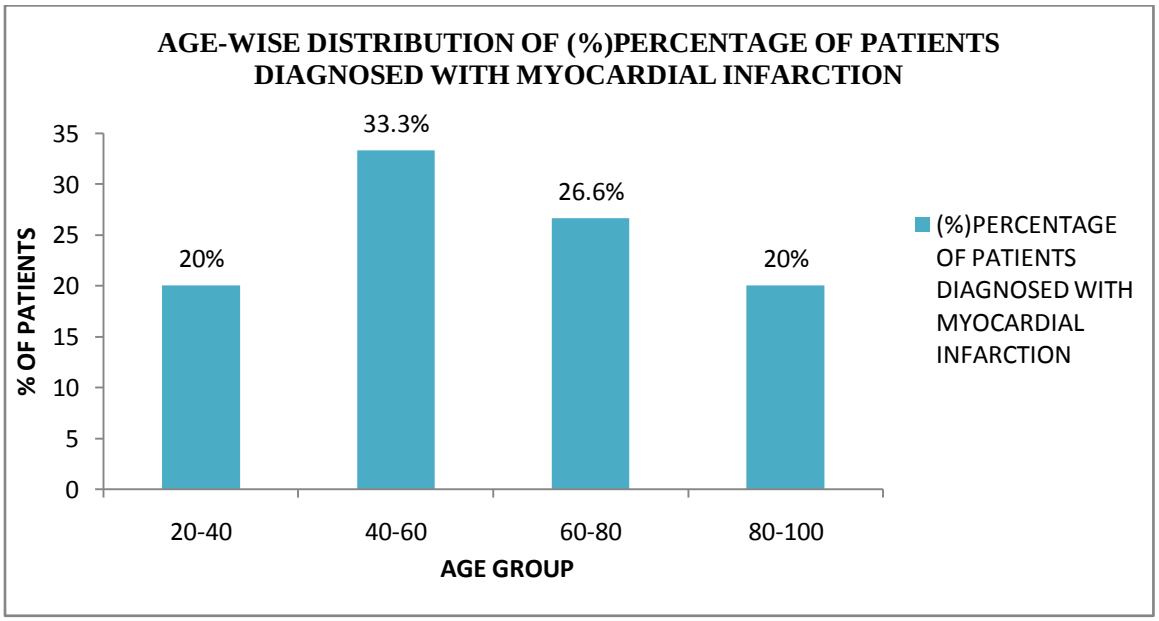

Figure VII: Representation of age-wise distribution of percentage(%) of patients diagnosed with myocardial infarction

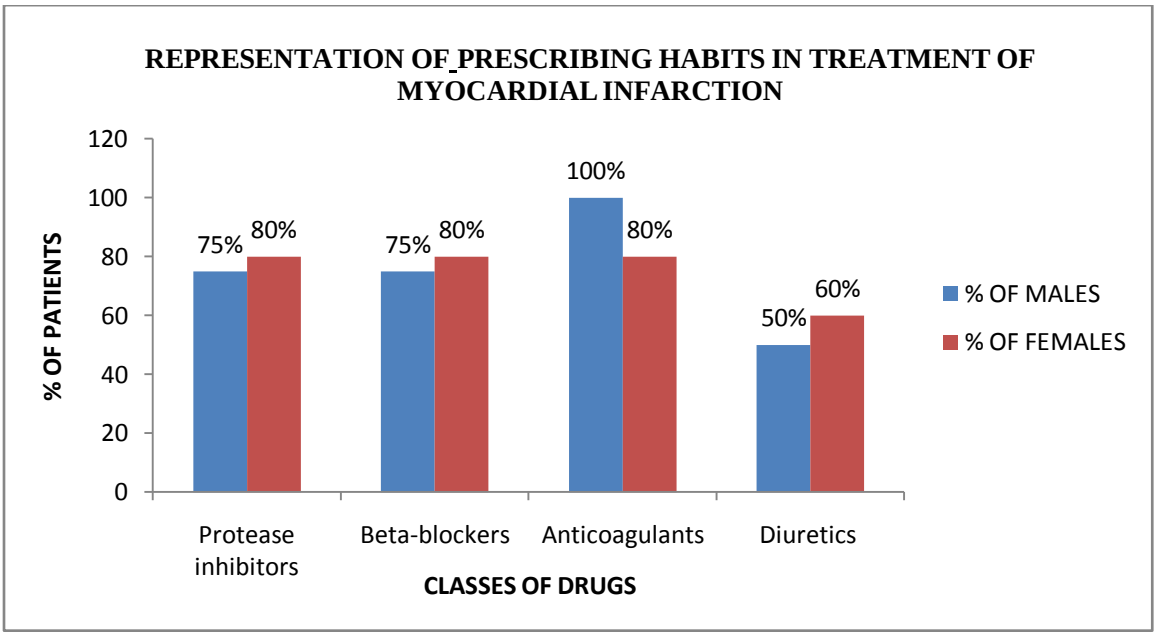

Figure VIII: Representation of prescribing habits in treatment of myocardial infarction:

MANAGEMENT OF MYOCARDIAL INFARCTION:

Myocardial infarction has the initial therapy which is directed towards restoration of perfusion as soon as possible to salvage as such as myocardium as possible. This may be accomplished through medical or mechanical means such as percutaneous coronary intervention (PCI) or coronary artery bypass grafting. The treatment management for myocardium are more effective it does as the guidelines recommended .(<90 min for PCI and < 30 min for lytics)

Treatment is based on Restoration of the balance between the oxygen supply & demand to prevent further ischemia, Pain relief, Prevention &treatment of any complications that may arise.

HYPERTENSION

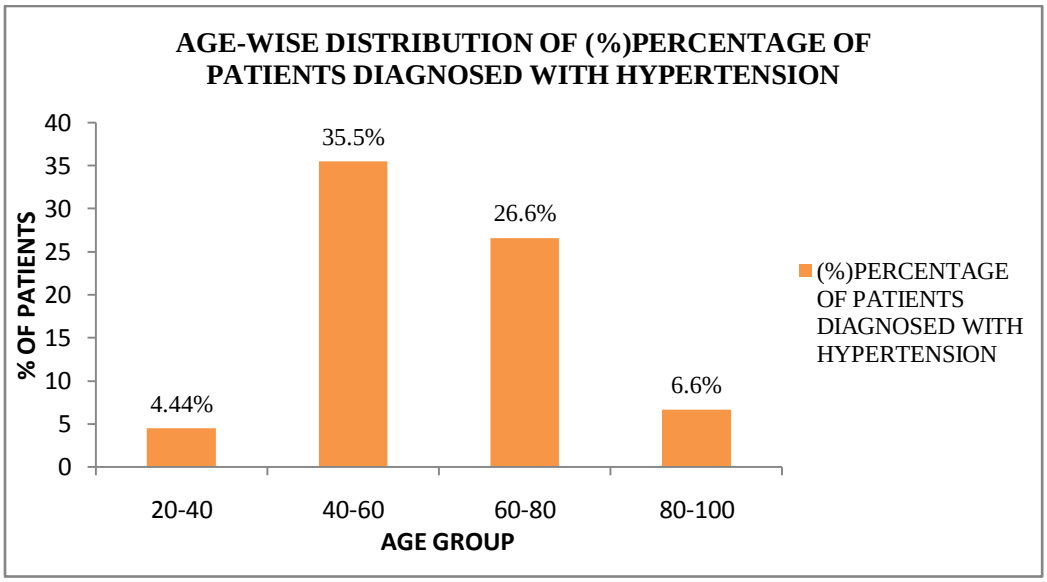

Figure IX: Representation of age-wise distribution of percentage (%) of patients diagnosed with Hypertension

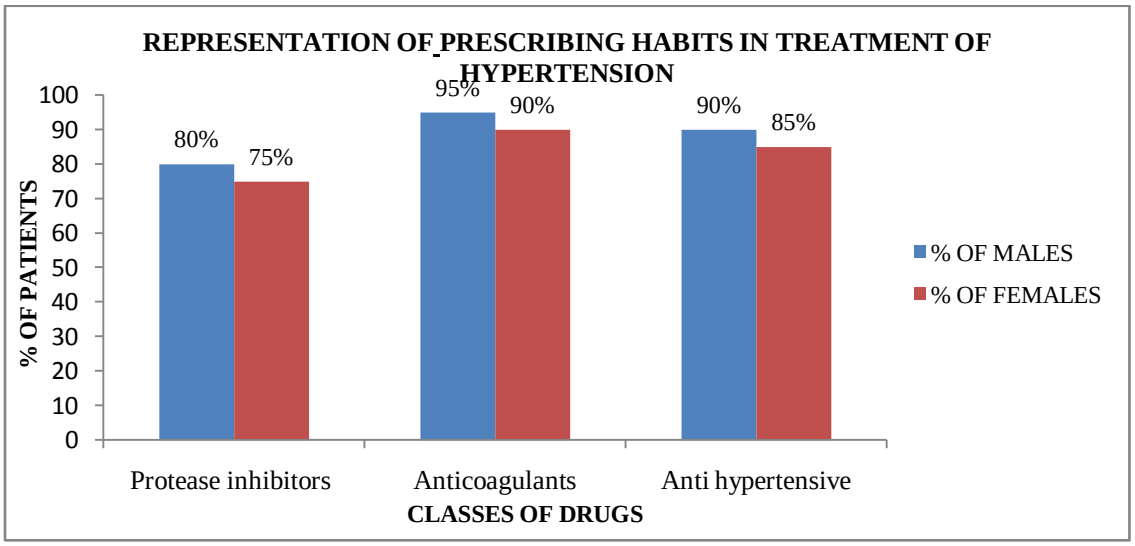

Figure X: Representation of prescribing habits in treatment of hypertension:

MANAGEMENT OF HYPERTENSION:

Hypertension is a risk factor for the development for atherosclerosis , atherosclerotic, stroke and cardiovascular disease. The mechanism by which hypertension causes these effects is not known and some uncertainty exists as to what the primary and secondary factors are in a typically multifactorial syndrome. These factors may include hyperlipidemia , diabetes mellitus, obesity and diet and pharmacological treatment of hypertension is associated with a decreased incidence of stroke and to a lesser degree atherosclerotic cardiovascular disease.

ATHEROSCLEROSIS

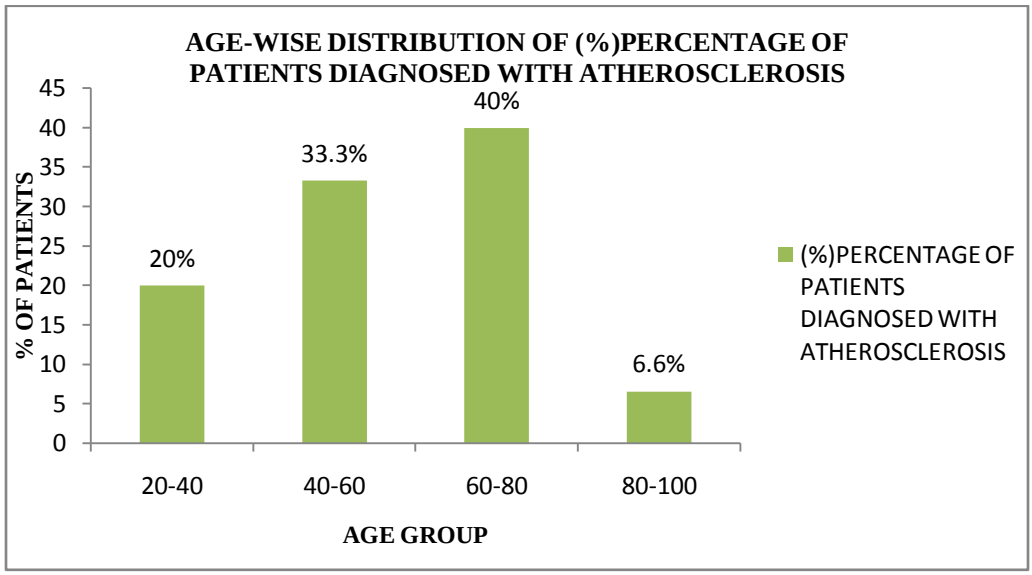

Figure XI: Representation of age-wise distribution of percentage(%) of patients diagnosed with Atherosclerosis

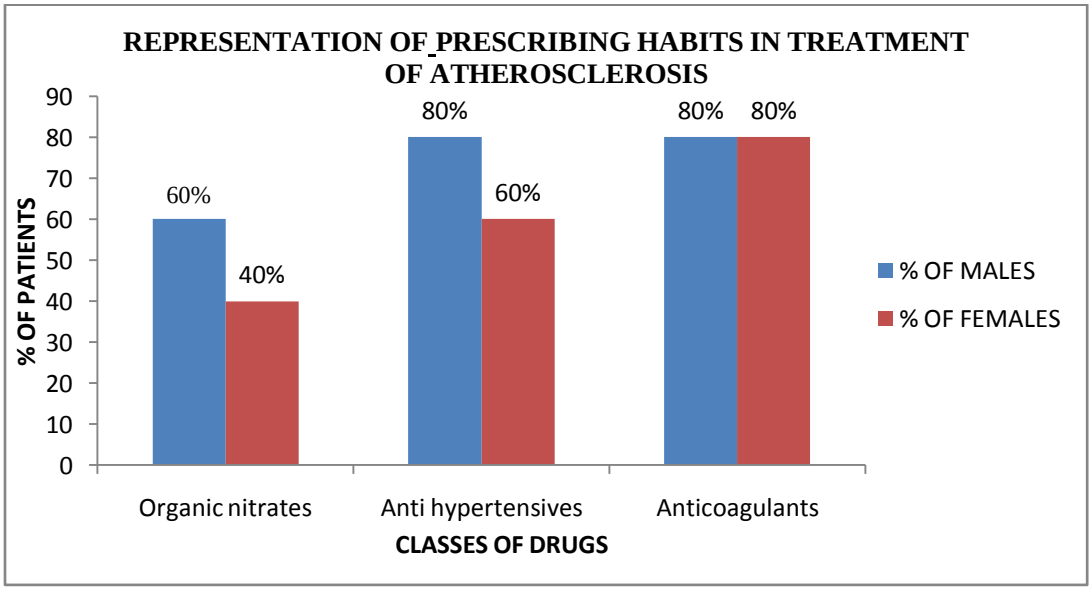

Figure XII: Representation of prescribing habits in treatment of atherosclerosis :

MANAGEMENT OF ATHEROSCLEROSIS

Atherosclerosis cannot be cured but is manageable with proper monitoring and treatment . It will be necessary to wake healthy lifestyle changes for improved quality of life. The prevention and treatment of atherosclerosis control requires of known modifiable risk factors for this disease. This includes the medical treatment of hypertension , diabetes mellitus, hyperlipidemia and cigarette smoking. Some studies have claimed reversal of atherosclerosis with pharmacologic agents such as statins and cillostazole , but these need to be further tested to show many significant benefits in reducing clinical events.

CONCLUSION

The survey regarding drug utilization evaluation of cardiovascular diseases was carried out at Kamineni Hospital, at King Kothi, Hyderabad, A.P. The case sheets of patients with cardiovascular diseases (CVD) under various age groups were collected: As per the data collected from the case sheets it can be concluded that average prevalence of cardiovascular diseases were found to be more in males than in females. Among the various CVD high prevalence was found to be hypertension. Common age group of CVD is observed as 40 to 60 years. We have concluded that the drugs used for the treatment of cardiac disease are almost found to be rational. Rational use of drugs minimizes poly-pharmacy, drug interactions in turn it minimizes the hospital stay. The drugs prescribed are from national list of essential medicines. The prescribing habits, route of administration, dosage forms are found to be appropriate.

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