A Cross Sectional Observational Study of Drug Prescription Pattern in Ischemic Heart Disease Patients

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Abstract: Introduction: Ischemic heart disease (IHD) is a condition in which there is an inadequate supply of blood and oxygen to a portion of the myocardium, it occurs if there is imbalance between myocardial oxygen supply and demand. The common cause of myocardial ischemia is atherosclerosis of epicardial coronary artery/arteries which leads to regional reduction in myocardial blood flow and inadequate perfusion of the myocardium supplied by the involved coronary artery.
Materials and Methods: This is a cross sectional observational study conducted on ischemic heart disease patients admitted at inpatient department of Medicine in a tertiary care teaching hospital, Kurnool. The study consisted of analysis of drug utilization pattern of prescribed drugs. All ischemic heart disease patients admitted in medicine inpatient department were enrolled in the study as per the following inclusion and exclusion criteria over a period of January 2018-June 2018. All diagnosed cases of in-patients with ischemic heart disease during the study period (January 2018- June 2018). Exclusion criteria include Patient not willing to consent for the study, Outpatients Department (OPD) patients, Patients who were under day care management.
Results: Around 500 patient's data, who were admitted during Jan- 2018 to June 2018, was collected and analyzed. The demographic data is shown in as follows. IHD was more commonly seen in males (70.06%) than females (29.94%). IHD group patients were divided according to age in 7 classes. As per study analysis, IHD was most commonly seen in patients of age group of 61-70 year. The mean age of study group was 65.32 Years. (Age wise details are as shown in (Table 1).
Conclusion: This study had few limitations. It was conducted at a single tertiary healthcare centre. Studies with data from multi-centric group of population in similar context would give additional information on this aspect. This study population was relatively homogenous. Hence, this study results may not be generalized to other population. It was a quantitative type of drug prescribing pattern study with the WHO core prescribing indicators and therefore determining the quality of diagnosis and the appropriateness of treatment was beyond scope of prescribing indicators.
Key Words: Ischemic heart disease (IHD), coronary artery, homogenous

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I. Introduction

Ischemic heart disease (IHD) is a condition in which there is an inadequate supply of blood and oxygen to a portion of the myocardium, it occurs if there is imbalance between myocardial oxygen supply and demand. The common cause of myocardial ischemia is atherosclerosis of epicardial coronary artery/arteries which leads to regional reduction in myocardial blood flow and inadequate perfusion of the myocardium supplied by the involved coronary artery.1

Ischemic heart disease (IHD) is one of the leading causes of mortality and it is also a primary cause of premature mortality and disability in developing countries like India.2 Noncommunicable diseases (NCDs) kill 40 million people each year, equivalent to 70% of all deaths globally. Each year, 17 million people die from a NCD before the age of seventy, and 87 percentages of premature deaths occur in low and middle-income countries. Cardiovascular diseases account for most non-communicable diseases deaths, (17.7 million population yearly) which is followed by cancers (8.8 million), respiratory diseases (3.9 million), and diabetes (1.6 million).3

Drug utilization pattern studies helps to screen, assess and propose appropriate modifications in prescription practices; this would help to make patient care rational and cost effective. Rational drug prescribing is defined patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community.7

Drug utilization studies are influential aid to ascertain the role of drug in the society. The World Health Organization (WHO) has defined drug utilization research as the marketing, distribution, prescription and use of

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drugs in a society, with special emphasis on the resulting medical, social and economic consequences.8 Drug therapy is available often at an unaffordable price. Hence, it is very important to realize that dispensing inappropriate and irrational drugs for treatment of various disease leads to potential hazards.9 It is globally a major concern. So it is very important to review the drug utilization pattern periodically, to ensure its safety and efficacy.10

World Health Organization (WHO) and International Network of Rational Use of Drugs (INRUD) have provided guidelines of rational drug use. When applied, these indicators give fair idea about prescription pattern, availability of drugs and patients comprehension about therapy. It helps to overcome the shortcoming and enhance the performance from day to day.11 Indiscriminate use of drugs in ischemic heart disease patient may lead increased adverse events. Still, very scanty data is available regarding drug utilization pattern in Ischemic heart disease treatment. In the given circumstances, present study is proposed to investigate prescription and drug utilization practices in ischemic heart disease patients admitted in Medicine ward in a government tertiary care hospital in Kurnool.

II. Materials And Methods

This is a cross sectional observational study conducted on ischemic heart disease patients admitted at inpatient department of Medicine in a tertiary care teaching hospital. The study consisted of analysis of drug utilization pattern of prescribed drugs.

Study population
All ischemic heart disease patients admitted in medicine inpatient department were enrolled in the study as per the following inclusion and exclusion criteria over a period of January 2018-June 2018.

Inclusion criteria
All diagnosed cases of in-patients with ischemic heart disease during the study period (January 2018- June 2018).

Exclusion criteria
➢ Patient not willing to consent for the study
➢ Outpatients Department (OPD) patients
➢ Patients who were under day care management

Statistical analysis
The statistical analysis was done with the help of Microsoft Excel 2010 software.

III. Results

Around 500 patient's data, who were admitted during Jan- 2018 to June 2018, was collected and analyzed. The demographic data is shown in as follows.

IHD was more commonly seen in males (70.06%) than females (29.94%). IHD group patients were divided according to age in 7 classes. As per study analysis, IHD was most commonly seen in patients of age group of 61-70 year. The mean age of study group was 65.32 Years. (Age wise details are as shown in (Table 1).

S.No	Age group	Number	Percentage
1	20-30 years	6	1.2
2	>30-40 years	18	3.6
3	>40-50 years	53	10.6
4	>50-60 years	103	20.6
5	>60-70 years	213	42.6
6	>70-80 years	84	16.8
7	>80 years	23	4.6

Table 1: Age group wise distribution of patients

| S.No	No of Drugs	Number of prescriptions	Percentage (%)
1	4	10	2
2	5	32	6.4
3	6	54	10.8
4	7	105	21
5	8	132	26.4
6	9	87	17.4
7	10	56	11.2
8	11	21	4.2

| 9 | 12 | 2 | 0.4 |
| 10 | 14 | 1 | 0.2 |

Table 2: Number of drugs prescribed per prescription

Total 4995 drugs were prescribed to 648 patients of Ischemic heart disease during our study. The number of drugs ranged from 4-14 per patient with average of 7.70 drugs per patient. (Table 2).
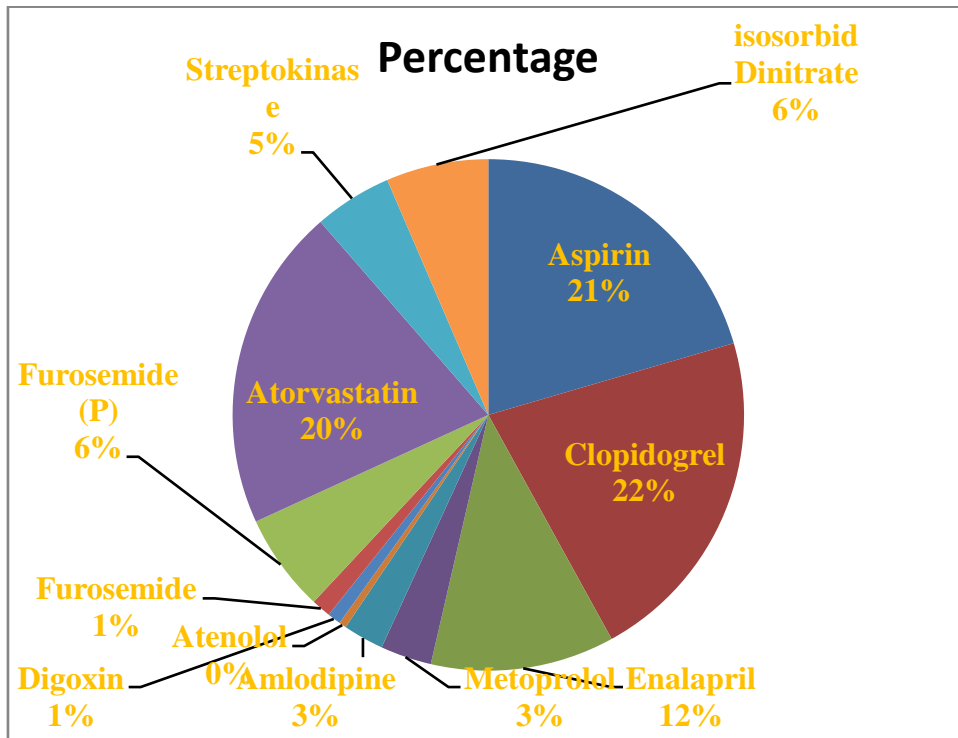
Figure 1: Percentage of drugs prescribed as per drug class
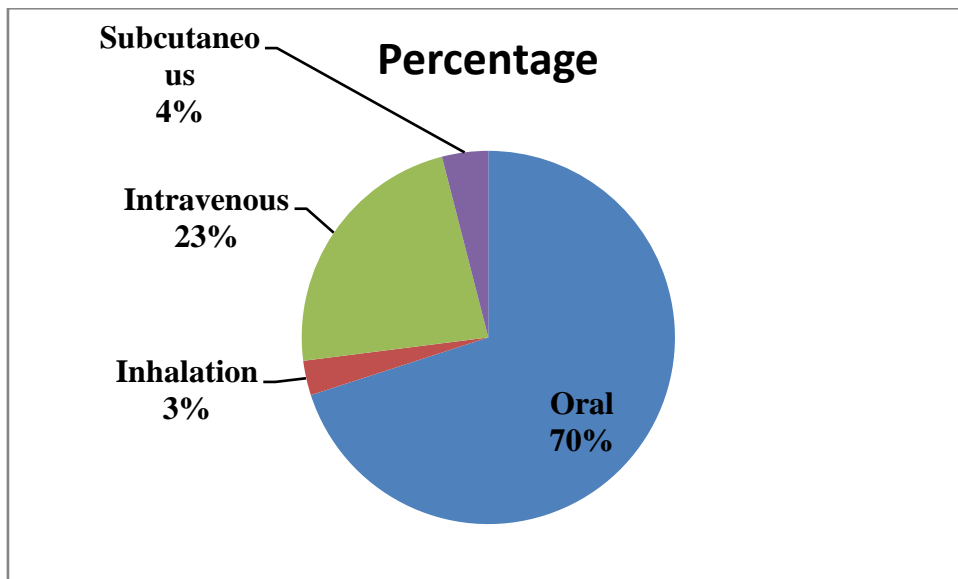
Figure 2: Various routes of drug administration WHO core drug use indicators

Drugs prescribed to patients belong to various therapeutic classes ranging from anti-platelets, anticoagulants, anti-anginal, antithrombin, thrombolytic, hypolipidemics. The most commonly prescribed therapeutic class of drugs was anti-platelet (86.26%) followed by hypolipidemic (82.25%) and ACE inhibitors drugs (46.60%). Mostly commonly prescribed drug was clopidogrel (86.26%) followed by atorvastatin (82.5%),

aspirin (82.09%), enalapril (46.60%), asosorbide dinitrate 25.92%, furosemide (P) 20.84%, metoprolol 12.96%, Amlodipine 10.33%, Furosemide 4.93%, digoxin 3.3%, atenolol 1.85%. (Figure 2).

Prescribing indicators
* Average number of drugs per encounter
* Total of 4994 drugs were prescribed to 500 patients. So, average number of drugs per encounter was 7.70. Out of total 4995 of drugs prescribed, maximum drugs 71.19 % were prescribed in oral formulations
* Percentage of drugs prescribed by generic names
* In previous studies reviewed, prescribing drugs with brand names was commonly observed practice. In current study prescription analysis showed that 1498 (29.99%) drugs were prescribed by their generic names
* Percentage of encounters with antibiotics prescribed:
* In present study, antibiotics were prescribed to few patients. Out of 648 prescriptions, 143 (22.06%) were having at least one antibiotic
* Percentage of encounters with injections prescribed Injections were prescribed only in 1004 (26.89%) out of 4995 drugs
* Percentage of drugs prescribed from essential drug list or formulary
* Of total drugs 3270 (65.45%) of drugs were from National List of Essential Medicines -2016 (NLEM - 2016) and 2774 (55.53%) drugs prescribed were from WHO-EML-2016

IV. Discussion

Drug utilization studies are useful to determine the behavior of the use of medicines in a society.12 Since past few years many research drug utilization studies are being performed worldwide to assess and to understand the safe and more effective drug utilization, these studies are indicating that irrational drug use is a universal phenomenon. Countries like India are becoming global epicenter for various diseases like ischemic heart disease and diabetes. Hence, it is the need of the time to decrease the risk factors and to improve the treatment strategies for these diseases.12

Around 648 patient's prescriptions were analyzed from medicine ward for 18 months. Study results indicated that male (70.06%) patients had a high frequency of ischemic heart disease incidences as compared to female (29.94%) patients which were in accordance to Nagabushan H. et al, and Sreedevi K et al.13,14 As per Dawalji S et al, 72.94% patients were male and 27.06% were female as per other study by Tamilselvan T et al, 69.1% accounts for males and 30.8% accounts for females as per Sreedevi K et al, gender-wise distribution showed males 61.5% predominance, whereas, females were 38.5%.14,15,16 Whereas, similar study by Shankar R et al, showed the female (51.94%) predominance over males (48.06%).17 The study results were found to be consistence with most of the previous studies and indicated that male are more prone to coronary artery disease as compared to female.

V. Conclusion

This study had few limitations. It was conducted at a single tertiary healthcare centre. Studies with data from multi-centric group of population in similar context would give additional information on this aspect. This study population was relatively homogenous. Hence, this study results may not be generalized to other population. It was a quantitative type of drug prescribing pattern study with the WHO core prescribing indicators and therefore determining the quality of diagnosis and the appropriateness of treatment was beyond scope of prescribing indicators.

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