



## Evaluate the Prescription Pattern of Statins in Cardiovascular Disease

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### ABSTRACT

**Background:** The main objective present study is aimed to the prescription pattern of statins in cardiovascular disease in an Inpatient pharmacy at tertiary care hospital. The study was conducted in the In-patient pharmacy department of tertiary care hospital Bangalore, India.

**Method:** A prospective and Observational study will be conducted in the department of medicine. Baseline information such as demographic details like age, sex, weight, date of admission and date of discharge of the patients will be obtained. Drug related data such as name of drugs, doses, route of administration, duration & other laboratory data will be collected and documented in a suitable designed data collection form.

**Result:** From 133 patients 65 were male and 68 of patients were female. Atorvastatin 10mg was prescribed for (32) patients, followed by Atorvastatin 20mg for (23) patients. Atorvastatin 40mg (49) and Atorvastatin 80mg for (3) patients and Rosuvastatin 5mg was prescribed at (2) patients Rosuvastatin 10mg (5) Rosuvastatin 20mg (7) Rosuvastatin 40mg (11) and Rosuvastatin 80mg (1) patient each. A total of 67.66% of statin therapies were of moderate-intensity dose, 29.32% were of low-intensity dose and only 3% was of high-intensity dose. According to this data collected in this study there are some irrational prescribing practices among physicians affecting the performance of statin therapy in primary and secondary prevention of cardiovascular disease.

**Conclusion:** According to this data collected in this study there are some irrational prescribing practices among physicians affecting the performance of statin therapy in primary and secondary prevention of atherosclerotic cardiovascular disease. A need to rationalize the prescription practices by keeping abreast with the latest recommendations as well as effective patient counseling and education seems warranted.

**Key words:** Cardiovascular disease, dyslipidemia Cholesterol, Statins, atorvastatin, Rosuvastatin.

### INTRODUCTION

Statins (HMG-CoA reductase inhibitors) are cholesterol-bringing down drugs utilized in the counteraction of cardiovascular sickness (CVD). They are endorsed for those with known CVD (optional counteraction), as well concerning those considered in danger of CVD yet who have not yet had an occasion (essential prevention). The most recent 30 years have seen a huge expansion in the usage of statins, 1-4 predictable with changes in suggestions by clinical rules 5 Discussion has resulted about such changes 6-8 which have would in general grow the quantity of individuals qualified for treatment, especially in essential prevention. 9-10 The creators' past examination observed that close to 66% of individuals who were taking statins did as such for essential anticipation. 11. Studies on the solution example and cost of these medications (bringing down cholesterol specialist), especially in certain nations are expected to all the more likely help dynamic cycles (from individual clinical setting to the more extensive public administrative or general wellbeing settings). At gathering of infections, for example, cardiovascular sicknesses and their representatives are assuming significant parts. Studies have shown that statins forestalls first cardiovascular occasions in solid individual with raised LDL cholesterol and show low degrees of high-thickness lipoprotein cholesterol. Statins are likewise connected with a decrease in cardiovascular passing, stroke, hospitalization, and the requirement for revascularization in patients with laid out coronary heart illnesses and hyperlipidemia.

Statins (3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors) were presented in Denmark in 1990 and are right now suggested as a preventive treatment for people of any age at high gamble of cardiovascular occasions, statins block the pathway for blending cholesterol in the liver. This is critical in light of the fact that most circling cholesterol comes from inner assembling as opposed to the eating regimen when the liver can never again create cholesterol, levels of cholesterol in the blood will fall. Cholesterol union seems to happen generally around evening time, so statins with short half-lives are typically taken around evening time to boost their impact. Statins have become one of the most generally utilized gatherings of medications around the world. They are endorsed for those with known CVD (optional counteraction), as well concerning those considered in danger of CVD however who have not yet had an occasion (essential avoidance).

While late examinations have viewed statins as financially savvy in essential avoidance. 12-13 issues like the bearableness and wellbeing of statins, or the perspectives on patients on long lasting medication treatment, were not thought of.

## MATERIALS AND METHODS

A prospective and Observational study will be conducted in the department of medicine. The patients who meet the criteria will be enrolled for the study. Baseline information such as demographic details like age, sex, weight, date of admission and date of discharge of the patients will be obtained. Drug related data such as name of drugs, doses, route of administration, duration & other laboratory data will be collected and documented in a suitable designed data collection form. The follow - ups will also be documented up to discharge.

The standard references like MICROMEDEX and LEXICOMP software available in the department and standard text books like Textbook of Pharmacotherapy by Joseph T. Dipiro, Textbook of Pharmacotherapy by Herfindal, and Applied Therapeutics by Koda will be used. Data will be evaluated by using suitable statistical.

### Inclusive Criteria:

All inpatients cardiovascular diseases prescribed with statins

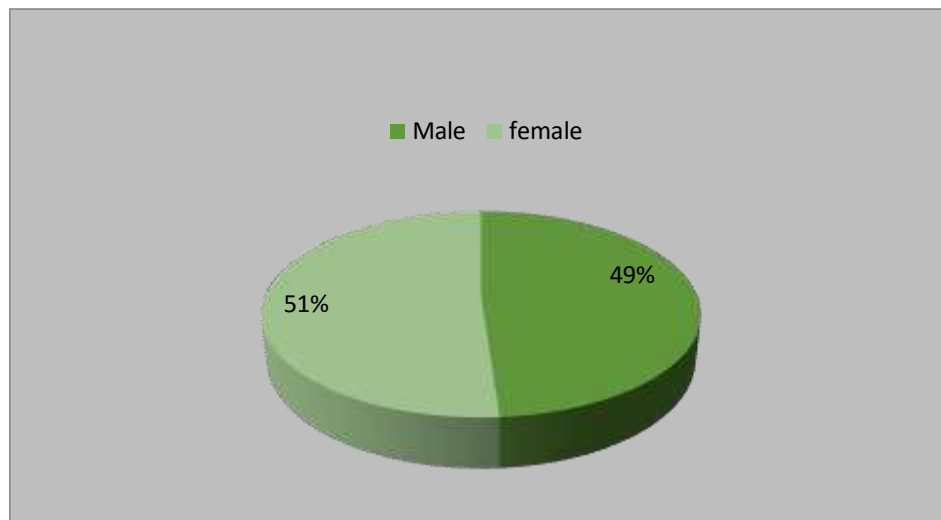
### Exclusion Criteria:

Paediatrics.

Pregnancy women and Lactating women.

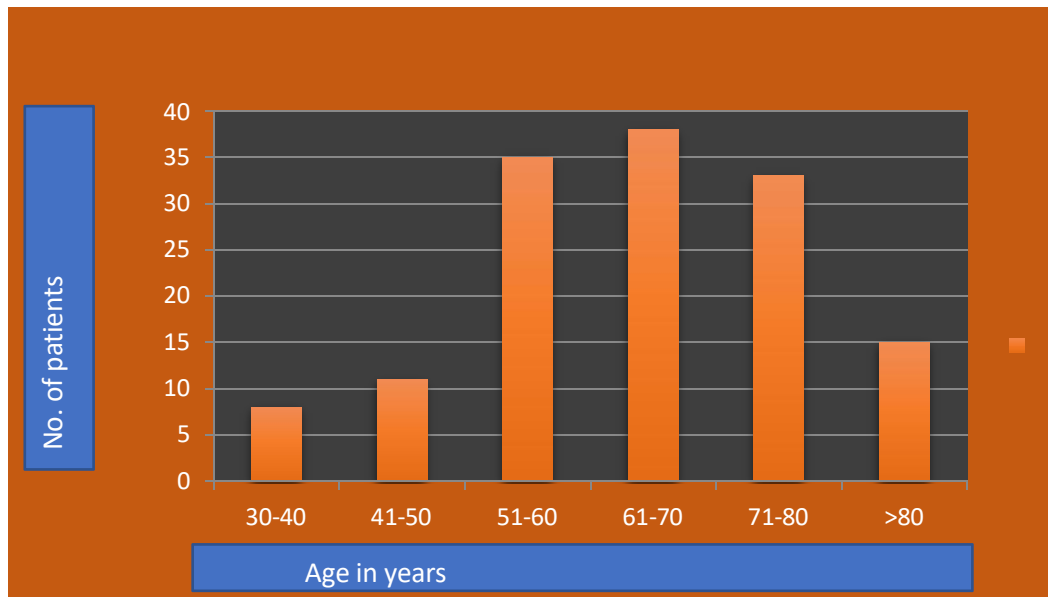
Patients in OPD department.

**Result:** This study was a prospective observational study on 133 patients in different departments of hospital. According to data achieved in this study 48.83% were male and 51.12% of patients were female.



**Graph1:** Demographic of patients based on gender

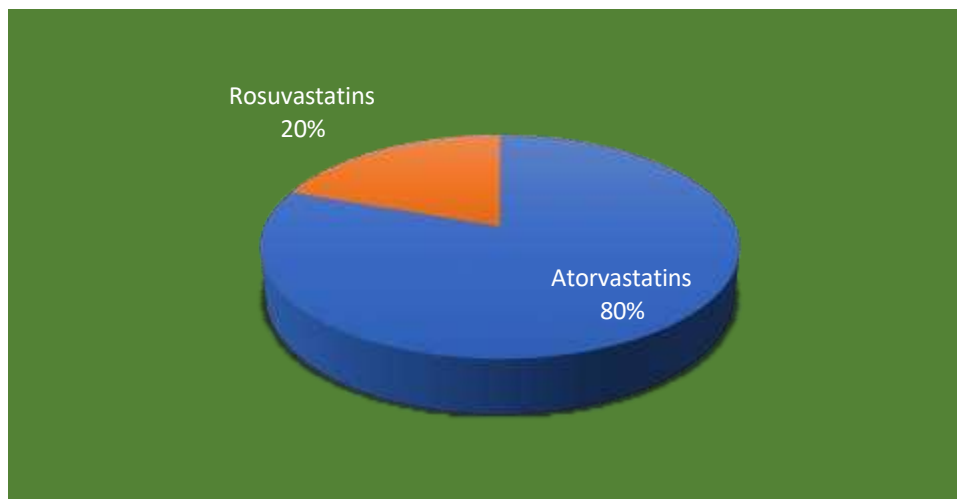
The age of Patients are divided into six classes of age groups; this division includes as 30-40 years old (first group) 8 patients, 40-50 years old (second group) 11 patients, 50-60 years old (third group) 35 patients, 60-70 years old (fourth group) 38 patients, 70-80 years old (fifth group) 33 patients, >80 years old (sixth group) 15 patients totally from 133 patients.



**Graph 2:** Graph representing age distribution cardiovascular diseases patients

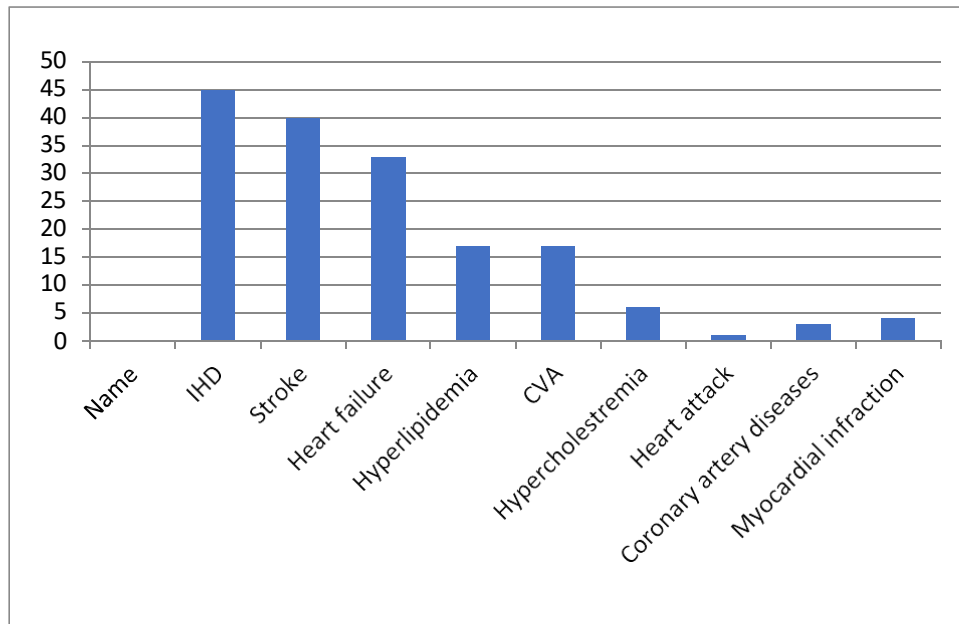
**Table 1:** Lowering lipid agents used during treatment in hospital

Sl.no	DRUG NAME	NO OF PARTICIPANTS	PERCENTAGES
1.	Atorvastatins	107	80.45%
2.	Rosuvastatin	26	19.54%
3.	Simavastatin	0	0%
4.	Lovastatin	0	0%



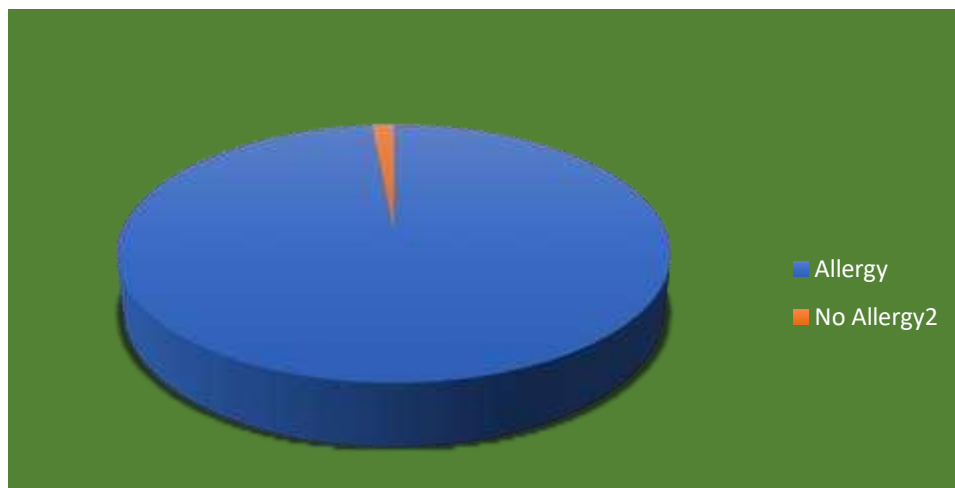
**Graph 3:** Graph representing Lowering lipid agents used during treatment at hospital

Among 133 patients 45 patients had past history of the ischemic heart disease, stroke 40 patients, heart failure 33, hyperlipidemia 17 patients, cardiovascular accident 17 patients, hypercholesterolemia 6 patients, myocardial infarction 4 patients, coronary artery disease 3 patients and heart attack 1 patients.



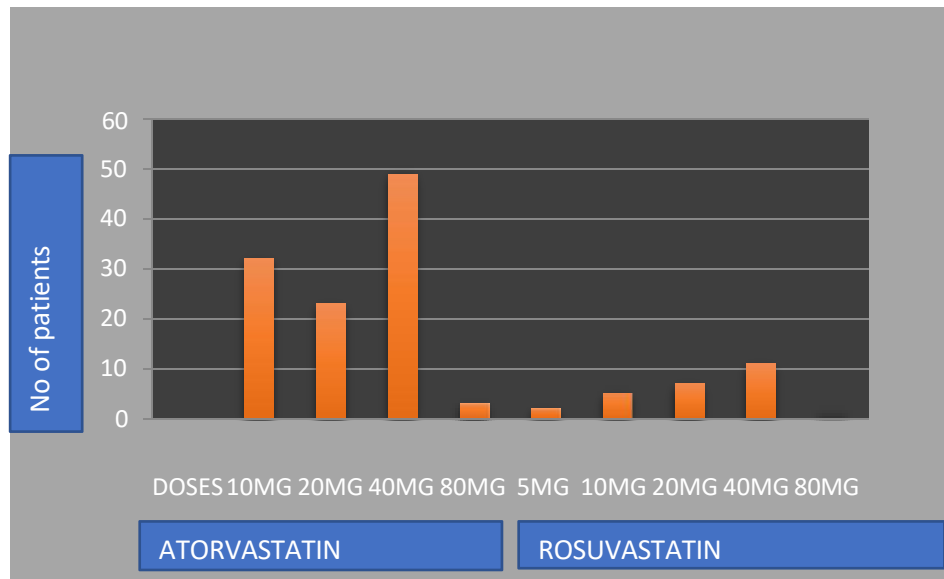
**Graph 4:** Graph representing different types of past history of patients

From 133 patients in this study, around 131 number of the patients (98.5) had no allergy to lowering lipid agents and only 2 patients (1.5) had allergy to lowering lipid agents which is reported for atorvastatin ( graph no )



**Graph 5:** Evaluation of drug sensitivity to lowering cholesterol agents.

Among 133 patients in this study 32 patients were given atorvastatin 10mg, 23 patients were given atorvastatin 20mg, 49 patients were given atorvastatin 40mg, 3 patients were given atorvastatin 80mg, 2 patients were given Rosuvastatin 5mg, 5 patients were given Rosuvastatin 10mg, 20 patients were given Rosuvastatin 40mg, 11 patients were given Rosuvastatin 40mg, and 1 patients were given Rosuvastatin 80mg.



**Graph 6:** Graph representing Lowering lipid agents used during treatment at hospital

### Discussion:

During past few years numerous research studies have been conducted to determine the safe and effective drug utilization indicating that inappropriate drug use is a universal phenomenon. To examine the use of drugs in a society, trend of drug utilization studies has been raised globally in different health setups. Such types of drug utilization studies are helpful to determine the pattern of prescription and for setting the priorities to avoid the irrational drug use. The present study was conducted to find out prescribing pattern of drugs used in cardiovascular emergencies in tertiary care hospital of Bangalore Baptist Hospital.

The present study was conducted to find out prescribing pattern of drugs used in cardiovascular diseases in tertiary care hospital. Total 133 patients case paper were analyzed during six month study period. Results pointed out that the frequency of cardiovascular was more in female patients (51.12%) than male patients (48.83%). In the age group 31-50 years, the number of female patients was found significantly less as compare to the number of female patients in the age group 51-80 yrs. The reason for increased incidence of cardiovascular in female could be the loss of cardio protective effect of estrogen after menopause. Also there was no significant difference between number of male (14.2%) and female (14.2%) patients in the age group 61-70 yrs. As far as age factor is concerned 28.57% patients belong to age group 51-60 yrs and 26.31% patients belong to 61-70 yrs. Hence 70.2% patients belong to age group 51-70 yrs. This shows that CHD manifests 10 years earlier on an average in Indian subcontinent compared with the rest of the world.

According to data collected in this study the female patient are more exposed to lowering lipid agents than male, when compare to SREEDEVI K study, females are prescribed are more on statins therapy compared to the females.

Most of the patients had a past history of heart and blood vessels disorders. Most of the current complaints and diagnosis were of heart and blood vessels disorders, when compared to KAMLESH P PATEL, study heart diseases are the most diagnosis and history of patients.

According to this study data anti lipid agents or lowering lipid agents which are prescribed for patient are from statins when compared to PANKAJ GOYAL study. The LLDs prescribed were fibrates and statins.

Among statins, Atorvastatin (80.45%) Rosuvastatin(19.54) both are mostly used on patients than other agents when compared to SREE DEVI K study, which started Atorvastatin to be the most prescribed lowering lipid agent for patients.

Related lab-parameters to lowering lipid agents and their monitoring are important to evaluate the effectiveness of these agents. Therefore they needs monitoring during their usage on the patients.

According to the data collected 133 patients were prescribed for lipid lowering agents 26 patients were elevated with the total cholesterol, 120 patients had elevations of HDL cholesterol, 32 patients had elevation of LDL cholesterol, 41 patients had elevations of TG. Hence this test are not used on all patients before and after lipid lowering agents rather they are selected and randomized is most patients.

In some cases these tests are used few days after administrating lipid lowering agents and in some cases these tests are not done during the drug usage. But these diagnostic tests are very much important as they are informative on the patient condition.

According to this study data of parameters, patients given lowering lipid agents had bad cholesterol average rate of 283mg/dl, HDL average rate of 43.9mg/dl, LDL average rate 150.25mg/dl and TG average rate 293mg/dl when compared to PANKAJ GOYAL study.

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## Conclusion:

Prescription analysis of statins is useful to find out the problems and provide feedback to the prescribers, so as to create awareness about the rational use of the drug. From the above study, it may be concluded that prescribing rates of atorvastatin was higher in the study Bangalore Baptist hospitals of Karnataka, followed by Rosuvastatin and simvastatin. Our study suggests that statins are first-line agents in most situations. There is a need for patient counselling regarding the side effects of statins and their interactions (Ex: Grape fruit juice). A less number of prescriptions were found with generic drugs. The practice of prescribing generic drugs should be encouraged which will be cost-effective for the patients as these drugs are used for long-term treatments.

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