DRUG UTILIZATION EVALUATION IN CARDIOVASCULAR DISEASE: AN OBSERVATIONAL STUDY IN A TERTIARY CARE HOSPITAL

Dr. Zeel Naik[1]*, Vaishnavi Bodawala[2], Ayushi Surma[3], Dr. Mohil Nagad[4]

*[1]Assistant Proffesor, Shree Dhanvantary Pharmacy College, Surat, Gujarat.

[2.3]Pharm D Student, Shree Dhanvantary Pharmacy College, Surat, Gujarat.

[4]M.D (Medicine), D. M. (Cardiology), Venus Hospital.

*Corresponding Author

Dr. Zeel Naik

Assistant Proffesor, Shree Dhanvantary Pharmacy College, Surat, Gujarat.

ABSTRACT

Background: Drug Utilization Evaluation (DUE) studies are essential to assess prescribing patterns, and promote rational drug therapy. In cardiovascular diseases (CVDs), where polypharmacy and comorbidities are common, DUE provides insights to optimize treatment and improve patient outcomes. **Aim:** To evaluate the drug utilization patterns in patients with cardiovascular diseases in a tertiary care hospital. **Methods:** A prospective observational study was conducted for six months in the cardiology ward of Venus Hospital, Surat. A total of 150 inpatients aged ≥18 years with confirmed cardiovascular diseases and prescribed at least one cardiovascular drug were included. Data were collected from medical records, including demographics, diagnoses, comorbidities, and prescribed medications. Statistical analysis was performed using Microsoft Excel to obtain frequencies, percentages, and correlations between comorbidities, number of drugs prescribed, and incidence of drug–drug interactions. **Results:** Among 150 patients, males predominated (56%), with the majority being elderly (>60 years, 59.33%). Myocardial infarction and angina were the most common diagnoses. Polypharmacy was more frequent in patients with multiple comorbidities, increasing the risk of drug–drug interactions. Aspirin (84%) and Heparin (65.33%) were the most prescribed anticoagulants, while Atorvastatin (58%) was the leading lipid-lowering agent. Ticagrelor (44.67%) and Nicorandil(30.67%) were widely used

for ischemic prevention, whereas Amiodarone (12%) and Nitroglycerin (8%) were prescribed for arrhythmia and angina management. **Conclusion:** The study highlights a higher prevalence of CVDs among elderly males. Anticoagulants and lipid-lowering agents were the most prescribed drugs, reflecting adherence to standard guidelines. Findings emphasize the need for rational prescribing, monitoring polypharmacy, and preventing drug–drug interactions to ensure safe and effective cardiovascular care.

KEYWORDS: Drug utilization evaluation, Cardiovascular diseases, Anticoagulants, Polypharmacy, Myocardial infarction, Angina.

I. INTRODUCTION

A DUE is often used to detect possible problems with drug use and to enhance it. DUEs have often focused on drugs that cause a lot of side effects, are costly, or need complicated dosing regimens. DUE has been recommended as a method for detecting inappropriate or unnecessary drug use that monitor, evaluates, and promotes rational drug therapy.[1]

Cardiovascular diseases (CVDs) remain the leading cause of mortality worldwide, accounting for a significant proportion of deaths, particularly in low- and middle-income countries where more than three-quarters of CVD-related mortality occurs.[2] CVD encompasses a wide spectrum of disorders affecting the heart and blood vessels, including coronary artery disease, myocardial infarction, heart failure, rheumatic heart disease, congenital heart disease, arrhythmias, hypertension, and peripheral arterial disease.[3] The primary underlying mechanism is often atherosclerosis, characterized by the accumulation of fatty plaques within arterial walls, which progressively narrows blood vessels and predisposes individuals to life-threatening cardiovascular events.[4] Both modifiable risk factors, such as hypertension, diabetes mellitus, hyperlipidemia, obesity, tobacco use, physical inactivity, and alcohol consumption, along with non-modifiable factors like age and genetic predisposition, contribute to the global burden of CVD.[5]

II. BACKGROUND

Cardiovascular diseases (CVDs) are the leading cause of death globally, contributing to nearly one-third of all mortalities, with the burden particularly high in low- and middle-income countries.[6] Patients with cardiovascular diseases frequently present with multiple coexisting non-communicable diseases—such as diabetes and hypertension—leading to complex therapeutic regimens that increase with age and socioeconomic status.[7]

Hospitalized CVD patients often require combination therapies to target multiple risk factors and coexisting conditions, leading to polypharmacy.[8] The complexity of managing multiple conditions in CVD often results in polypharmacy, which raises the risk of drug-drug interactions, adverse events, and challenges adherence, especially in older adults with higher multimorbidity prevalence.[9] Several observational studies in India and neighboring countries have provided valuable insights into cardiovascular prescribing patterns. A study reported high rates of polypharmacy and low generic prescribing in a teaching hospital in Telangana,[10] while other demonstrated variations in cardiovascular drug utilization across multiple tertiary care centers in South India.[11] Similar findings were observed in coronary care and intensive cardiac units, where beta-blockers, ACE inhibitors/ARBs, and statins were widely prescribed.[12] Given this growing complexity, targeted drug utilization evaluation in CVD populations is essential for optimizing prescribing quality, minimizing unnecessary drug exposure, and enhancing adherence to clinical guidelines and patient safety.[7]

III. RATIONALE

Cardiovascular diseases (CVDs) are the leading cause of death globally, and rational drug use is vital for optimal patient outcomes and resource utilization. Effective management of CVDs relies heavily on pharmacotherapy involving antihypertensives, antiplatelets, anticoagulants, lipid-lowering agents, and drugs for comorbid conditions such as diabetes and chronic kidney disease.[13] Drug utilization evaluation (DUE) studies are crucial as they: Identify prescribing patterns and assess alignment with standard treatment guidelines. Provide actionable insights for improving evidence-based prescribing and minimizing medication errors. Help optimize therapy for patients with comorbid conditions.[14] In studies of acute coronary syndrome, treatment generally followed international guidelines, but variability between institutions were noted.[15] Studies consistently report that regular DUEs enhance patient safety, treatment efficacy, and adherence to essential medicine lists, improving the quality of healthcare delivered to CVD patients in tertiary hospitals.[10]

IV. AIM AND OBJECTIVES.

Aim

To evaluate the drug utilization patterns in patients with cardiovascular diseases in a tertiary care hospital.

Objectives

1. To evaluate the drug utilisation evaluation of CVD drugs in patients.

2. To evaluate the correlation between the comorbidities with the number of drugs has been prescribed.

3. To evaluate the correlation between the total number of drugs prescribed with incidence of drug interactions.

4. Prevalence of CVD in patients.

V. MATERIALS AND METHODS

Study site: Venus Hospital, Rampura, Katargam, Surat, Gujarat 395008

Study design: A prospective observational study

Study duration: 6 months

Study population: 150 inpatients from cardiology wards.

Study Ethical Approval: This study was approved by the institutional ethics committee of Shree Dhanvantary Pharmacy College, Kim, Surat.

Inclusion criteria

1. Participants must have a clinically confirmed diagnosis of a cardiovascular condition, such as coronary artery disease, heart failure, hypertension, or any other documented cardiovascular disorder.

2. Individuals must be 18 years of age or older at the time of study enrollment.

3. Participants must be currently prescribed at least one medication for the management of their cardiovascular disease.

4. Patients who voluntarily consent to participate in the study, demonstrating a clear understanding of the study's purpose and procedures.

Exclusion criteria

1. Exclusion criteria encompass pregnant or breastfeeding women due to potential risks associated with medication exposure to the fetus or infant.

2. Patients with severe comorbid conditions, such as terminal illnesses or advanced chronic diseases unrelated to cardiovascular disease (CVD), that may overshadow the impact of CVD management are also excluded. Individuals under 18 years of age are ineligible.

3. Patients with cardiovascular conditions that do not primarily require pharmacological management, such as congenital heart defects managed without medication, are excluded.

4. Patients with incomplete or missing medical records will not be considered.

Data collection form

The data collection form encompasses essential patient information, including the Unique Hospital Identification (UHID) number, demographic details (age, sex, weight, presenting signs and symptoms), and medical history, which covers cardiovascular disease (CVD) diagnosis and associated comorbid conditions. Additionally, the form documents the smedication history, listing prescribed drugs along with their name, dosage, frequency, and duration of use.

Study procedure

Prior to initiating the study, essential documents such as the study protocol and Case Report Form (CRF) will be submitted to the ethics committee for review and approval. Upon receiving ethical clearance, the study will commence. Data collection will be conducted through a systematic review of patient records using an ethics committee-approved CRF. The collected data will include key parameters such as patient demographics, presenting complaints, clinical diagnosis, and details of prescribed cardiac medications. This will encompass the drug class, indications, dosage, frequency, and duration of therapy. Additionally, any modifications to the medication regimen, including changes in prescribed drugs or dosage adjustments, will be documented throughout the study period.

Statistical analysis

The collected data entered into MS Excel and analyzed for frequencies, percentages, and correlation.

VI. RESULTS

1. Gender based distribution

A total of 100 prescriptions were analysed. Patients were grouped based on gender distribution. Among the total patients, 84 (56%) were male, while 66 (44%) were female. The data indicates a higher proportion of male patients compared to female patients, suggesting a slight male predominance in the study population.
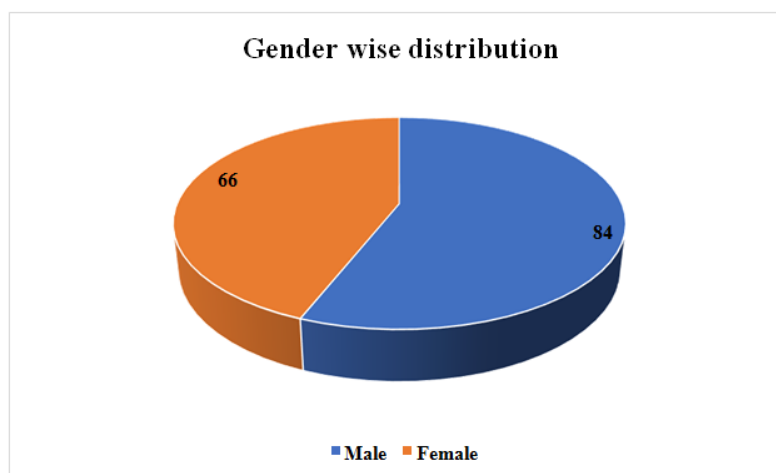
Fig. 1: Gender based distribution.

2. Age based distribution

Patients were grouped into four broad age categories based on their distribution. No patients were found in the less than 30 years category (0%). 30-45 years comprised 11.33% of the patients. 46-60 years accounted for 29.33% of the population. The majority of patients, 59.33%, were in the above 60 years group, indicating a higher prevalence of older individuals in the study.
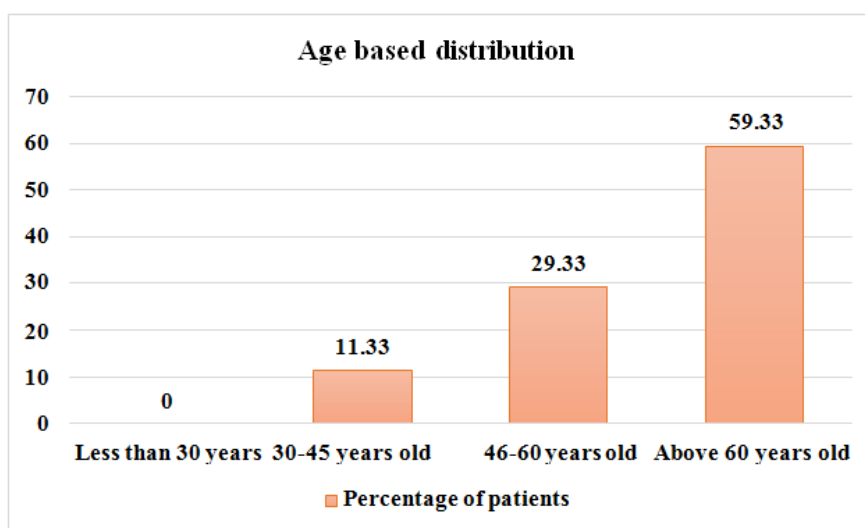

Fig. 2: Age based distribution.

3. Diagnosis based distribution

Patients were grouped based on their diagnoses, showing a varied distribution of cardiovascular conditions. The most common diagnosis was myocardial infarction (MI), affecting 43 patients, followed by angina (36 patients) and ischemic heart disease (IHD) with 23 cases. Other frequently observed conditions included left ventricular failure (LVF) in 8 patients, acute coronary syndrome (ACS) in 7 patients, and rheumatic heart disease (RHD) in

5 patients. Several other conditions, such as heart failure (HF), coronary artery disease (CAD), and arrhythmia, were seen in smaller numbers. The data highlights that MI and angina were the most prevalent diagnoses among patients.
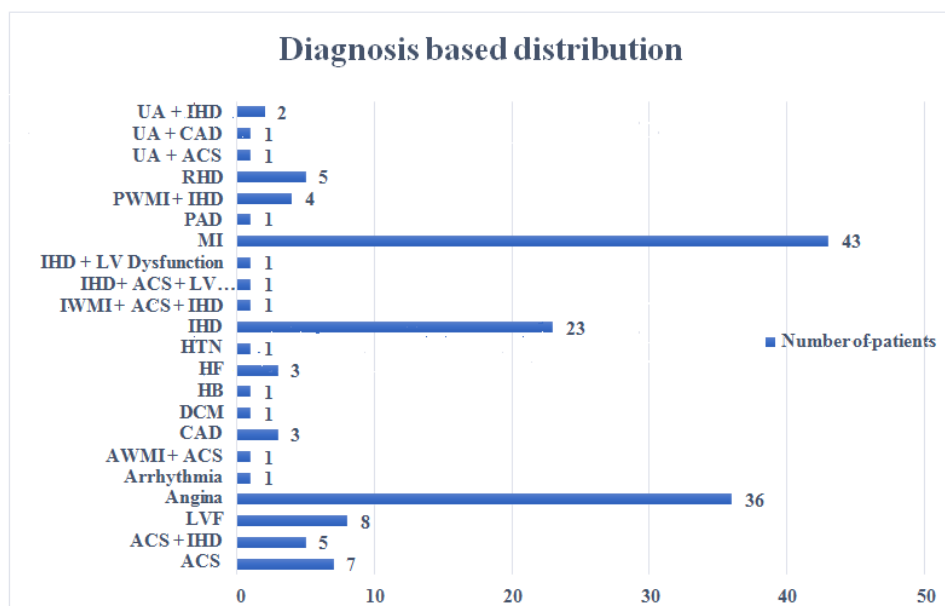
Fig. 3: Diagnosis based distribution.

4. Co-Morbidities based distribution

Patients were grouped based on the presence or absence of comorbidities. Among the total patients, 82 (55%) had comorbid conditions, whereas 68 (45%) had no comorbidities. This indicates that a majority of patients had additional health conditions alongside their primary diagnosis, which may impact disease progression and treatment outcomes.

Fig. 4: Co-Morbidities based distribution.

5. List of Co-Morbidities

Patients were grouped based on the presence or absence of comorbidities. Among the total patients, 82 (55%) had comorbid conditions, whereas 68 (45%) had no comorbidities. This indicates that a majority of patients had additional health conditions alongside their primary diagnosis, which may impact disease progression and treatment outcomes.
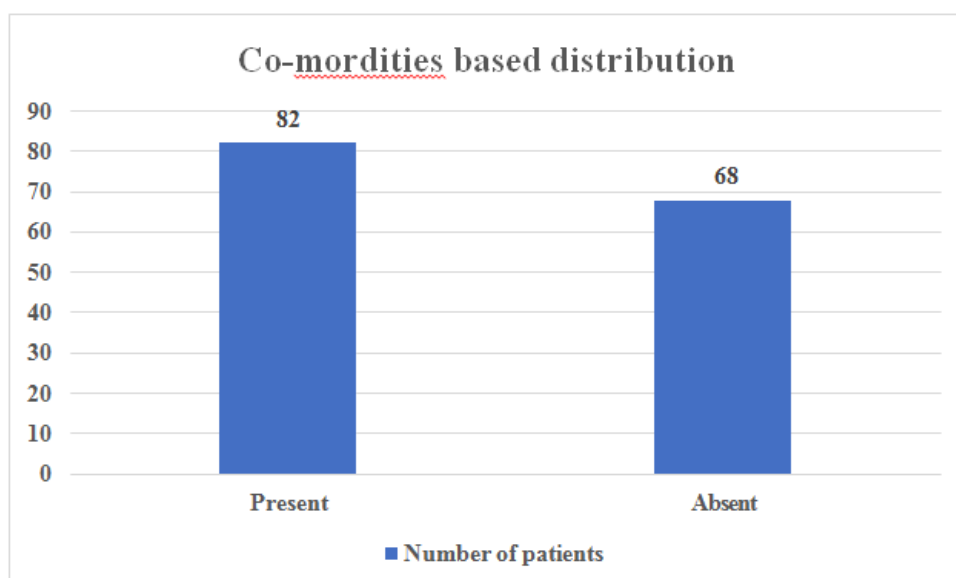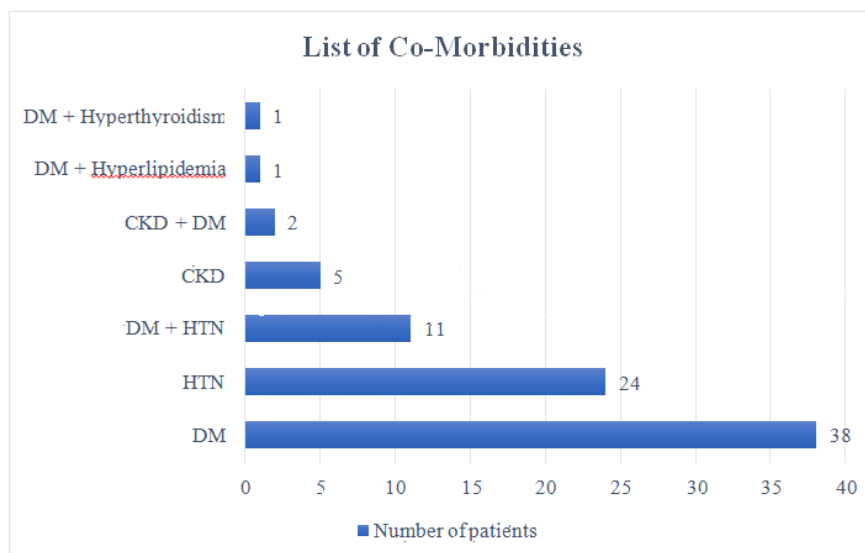

Fig. 5: List of Co-Morbidities.

6. Hospital stay based distribution

Patients were grouped based on the duration of their hospital stay. The most common duration was 3 days (33.3%), followed by 4 days (29.3%) and 5 days (18%). A smaller proportion of patients stayed for 6 days (10%), 2 days (6.7%), 7 days (2%), and 8 days (0.7%). This indicates that the majority of patients were hospitalized for 3 to 5 days, suggesting that most conditions required short to moderate hospital stays.

Fig. 6: Hospital stay based distribution.

7. Number of drugs prescribed

Patients were categorized based on the number of drugs prescribed. The majority of patients (60%) received 5-10 drugs, followed by 11-15 drugs prescribed in about 20% of patients. A smaller prop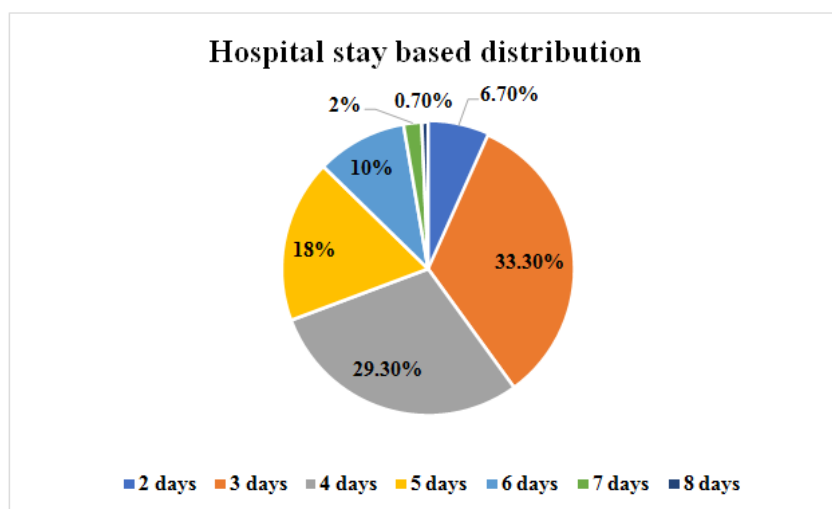ortion (around 15%) received less than 5 drugs, while a very minimal percentage of patients were prescribed 16-20 drugs. This suggests that most patients required a moderate number of medications, likely reflecting the complexity of their conditions and the need for combination therapies.
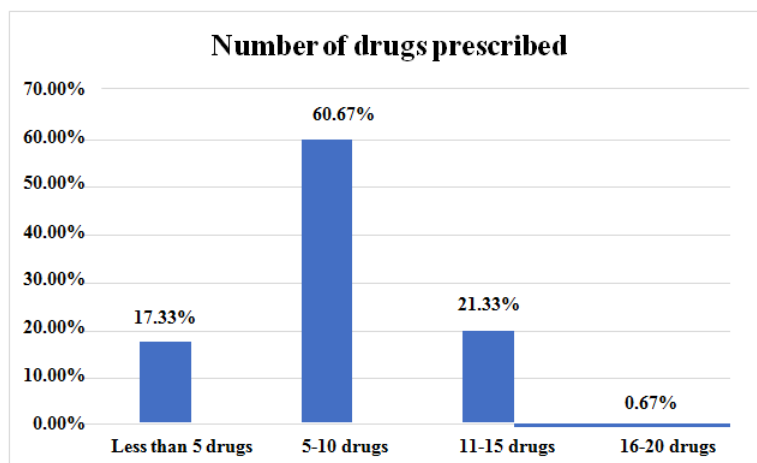

Fig. 7: Number of drugs prescribed.

8. Antidiabetic drug-based distribution

Among the prescribed drugs, soluble insulin injection was the most commonly used medication, administered to 38 patients (25.3%). Metformin was prescribed to 7 patients (4.7%), while Sitagliptin was given to only 1 patient (0.7%). This indicates that insulin therapy was the primary treatment for the majority of patients, while oral antidiabetic agents were less frequently used.

Table 1: Antidiabetic drug-based distribution.

SI.NO	Drugs prescribed	Number of patients	Percentage of patients
1	Soluble insulin Inj	38	25.3
2	Metformin	7	4.7
3	Sitagliptin	1	0.7

9. Antihypertensive drug-based distribution

The table 2 highlights the prescription pattern of antihypertensive drugs. Furosemide (25.33%) was the most prescribed, followed by Telmisartan, Metoprolol, and Torsemide + Spironolactone (19.33% each), indicating their significance in managing hypertension and heart failure. Torsemide (8.67%) was also frequently used as a diuretic alternative. Beta-

blockers like Metoprolol (19.33%) and Carvedilol (6.67%) were commonly prescribed, while Bisoprolol (1.33%) had limited use. Amlodipine (6.67%) was selectively used for hypertension, and Tamsulosin (2%) was prescribed for urinary symptoms.

Table 2: Antihypertensive drug-based distribution.

SI. NO	Drugs prescribed	Number of patients	Percentage of patients
1	Telmisartan	29	19.33
2	Amlodipine	10	6.67
3	Furosemide	38	25.33
4	Metoprolol	29	19.33
5	Bisoprolol	2	1.33
6	Spironolactone	2	1.33
7	Carvedilol	10	6.67
8	Torsemide	13	8.67
9	Torsemide + Spironolactone	29	19.33
10	Tamsulosin	3	2.00

10. Cardiovascular drug-based distribution

This table presents the prescription trends of cardiovascular drugs. Aspirin (84%) and Heparin (65.33%) were the most commonly prescribed, reflecting their essential role in anticoagulation and thromboprophylaxis. Atorvastatin (58%) was frequently used for lipid control, followed by Ticagrelor (44.67%) and Nicorandil (30.67%), indicating their importance in preventing ischemic events. Amiodarone (12%) and Nitroglycerin (8%) were prescribed for arrhythmias and angina, respectively. Rosuvastatin (10.67%) was a secondary statin choice, while Prasugrel (4.67%) was selectively used. Other drugs like Warfarin (2%), Digoxin (1.33%), and Trimetazidine (0.67%) were prescribed based on specific patient conditions. The data underscores a strategic medication approach in cardiovascular management.

Table 3: Cardiovascular drug-based distribution.

SI. NO	Drugs prescribed	Number of patients	Percentage of patients
1	Ticagrelor	67	44.67
2	Aspirin	126	84.00
3	Atorvastatin	87	58.00
4	Amiodarone	18	12.00
5	Heparin	98	65.33
6	Ivabradine	5	3.33
7	Nitroglycerin	12	8.00
8	Prasugrel	7	4.67
9	Rosuvastatin	16	10.67
10	Digoxin	2	1.33
11	Nor-adrenaline	2	1.33
12	Trimetazidine	1	0.67

13	Nicorandil	46	30.67
14	Warfarin	3	2.00

11. Gastro drug-based distribution

The data highlights the prescription patterns of gastroprotective and antiemetic drugs. Pantoprazole (68%) was the most commonly prescribed, indicating its widespread use for acid suppression. Ondansetron (45.33%) was frequently used for nausea and vomiting control. Rabeprazole (15.33%) was a secondary choice for acid-related disorders, while esomeprazole+ domperidone combinations (9.33%) were used for reflux and gastroparesis. Ranitidine (8%) and Metoclopramide (7.33%) had limited use, reflecting a preference for proton pump inhibitors over H2 blockers and prokinetics. This data suggests a strong reliance on PPIs and antiemetics in gastrointestinal management.

Table 4: Gastro drug-based distribution.

SI. NO	Drugs prescribed	Number of patients	Percentage of patients
1	Pantoprazole	102	68
2	Rabeprazole	23	15.33
3	Rabeprazole + Domperidone	3	2.00
4	Ondansetron	68	45.33
5	Esomeprazole + Domperidone	14	9.33
6	Ranitidine	12	8.00
7	Metoclopramide	11	7.33

12. Antibiotics drug-based distribution

The data on antibiotic prescriptions indicates that Cefixime (38%) was the most frequently prescribed, followed by Ceftriaxone (22%), reflecting a preference for cephalosporins in bacterial infections. Levofloxacin (8%) was the most commonly used fluoroquinolone, while Amikacin (4.67%) and Linezolid (3.33%) were prescribed for resistant or specific bacterial infections. Norfloxacin + Tinidazole (1.33%) had minimal use, likely for gastrointestinal infections.

Table 5: Antibiotics drug-based distribution.

SI. NO	Drugs prescribed	Number of patients	Percentage of patients
1	Cefixime	57	38
2	Ceftriaxone	33	22
3	Linezolid	5	3.33
4	Amikacin	7	4.67
5	Levofloxacin	12	8.00
6	Norfloxacin + Tinidazole	2	1.33

13. Miscellaneous drug-based distribution

The data on supportive therapy and symptomatic treatment shows that Normal Saline (34.67%) was the most commonly prescribed, emphasizing its role in fluid management. Liquid paraffin + Milk of Magnesia (15.33%) was frequently used for gastrointestinal relief, followed by Paracetamol (14.67%), a common analgesic and antipyretic. Ringer Lactate (7.33%) was administered for electrolyte balance, while Dexamethasone (3.33%) and Levocetirizine (2%) were prescribed for inflammatory and allergic conditions, respectively.

Table 6: Miscellaneous drug-based distribution.

SI. NO	Drugs prescribed	Number of patients	Percentage of patients
1	Syp. Liquid paraffin + Milk of magnesia	23	15.33
2	Ringer lactate	11	7.33
3	Normal saline	52	34.67
4	Paracetamol	22	14.67
5	Levocetirizine	3	2.00
6	Dexamethasone	5	3.33

14. Drug interaction-based distribution

The drug interaction analysis indicates that only 5 patients (3.33%) experienced a drug interaction involving Heparin and Prasugrel, whereas 145 patients (96.67%) did not encounter any significant interactions. This suggests that the incidence of drug interactions in the studied population was relatively low.
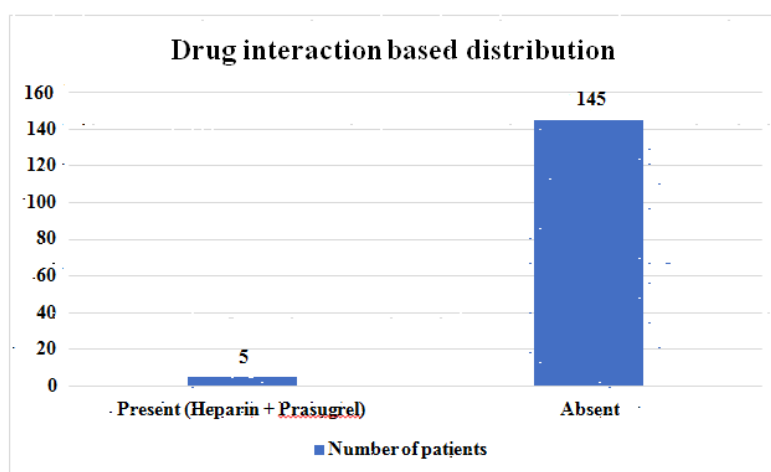

Table 7: Drug interaction-based distribution.

15. Co-relation between Co-morbidities and number of drugs prescribed

The data highlights the distribution of co-morbidities among patients and their corresponding average number of drugs prescribed. Diabetes Mellitus (DM) was the most common

condition (38 patients, 8.4 drugs on average), followed by Hypertension (HTN) (24 patients, 8 drugs on average). Patients with both DM and HTN required a higher number of medications (9.7 on average). Those with Chronic Kidney Disease (CKD) alone had fewer prescriptions (6.8), while CKD + DM patients had slightly more (7). Cases involving DM with hyperlipidemia and DM with hyperthyroidism were rare, with an average of 6 and 3 drugs prescribed, respectively. This data suggests a higher medication burden in patients with multiple co-morbidities.

Table 8: Co-relation between Co-morbidities and number of drugs prescribed.

SI. NO	CO-morbidities	Number of patients	Average number of drug prescribed
1	DM	38	8.4
2	HTN	24	8
3	DM + HTN	11	9.7
4	CKD	5	6.8
5	CKD + DM	2	7
6	DM + Hyperlipidemia	1	6
7	DM + Hyperthyroidism	1	3

16. Co-relation between Co-morbidities and drug-drug interaction

The analysis reveals that 5 patients experienced a drug interaction involving Heparin and Prasugrel, with an average of 11.6 drugs prescribed per patient. This suggests that polypharmacy may contribute to the occurrence of drug interactions, emphasizing the need for careful medication management in such cases.

Table 9: Co-relation between Co-morbidities and drug-drug interaction.

SI. NO	Drug interaction	Number of patients	Average number of drug prescribed
1	Heparin + Prasugrel	5	11.6

17. Prevalence of cardiovascular disease

During our study, 8250 patients were admitted in hospital. Among that patients, only 150 patients was admitted for treatment of cardiovascular disease. That is, prevalence of cardiovascular disease is 1.8%.

VII. DISCUSSION

Drug utilization evaluation (DUE) of cardiovascular diseases (CVD) assesses the prescribing patterns, appropriateness, and effectiveness of medications used in CVD management.

Patient demographics

In the analysis of 100 prescriptions, 84 patients (56%) were male, and 66 patients (44%) were female, indicating a higher proportion of male patients in the study population. Naliganti et al. (2019) concluded that the majority of cardiovascular disease (CVD) patients were male, highlighting a higher prevalence of CVD among men compared to women. This gender disparity in cardiovascular conditions may be attributed to various factors, including differences in lifestyle, genetic predisposition, and risk factor exposure such as smoking and alcohol.[10]

The majority of patients (59.33%) were over 60 years, with smaller proportions in the 46-60 (29.33%) and 30-45 (11.33%) age groups, while none were under 30. According to the American Heart Association (AHA), the prevalence of cardiovascular disease (CVD) in the U.S. population varies significantly with age. Approximately 40% of individuals between 40 and 59 years are affected by CVD. This prevalence increases to around 75% among those aged 60 to 79 years. Notably, the incidence rises further to nearly 86% in individuals aged 80 and above, highlighting the strong correlation between aging and risk of cardiovascularr conditions.[16]

Diagnosis based characteristics

Cardiovascular diseases (CVDs) remain a leading cause of morbidity and mortality worldwide, with myocardial infarction (MI) and angina being among the most prevalent conditions. In this study, MI (43 cases) and angina (36 cases) were the most frequently diagnosed conditions, aligning with global trends indicating that coronary artery disease (CAD) is a primary contributor to CVD burden (Roth et al., 2020). The high prevalence of ischemic heart disease (IHD) in 23 patients further supports existing evidence that atherosclerosis-driven conditions continue to dominate cardiovascular pathology (Virani et al., 2021).

Left ventricular failure (LVF), acute coronary syndrome (ACS), and rheumatic heart disease (RHD) were also observed, though in fewer cases. LVF (8 cases) is commonly associated with long-term complications of hypertension and myocardial infarction, as described by Braunwald (2019). Similarly, ACS (7 cases) represents a spectrum of conditions requiring urgent medical intervention, and its occurrence in this study is consistent with previous findings that highlight its significant impact on cardiovascular emergencies (Ibanez et al., 2018).

RHD, found in 5 patients, remains a concern, particularly in developing countries, where Streptococcus-related infections persist as a major cause of valvular heart disease (Carapetis et al., 2019). Less frequent diagnoses, including heart failure, coronary artery disease, and arrhythmia, reflect the broader spectrum of CVD presentations. While CAD remains a major underlying factor, its direct diagnosis may be underrepresented due to overlapping conditions such as MI and IHD. Arrhythmias, though less common in this study, are known to be a critical risk factor for sudden cardiac death and often coexist with other cardiovascular conditions (Zipes et al., 2018).

Co-morbidities

A higher prevalence of comorbidities among cardiovascular patients, as observed in this study (55% of patients with comorbid conditions), aligns with previous research emphasizing the impact of multimorbidity on disease progression and treatment complexity. Cardiovascular diseases (CVDs) are often accompanied by conditions such as diabetes mellitus (DM), hypertension (HTN), chronic kidney disease (CKD), and dyslipidemia, which not only increase the risk of adverse events but also complicate disease management strategies (Kotseva et al., 2019). Several studies have highlighted that comorbidities in cardiovascular patients contribute to polypharmacy, higher healthcare costs, and poorer clinical outcomes. For instance, a study by Yusuf et al. (2020) reported that patients with multiple comorbid conditions required more intensive pharmacological interventions and frequent hospital visits due to complications arising from drug interactions and disease progression. Furthermore, multimorbidity in CVD patients is associated with increased mortality and reduced quality of life, as demonstrated by the findings of Marengoni et al. (2021). From a clinical perspective, the presence of comorbid conditions necessitates an integrated and multidisciplinary approach to treatment. Guidelines from the European Society of Cardiology (ESC) emphasize the importance of personalized treatment plans that address not just cardiovascular health but also associated conditions such as diabetes and renal impairment (Piepoli et al., 2021).

Hospital stays

The study findings indicate that most cardiovascular patients had a short to moderate hospital stay, with the majority being discharged within 3 to 5 days. This trend is consistent with previous research, which suggests that early diagnosis, optimized pharmacological management, and advancements in interventional cardiology have contributed to reduced hospitalization durations (Pérez-Hernández et al., 2020; Xiao et al., 2021). Studies have shown

that conditions such as myocardial infarction (MI) and angina, when treated with timely interventions like percutaneous coronary intervention (PCI) and evidence-based medical therapy, often result in shorter hospital stays (Gupta et al., 2019). However, prolonged stays beyond 6 days were observed in a minority of patients, likely due to complications such as heart failure, arrhythmias, recurrent ischemic events, or post-procedural monitoring (Smith et al., 2018).

Number of drugs prescribed

Polypharmacy is a well-established practice in cardiovascular disease (CVD) management due to the need for multiple drug classes to control risk factors, prevent complications, and optimize patient outcomes. In this study, the majority of patients (60%) were prescribed 5–10 drugs, reflecting the standard approach in CVD treatment, where antihypertensives, antiplatelets, statins, and anticoagulants are commonly co-prescribed. Similarly, 20% of patients received 11–15 drugs, indicating the presence of multiple comorbidities such as diabetes or chronic kidney disease, which require additional pharmacological interventions. However, increasing drug burden raises concerns regarding drug-drug interactions, medication adherence, and potential adverse effects. Studies suggest that careful medication reconciliation and deprescribing strategies are essential to optimize therapy while minimizing risks (Mukete et al., 2017).

Drug utilization pattern

The utilization of diuretics, anticoagulants, and lipid-lowering agents plays a crucial role in the management of cardiovascular diseases (CVDs). In this study, Furosemide (25.33%) emerged as the most commonly prescribed diuretic. As a loop diuretic, furosemide is frequently used to manage heart failure, hypertension, and conditions associated with fluid overload (Packer et al., 2017). Its efficacy in reducing preload and afterload makes it a preferred choice in patients with congestive heart failure and left ventricular dysfunction (McMurray et al., 2019).

Anticoagulant therapy is essential in preventing thrombotic complications in CVD patients. The high prescription rate of Aspirin (84%) and Heparin (65.33%) aligns with current guidelines for the prevention and management of acute coronary syndromes (ACS) and ischemic heart disease (IHD) (Ibanez et al., 2018).

Aspirin remains the cornerstone of antiplatelet therapy due to its well established role in secondary prevention (Patrono et al., 2017). Heparin, commonly used in acute settings, is crucial for preventing clot formation in high-risk patients, particularly those undergoing percutaneous coronary intervention (PCI) or experiencing myocardial infarction (MI) (Kushner et al., 2018).

Lipid management is another fundamental aspect of cardiovascular therapy. Atorvastatin (58%) was the most frequently prescribed statin, reflecting its effectiveness in reducing low-density lipoprotein cholesterol (LDL-C) and improving cardiovascular outcomes (Ridker et al., 2019). Statins have demonstrated substantial benefits in reducing the risk of major adverse cardiovascular events (MACE), making them a primary therapy for dyslipidemia in CVD patients (Grundy et al., 2018).

VIII. CONCLUSION

This study revealed a higher prevalence of male patients (56%), indicating a slight male predominance. Patients with multiple co-morbidities exhibited a greater medication burden, underscoring the complexity of cardiovascular diseases and the necessity of combination therapies for optimal management. The predominance of myocardial infarction (MI) and angina, along with the high proportion of elderly patients (59.33% above 60 years), highlights the need for comprehensive treatment strategies. Aspirin (84%) and Heparin (65.33%) were the most prescribed anticoagulants, while Atorvastatin (58%) was frequently used for lipid control. Ticagrelor (44.67%) and Nicorandil (30.67%) played key roles in ischemic event prevention. Additionally, Amiodarone (12%) was utilized for arrhythmia management, and Nitroglycerin (8%) for angina relief.

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