

A Prospective Study on Assessment of Drug Prescription Pattern and Treatment Profile of Angina Pectoris Patients in a Tertiary Care Hospital

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ABSTRACT:

Introduction: Acute coronary syndrome includes unstable angina, non-ST-elevation myocardial infarction, and ST-elevation myocardial infarction. **Methodology:** The prospective observational study was carried out for a period of 6 months. The study was conducted in cardiology department in a tertiary care hospital. A written and informed consent was obtained from the recruited patients. A Total of 200 patients were enrolled in the study. **Aim:** The study aimed to assess the drug prescription pattern and treatment profile of angina pectoris patients in a tertiary care hospital. **Results and Discussion:** In our study 29-35 years age patients were more 65 (32.5%) compared to other ages. In our study male patients were more 119 (59.5%), compared to female patients were 81 (40.5%). The classification of Heart failure patients includes Class IV patients were more 74(37%) compared to other classes. Classification of cardiac emergencies includes Congestive heart failure patients were more 81 (40.5%) compared to other cardiac emergencies. Diagnosis tools for angina pectoris includes Troponin levels were more 95(47.5%) compared to Angiography were 20(10%). Clinical manifestations of angina pectoris patients includes Chest pain patients were more 95 (47.5%) compared to other symptoms. Drug prescribing pattern for angina pectoris management includes Thrombolytics prescribed patients were more 41 (20.5%) compared to other drugs. **Conclusion:** To lower the cost of medicines health care practitioners should be encouraged to prescribe medications with generic names. The findings of our study on the patterns of drug prescription would develop a framework for ongoing prescription assessment in a healthcare setting. Rational use of drugs practice must be improved in clinical settings to maximize the benefit of drug therapy in patient care.

Keywords: Unstable angina, Health care practitioners, Drug prescription, Rational use of drugs, Healthcare setting

1. Introduction

Chest pain is one of the most common reasons for seeking medical attention in both emergency and outpatient cardiology settings. Among this symptom's various potential causes, cardiac ischemia, particularly acute coronary syndrome, must be ruled out promptly, given its life-threatening nature. Acute coronary syndrome includes unstable angina, non-ST-elevation myocardial infarction, and ST-elevation myocardial infarction. Meanwhile, stable angina, which corresponds to the presentation of chronic coronary syndrome reflects a longstanding and typically exertional manifestation of myocardial ischemia¹⁻². These conditions result from a mismatch between myocardial oxygen supply and demand caused by flow-limiting atherosclerotic lesions.

Etiology

Congenital coronary artery anomalies, including anomalous origin, myocardial bridging, and coronary artery fistula. Coronary artery embolism arising from atrial fibrillation, infective endocarditis, or prosthetic valve thrombi

- Spontaneous coronary artery dissection
- Coronary artery spasm
- Microvascular angina, also known as cardiac syndrome X

- Severe aortic stenosis
- Hypertrophic cardiomyopathy
- Severe anemia or hypoxemia
- Hypertension
- Coronary artery vasculitis
- Infiltrative disorders such as amyloidosis and sarcoidosis

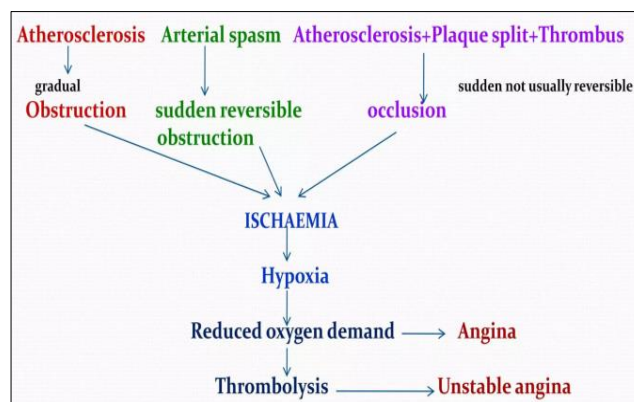


Fig 1: Pathophysiology

Pathophysiology

CCS results from atherosclerotic plaque formation within the coronary arteries, producing flow-limiting stenoses. These lesions demonstrate a luminal narrowing of 50% or greater in the left main coronary artery or at least 70% in other major coronary vessels. Such obstructions diminish coronary perfusion during exertion or stress, resulting in effort-induced myocardial ischemia. Although ischemia may manifest as stable angina, many lesions remain clinically silent. Despite their apparently stable morphology, significant plaques retain the potential for future destabilization, precipitating ACS³⁻⁶. Physical examination findings are typically unremarkable. Manifestations such as acute pulmonary edema, malignant arrhythmias, cardiac arrest, or hemodynamic instability strongly indicate ACS and warrant immediate intervention. Syncope rarely reflects myocardial infarction, as ventricular tachycardia seldom self-terminates and usually progresses to ventricular fibrillation, making transient syncope an unlikely ACS presentation. ACS may present atypically in patients with diabetes, lacking chest pain and instead manifesting with marked malaise.

Treatment / Management

Treatment for stable angina is geared toward reducing risk factors for presumed underlying coronary heart disease. An interdisciplinary approach would likely benefit individuals with multiple comorbidities: nutrition, diabetic educator, addiction counselor, and physical and occupational therapy⁷⁻¹¹.

Pharmacological management of angina pectoris

Although the general principles of treatment (ie lifestyle modification and risk-factor management) are applicable to all patients with angina, treatment should be individualised where possible. It should aim to reverse or reduce the underlying pathophysiological mechanisms in order to relieve symptoms and improve cardiovascular risk profile.

Treatment of chest pain episodes

Episodes of angina are best treated with sublingual glyceryltrinitrate (GTN). GTN acts as a nitric oxide donor, causing systemic and coronary vasodilatation. GTN is rapidly absorbed in the sublingual mucosae and its effects usually occur within 2–10 minutes.

First-line anti-anginal drugs

β -adrenergic receptor blockers (beta-blockers) and calcium-channel blockers are considered to be first-line anti-anginal drugs and have been shown in many studies to prevent angina and myocardial ischaemia.

Second-line anti-angina therapies

For patients whose symptoms are not well controlled by beta-blockers and calcium-channel blockers, or if contraindications exist for these agents, several options supported by NICE guidelines⁴ are available. These include: vasodilators such as long-acting nitrates and nicorandil, a drug that selectively slows the heart rate; ivabradine, and ranolazine, an agent that acts on the fast sodium current to improve cardiac metabolism.

Non Pharmacological steps for angina pectoris

Tobacco cessation results in the biggest risk reduction. Cigarette smoking is the leading avoidable cause of premature death. The risk of cardiovascular mortality in current smokers is roughly 2 times that of nonsmokers. Interestingly enough, the risk of cardiovascular mortality in former smokers is roughly equal to that of individuals who have never smoked¹²⁻¹³.

Cholesterol reduction

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Evidence has supported that adherence to the Mediterranean diet (high in vegetables and fruits) reduces the risk of cardiovascular disease.

Blood pressure control: The 2017 AHA/ACC guidelines define hypertension as systolic blood pressure ≥ 130 mmHg or diastolic pressure ≥ 80 mmHg. Goal blood pressure is unique to each patient; however, it is important to remember that for each 20/10 mmHg increase in systolic/diastolic blood pressure, evidence has supported a 2-fold increased risk of coronary heart and stroke-related mortality.

Diabetes mellitus management

Weight reduction, increased physical activity, and adequate control of comorbidities are recommended.

Weight loss Obesity is the second leading modifiable cause of premature death. Weight-loss regimens should be catered to each patient, and the discussion should include lifestyle modifications and surgical options if appropriate.

Aerobic exercise:

An average of 150 minutes of moderate-intensity exercise per week or 75 minutes of high-intensity exercise per week has been shown to decrease overall cardiac risk factors and, in turn, the risk of coronary heart disease¹⁴.

2. Methodology

The prospective observational study was carried out for a period of 6 months. The study was conducted in cardiology department in a tertiary care hospital. A written and informed consent was obtained from the recruited patients. A Total of 200 patients were enrolled in the study.

Study Design: It was Prospective observational study.

Study Period: The Present study was conducted for a period of six months.

Study site: The Present study was conducted in cardiology department in a tertiary care hospital.

Sample size: It was 200 Patients.

Inclusion criteria

- Patients with age of more than 18 years.
- Patients who are willing to give consent.
- Recently diagnosed with angina pectoris.
- Patients receiving treatment for angina pectoris.

Exclusion criteria

- Patients below 18 years.
- Patients who were not willing to join in the study.
- Special population including pregnant women and lactating women.
- Psychiatric abnormalities.

Institutional ethics committee (IEC) consideration:

The research protocol was submitted to ethical committee and ethical Committee was permitted to perform the research work in the selected department of a tertiary care hospital.

Patient data collection and management:

The data collection form contains information regarding age, sex, diagnosis, past medical history, medication history, laboratory data, and diagnosis, dose and frequency of administration and duration of therapy was collected from the patients treatment chart.

Statistical analysis:

The data was represented as percentages. The $P < 0.05$ was considered to indicate a statistically significant difference.

3. Results

Table 1: Age wise distribution

Age	Total (N=200)	Percentage (%)
25-28	45	22.5
29-35	65	32.5
36-48	52	26
49-55	38	19
Total	200	

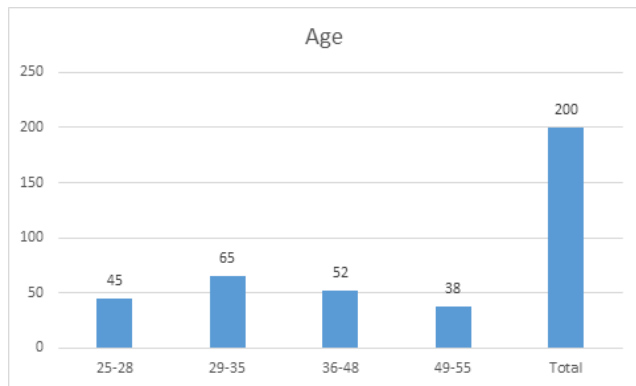


Fig 1: Age wise distribution

Table 2: Gender

Gender	Total (N=200)	Percentage (%)
Male	119	59.5
Female	81	40.5
Total	200	

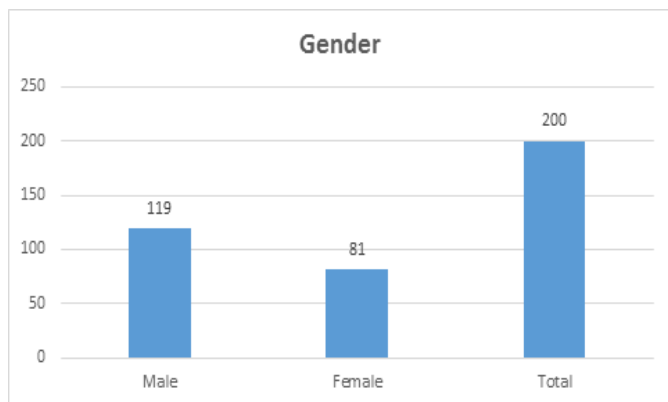


Fig 2: Gender

Table 3: Locality status

Locality status	Total (N=200)	Percentage (%)
Rural	67	33.5
Urban	133	66.5
Total	200	

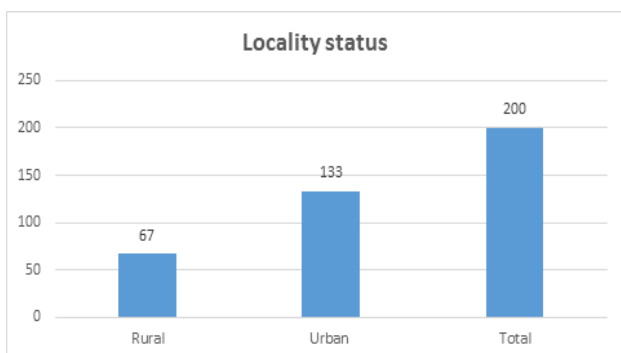


Fig 3: Locality status

Table 4: Education

Education	Total (N=200)	Percentage (%)
Diploma	48	24
SSC	58	29
Degree	42	21
Total	200	

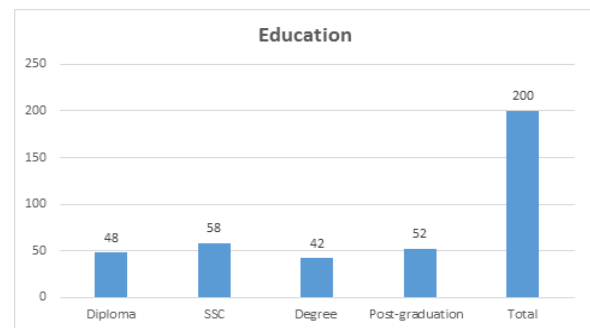


Fig 4: Education

Table 5: Social habits

Social habits	Total (N=200)	Percentage (%)
Smoking	117	58.5
Alcohol	83	41.5
Total	200	

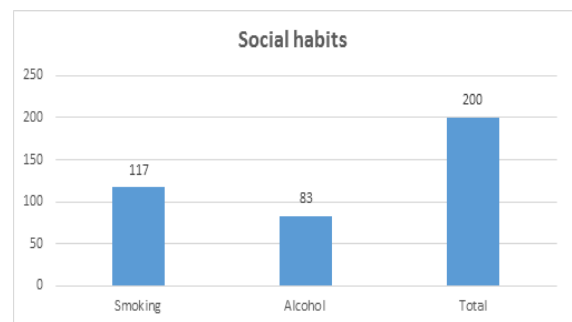


Fig 5: Social habits

Table 6: Socioeconomic status

Socioeconomic status	Total (N=200)	Percentage (%)
Low	76	38
High	59	29.5
Middle	65	32.5
Total	200	

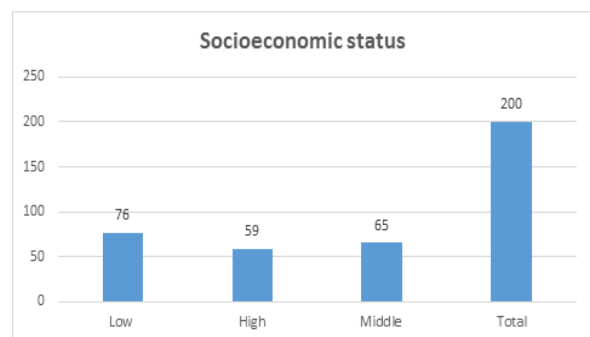


Fig 6: Socioeconomic status

Table 7: Classification of Heart failure

Heart failure class	Total (N=200)	Percentage (%)
Class I	35	17.5
Class II	41	20.5
Class III	50	25
Class IV	74	37
Total	200	

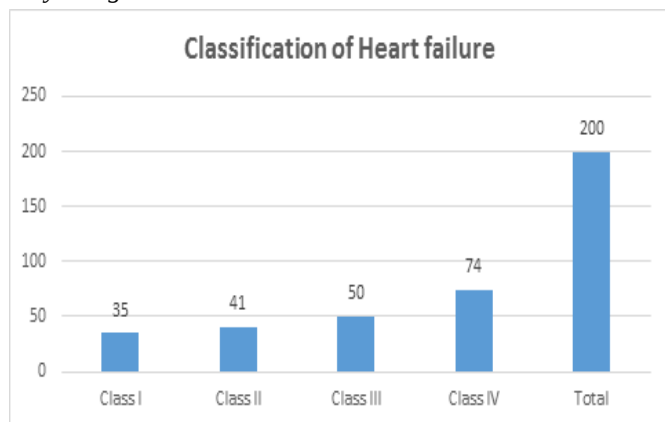


Fig.7: Classification of Heart failure

Table 8: Drug prescribing pattern for angina pectoris management

Prescribed drugs	Total (N=200)	Percentage (%)
Antiplatelets	35	17.5
Thrombolytics	41	20.5
Anticoagulants	28	14
Statins	37	18.5
Beta blockers	21	10.5
ACE Inhibitors	38	19
Total	200	

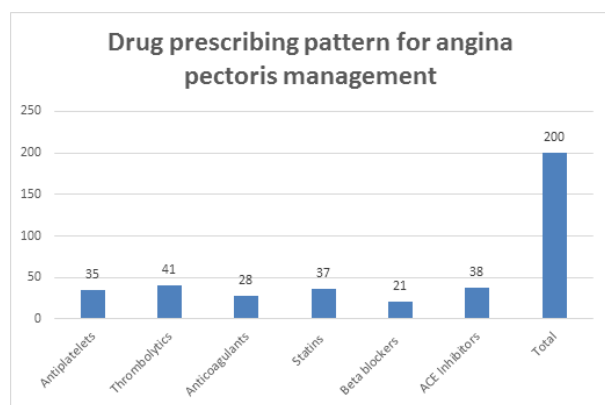


Figure 8: Drug prescribing pattern for angina pectoris management

Table 9: WHO Drug prescribing indicators

WHO Prescribing indicators	
Total number of patient's prescription analyzed	200
Total number of drugs prescribed	1600
Average number of drugs per prescription	8.0
Number of drugs prescribed by Generic name	352
Number of drugs prescribed by Brand name	1248
Drugs included in National list of essential medicines	225

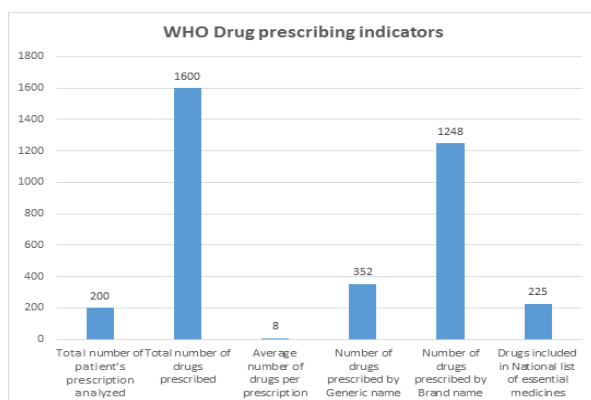


Figure 9: WHO Drug prescribing indicators

4. Discussion

- In our study 29-35 years age patients were more 65 (32.5%) compared to other ages.
- In our study male patients were more 119 (59.5%), compared to female patients were 81 (40.5%).
- In our study urban area patients were more 133 (66.5 %) compared to Rural area patients were 67 (33.5 %).
- In our study Education wise patients includes SSC were more 58 (29%) compared to Degree were 42 (21%), Post-graduation were 52 (26%).
- In our study social habits patients includes smoking patients were more 117(58.5%) compared to alcohol patients were 83 (41.5 %).
- Socioeconomic status includes low income patients were more 76(38%) compared to high income patients were 59 (29.5%), middle income patients were 65 (32.5%).
- The classification of Heart failure patients includes Class IV patients were more 74(37%) compared to other classes.
- Occupation wise distribution includes House wife were more 74 (37%) compared to Driver were 36 (18%), Employee were 25 (12.5%).
- Classification of cardiac emergencies includes Congestive heart failure patients were more 81 (40.5%) compared to other cardiac emergencies.
- Diagnosis tools for angina pectoris includes Troponin levels were more 95(47.5%) compared to Angiography were 20(10%).
- No of days admission in hospital includes 1--7 days patients were more 98 (49%) compared to other duration.
- Comorbidities includes Stroke patients were more 63 (31.5%) compared to Renal failure patients were 32 (16%), Hypothyroidism patients were 54 (27%), Rheumatoid arthritis patients were 51 (25.5%).
- Clinical manifestations of angina pectoris patients includes Chest pain patients were more 95 (47.5%) compared to other symptoms¹⁵.
- Drug prescribing pattern for angina pectoris management includes Thrombolytics prescribed patients were more 41 (20.5%) compared to other drugs.
- WHO Drug prescribing indicators includes Total number of patient's prescription analyzed were 200, Total number of drugs prescribed were 1600, Average number of drugs per prescription were 8.0, Number of drugs prescribed by Generic name was 352, Number of drugs prescribed by Brand name was 1248, Drugs included in National list of essential medicines was 225.

5. Conclusion

- The primary treatments for angina pectoris include antiplatelet drugs, anti-coagulants, thrombolytics, and statins, which are essential in the management of the clinical condition. Both healthcare professionals and patients should focus on managing risk factors and

adopting healthier lifestyles would bring greater efforts for management of angina pectoris¹⁶.

- Increasing age, random changes in lifestyle, lack of physical activities, increased stress, altered social habits can raise the risk of cardiovascular disorders. In the present study, the prescribing pattern of drugs in cardiovascular system were assessed.
- It will help prescribers improve patient management by rationalizing prescribing practices. Regular workshops for the health care professionals and dissemination of treatment guidelines could promote rational use of the drug.
- To lower the cost of medicines health care practitioners should be encouraged to prescribe medications with generic names.
- The findings of this study on the patterns of drug prescription would develop a framework for ongoing prescription assessment in a healthcare setting. Rational use of drugs practice must be improved in clinical settings to maximize the benefit of drug therapy in patient care.

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AI Tool Declaration

The authors declare that no AI and related tools are used to write the scientific content of this manuscript.

Conflict of Interests

The authors declare no conflict of interest

Ethics Approval

Not applicable

Data Availability

Data will be available on request

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