



INDO AMERICAN JOURNAL OF PHARMACEUTICAL RESEARCH



SINGLE VERSUS DUAL ANTI-PLATELET DRUG THERAPY IN THE MANAGEMENT OF CORONARY ARTERY DISEASE, ADDING ASPIRIN TO CLOPIDOGREL VERSUS CLOPIDOGREL ALONE

Uzma Farheen*

Department of Pharmacology, Sultan-UI-Uloom College of Pharmacy, Hyderabad, Telangana State, India.

ARTICLE INFO

Article history

Received 08/08/2019

Available online

30/09/2019

Keywords

Coronary artery disease,
myocardial infarction and
stent thrombosis.

ABSTRACT

Introduction- Coronary artery disease is one of the most common amongst the heart diseases. It occurs when the blood supplying arteries to the heart becomes very narrow and hard due to the plaque buildup. Therefore, the single or dual antiplatelet drug therapy (clopidogrel + Aspirin or clopidogrel alone) is widely accepted and challenging strategy in the patients with Coronary artery disease to reduce myocardial infarction and stent thrombosis. The outcomes and prescribing patterns associated with these therapies are observed in this study. **Method-** The retrospective study was conducted for a period of 8 months in which 150 case reports/prescriptions with single anti-platelet therapy (clopidogrel) or Dual anti-platelet therapy (clopidogrel + Aspirin) were collected and noted in a data form. The data obtained is used to observe the prescribing patterns and their outcomes. **Results-** The data was collected from 150 patients in Medical intensive care unit (MICU), Critical intensive care unit (CICU), Intensive care unit (ICU), and general ward. The male to female ratio was found to be 103 (68.66%): 47 (31.33%). The usage of Single Anti-Platelet Therapy was found to be quite lesser than Dual Anti-Platelet Therapy. The patients with Dual anti-platelet therapy were at the higher risk of life threatening bleeding and ischemic complications but the use of dual anti-platelet therapy has found to be beneficent in reducing the myocardial infarction and stent thrombosis. The choice of dual anti-platelet therapy or single anti-platelet therapy depends upon the duration of patients, their profile, risk, benefits and management therapy. **Conclusion-** The main focus of our study was the prescription of Aspirin and Clopidogrel both as single drug and in combination, the medication given while admission of patient in the hospital were 20, (13.33%) of Aspirin, 7, (4.66%) of Clopidogrel and 25, (16.66%) Aspirin + Clopidogrel and medication given while discharging of patient in the hospital were 46, (37.70%) of Aspirin, 25, (20.49%) of Clopidogrel and 51, (41.80%) Aspirin + Clopidogrel 65.33% were Other Miscellaneous drugs.

Corresponding author

Uzma Farheen

Department of Pharmacology,
Sultan-UI-Uloom College of Pharmacy,
Hyderabad, Telangana State, India.

Please cite this article in press as **Uzma Farheen et al.** Single Versus Dual Anti-Platelet Drug Therapy in the Management of Coronary Artery Disease, Adding Aspirin to Clopidogrel Versus Clopidogrel Alone. *Indo American Journal of Pharmaceutical Research*.2019;9(09).

Copy right © 2019 This is an Open Access article distributed under the terms of the Indo American journal of Pharmaceutical Research, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Rules summarize and assess all accessible prove on a specific issue at the time of the composing prepare, with the point of helping wellbeing experts in selecting the most excellent administration techniques for an individual patient with a given condition, taking into consideration the affect on result, as well as the risk–benefit proportion of particular diagnostic or helpful implies. Rules and proposals should help wellbeing experts to create choices in their every day hone. In any case, the ultimate choices concerning a person persistent must be made by the capable wellbeing professional(s) in discussion with the persistent and caregiver as suitable.

An incredible number of Rules have been issued in later a long time by the European Society of Cardiology (ESC) and by the European Affiliation for Cardio-Thoracic Surgery, as well as by other social orders and associations. Since of the affect on clinical hone, quality criteria for the improvement of rules have been built up in arrange to create all choices straightforward to the client. The suggestions for defining and issuing ESC Rules can be found on the ESC site. ESC Rules speak to the official position of the ESC on a given point and are routinely overhauled.

Individuals of this Assignment Drive were chosen by the ESC, counting representation from the European Heart Cadence Affiliation (EHRA), and EACTS as well as by the European Stroke Association (ESO) to speak to experts included with the therapeutic care of patients with this pathology. Chosen specialists within the field attempted a comprehensive audit of the distributed prove for administration (counting determination, treatment, avoidance and restoration) of a given condition agreeing to ESC Committee for Hone Rules (CPG) approach and affirmed by the EACTS and ESO. A basic assessment of symptomatic and restorative methods was performed, counting evaluation of the risk–benefit proportion. Gauges of anticipated wellbeing results for bigger populaces were included, where information exist. The level of prove and the quality of the proposal of specific administration alternatives were weighed and evaluated agreeing to predefined scales ^[1]

There remains instability over ideal antithrombotic administration technique for patients with atrial fibrillation (AF) showing with an intense coronary disorder and/or experiencing percutaneous coronary intervention/stenting. Clinicians have to be adjust the hazard of stroke and thromboembolism against the chance of repetitive cardiac ischaemia and/or stent thrombosis, and the hazard of dying. This agreement report comprehensively surveys the distributed prove and presents a agreement explanation on a 'best practice' antithrombotic treatment rule for the administration of antithrombotic treatment in such AF patients. ^[2]

AIM:

To monitor and optimize antiplatelet therapy in patients with stable coronary artery disease for their Irrational prescribing practice of antiplatelet drugs within the administration of coronary artery disease and to prescribing drug dose practices which serves as an apparatus for evaluating the endorsing, apportioning and dispersion practices of drugs against coronary artery route diseases which encourages proper evaluation of the viability in advancing sound utilize of antiplatelet drugs.

OBJECTIVES:

To highlight the prescription practice of antiplatelet drugs within the administration of coronary artery diseases of inpatient division, generic drugs comparing with branded drugs on the basis of collected information within the shape of case sheets from the patients.

Our points of interest are:

- age of the patients,
- number of drugs per prescription,
- medications of patients while admission,
- medications of patients while discharge,
- Resistance and Replacement of drugs,
- Comorbidity Prescriptions

METHODOLOGY

Aster Prime Hospital is a private hospital situated in Hyderabad. Aster Prime Hospital is mostly dedicated to cardiac services and it is positioned to serve patients from different parts of the country and is, in effect, the apex of the private health service centre in Hyderabad.

Study design

This was a clinical Retrospective study conducted for 8 months from Nov 2017 to June 2018.

Study population

The study included all patients in cardiology department suffering from coronary artery disease ward who were selectively selected by prescription pattern of antiplatelet drugs in the management of coronary artery disease during the study period.

Sample size

Sample size was convenient sampling in which all patients who had coronary artery disease and met inclusions criteria were included. Total selective prescriptions of 150 patients were included in the study.

Inclusion and Exclusion criteria

Inclusion criteria

All sampling prescriptions in which all patients who had coronary artery disease consisting of prescribed antiplatelet drugs are included. Total selective prescriptions were of 150 prescriptions are included in the study.

Exclusion criteria

All sampling prescriptions in which all patients who had coronary artery disease doesn't consist of prescribed antiplatelet drugs are excluded.

Sampling Technique

Convenient enrolment technique was employed in which all patients in cardiac department who were selectively prescribed with antiplatelet drugs in Prime Hospital from Nov 2017 to June 2018 were enrolled.

Study procedure:

Prior to data collection the hospital administration of the study the principal investigator made a pre-test of the case report and were responsible for data collection. Audit of selective prescriptions was done by collecting information on timing of administering first dose of antihyperlipidemic and antiplatelet drugs, demographic data, types of comorbidities, choice of drugs used, from case notes and observation. A Structured case report was used to collect information.

Data processing and analysis.

Data recorded on the data collecting tool was processed and checked for completeness and consistency using MS EXCEL program followed by data analysis using frequency tables and cross tabulation with respective statistical tests. After analysis of the data followed by interpretation, report was written and presented.

RESULTS

Gender Demographics

In this study of 150 patients were chosen by the consideration and prohibition criteria. Out of the 150 chosen patients 103 (68.66%) patients were male and the remaining 47 (31.33%) patients were female.

Table. 1 Gender Demographics.

S.No	Gender Demographics	Number of Prescriptions	Percentage
1	Male	103	68.66%
2	Female	47	31.33%

Gender Demographics

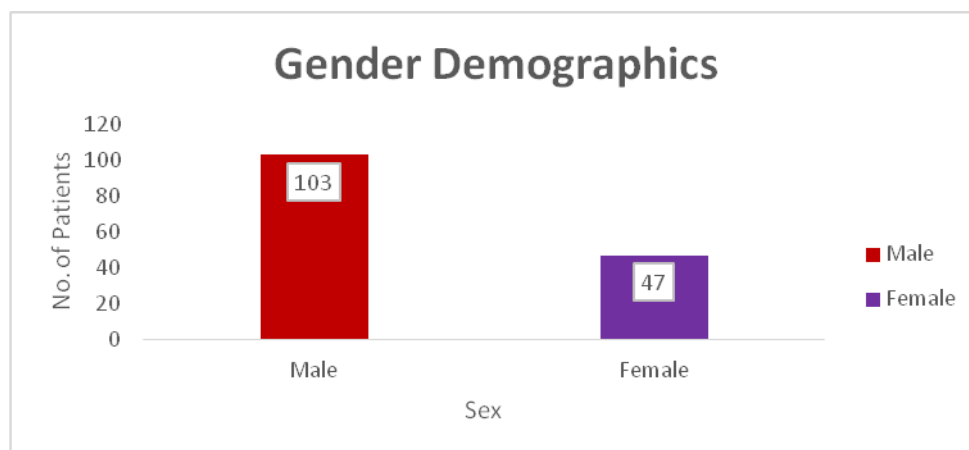


Fig. 1 Gender Demographics.

Age Wise distribution

The patients were distributed in several age group: between 51 – 55 years (9%), 56 - 60years (52%), 61 - 65years (73%), 66-70years (8%), 71-75years (3%). Coronary heart disease may affect any age of the life but by increasing the age the chance for disease is also increased. In this study the maximum number of patients comes under the age 61-65 years followed by 55-60 years of age.

Table. 2 Age Wise distribution.

S.No.	Demographics	
	Age Wise distribution	Number of patients
1.	51 – 55	13
2.	56 - 60	52
3.	61 - 65	73
4.	66- 70	8
5.	71-75	4

Age Wise distribution

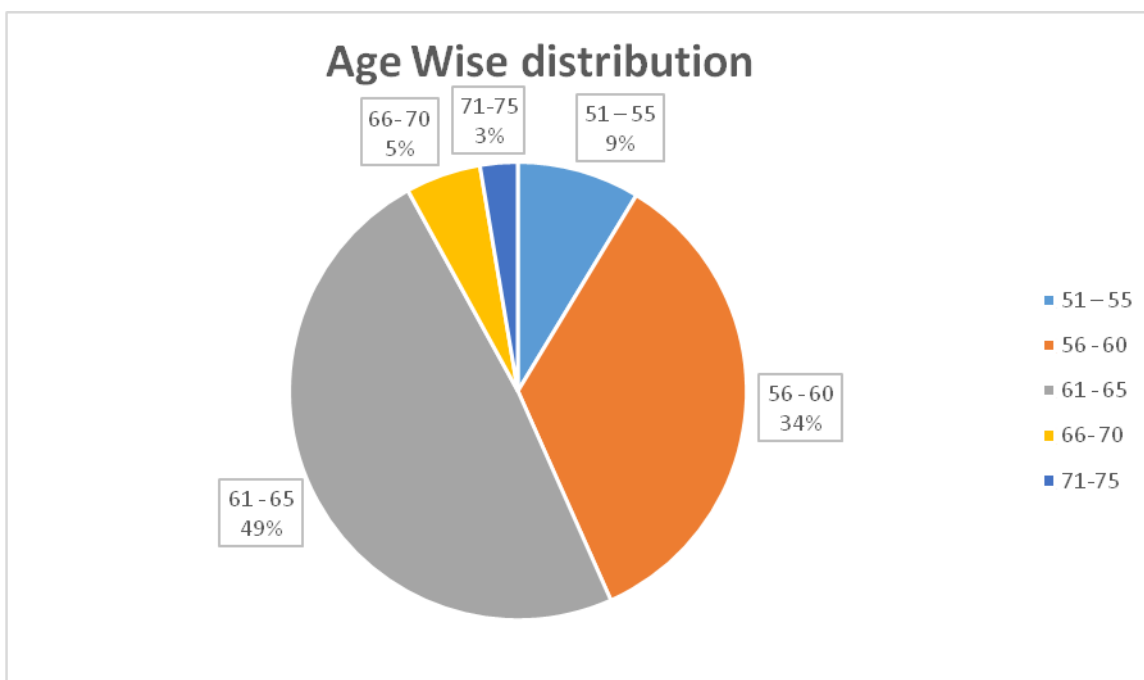


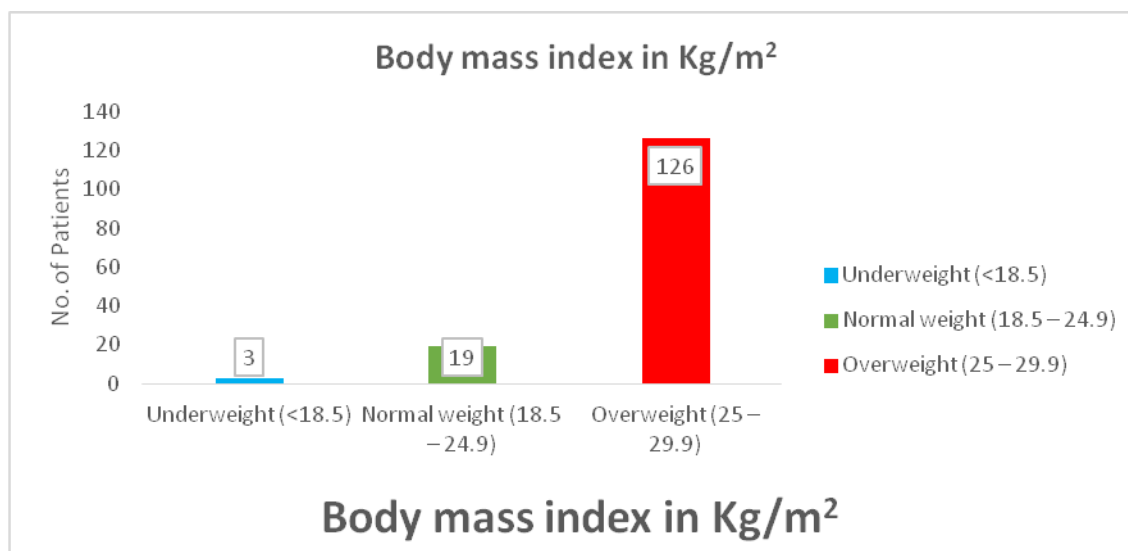
Fig. 2 Age Wise distribution.

Body mass index in Kg/m²

The Body mass index is expressed in Kg/m² units and 126 patients came under Overweight category.

Table. 3. Body mass index in Kg/m².

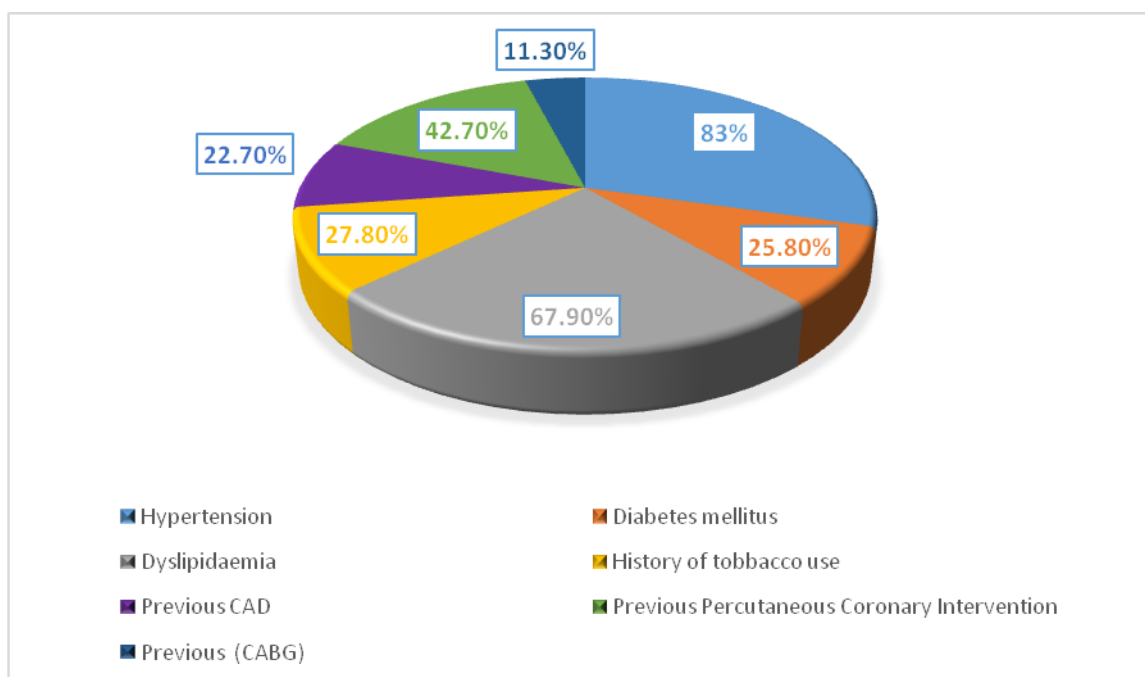
S.No	Body mass index in Kg/m ²	Number of patients
1.	Underweight (<18.5)	5
2.	Normal weight (18.5 – 24.9)	19
3.	Overweight (25 – 29.9)	126

Body mass index in Kg/m²**Fig. 3 Body mass index in Kg/m².**

Diagnostic The Diagnostic of Cardiovascular Disease shows Hypertension is having 83% and followed dyslipidaemia 67.9%.

Table. 4. Diagnostic Percentage.

Diagnostic	Percentage
Hypertension	83%
Diabetes mellitus	25.8%
Dyslipidaemia	67.9%
History of tobacco use	27.8%
Previous CAD	22.7%
Previous Percutaneous Coronary Intervention (PCI)	42.7%
Previous Coronary Artery Bypass Graft Surgery (CABG)	11.3%

**Fig. 4. Diagnostic.**

Social history

In this study most of the patients came beneath the category of male than female, it may be due to their everyday exercises, smoking and alcoholic propensities. The Social history status shows 45.63% are chain smokers, 8.73% are Alcoholic, 31.06% are Both smoking & Alcohol consumption and 14.56% are having none of the habits.

Table. 5. Social history.

S. No	Social history	Patients	%
1	Smokers	47	45.63%
2	Alcoholic	9	8.73%
3	both smoking & Alcohol consumption	32	31.06%
4	None	15	14.56%

None of the female have the habit of smoking and alcohol drinking, only Male who are included above.

Social History

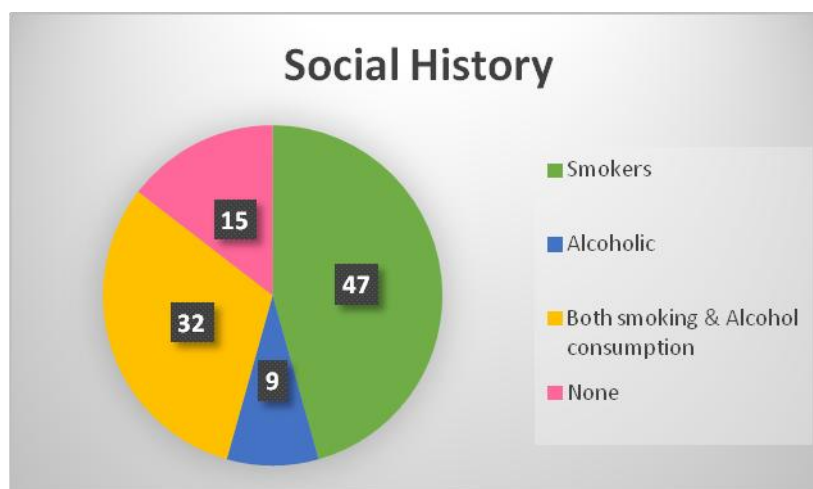


Fig. 5. Social History.

Medication on admission

Medication on admission were found to be higher in Dual Anti Platelet Therapy drugs. Dual Anti Platelet Therapy drugs was found to be higher. The single antiplatelet therapy was given less due to their high risk of bleeding and slow efficacy.

Table 6. Medication on admission.

<i>Medication on admission</i>	
Aspirin	20, (13.33%)
Clopidogrel	7,(4.66%)
Aspirin + Clopidogrel	25,(16.66%)
Other (Miscellaneous)	98, (66%)

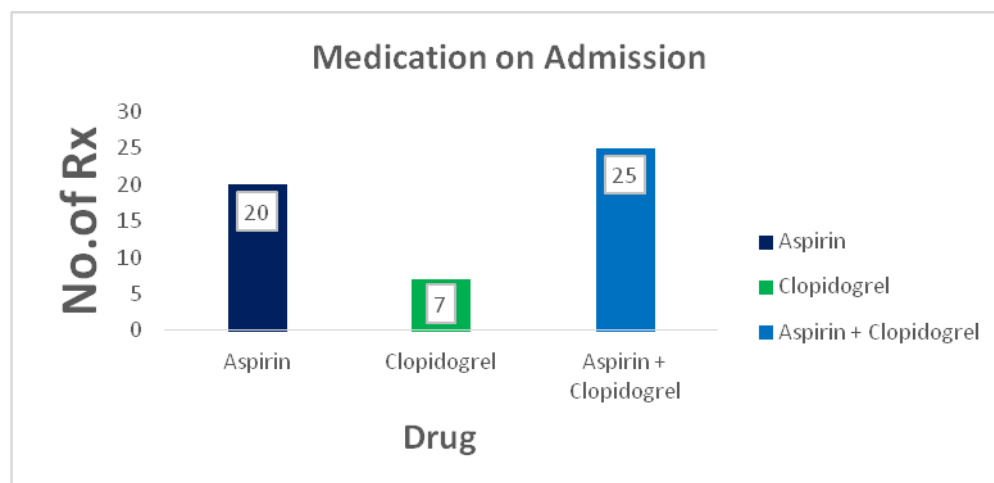


Fig. 6. Medication on admission.

Medication on Discharge

Medication on Discharge were found to be lesser in Single Anti Platelet Therapy drugs.

Table. 7 Medication on Discharge.

<i>Medication on Discharge</i>	
Aspirin	46, (37.70%)
Clopidogrel	25, (20.49%)
Aspirin + Clopidogrel	51, (41.80%)

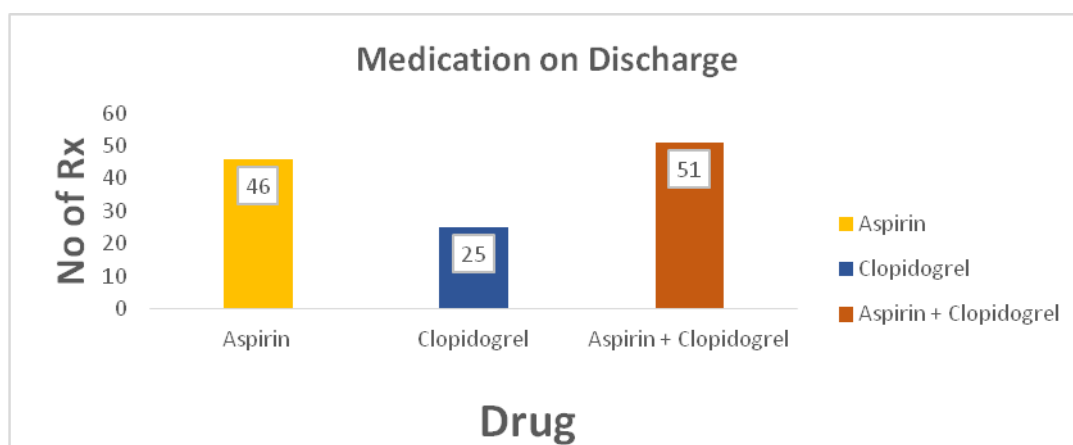


Fig. 7. Medication on Discharge.

Comorbidity

The patients are diagnosed with other comorbid diseases, 8% patients are suffering from Asthma, 12% are suffering from Kidney disease. 6% are suffering from Arrhythmias, 8% are suffering from Anaemia.

Table 8. Comorbidity.

Comorbidity	No of Prescriptions	%
Asthma	12	8.00%
COPD	14	9.33%
Kidney disease	18	12.00%
Arrhythmias	9	6.00%
Respiratory Disease	17	11.33%
Anaemia	12	8.00%
GIT disorder	18	12.00%

The least are suffering from anaemia and arrhythmias.

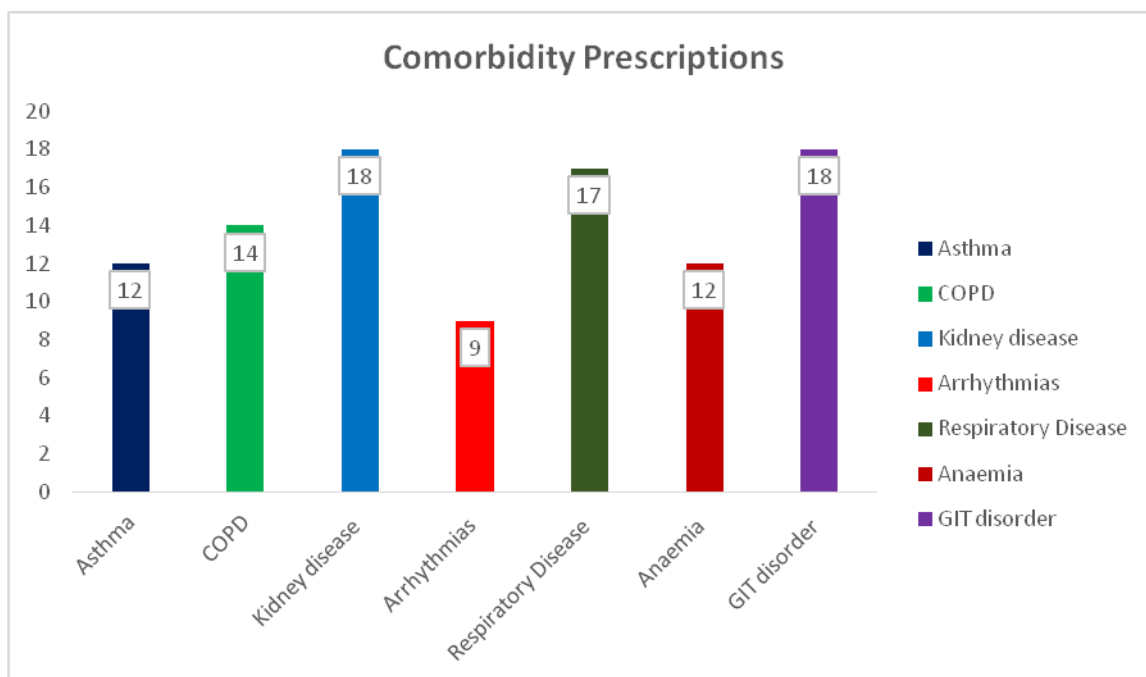


Fig. 8. Comorbidity.

Table 9. Anti-Platelet Drugs Prescribed by Brand names.

S.No.	Anti-Platelet Drugs Prescribed by Brand names	Number of Prescriptions
1.	Single Anti-Platelet Therapy (Aspirin, E Prin)	36
2.	Single Anti-Platelet Therapy (Clopidogrel, Clavix)	28
3.	Dual Anti-Platelet Therapy (Aspirin + Clopidogrel, Ecosprin)	58

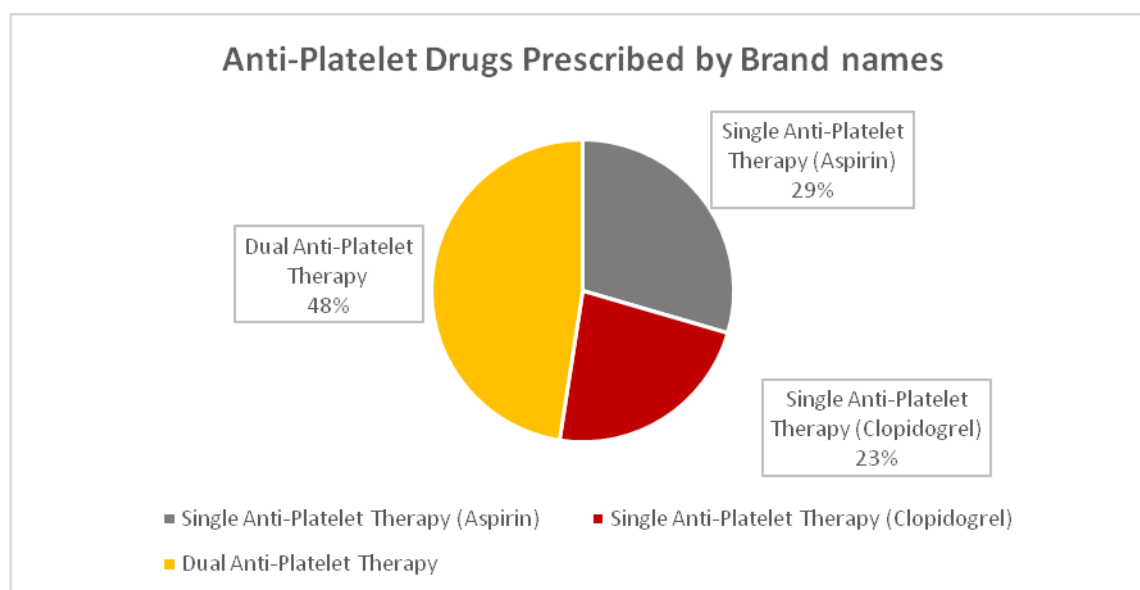


Fig. 9. Anti-Platelet Drugs Prescribed by Brand names.

Drugs prescribing by Brand names

In present study the prescription pattern of drugs revealed that anti-hyperlipidemics (22.01%) and anti-platelets (14.10%) were most commonly prescribed. “ All the drugs are prescribed by brand names and none by the generic names.

Table 10. Drugs prescribing by Brand names.

Generic names of Drugs	Brand names of Drugs	No. of Drugs	Prescription rate (%)
Lipid lowering agents		153	
Rosuvastatin	Novastat	84	54.90%
Atorvastatin	Atorva	40	26.14%
Simvastatin	Biosim	29	18.95%
Anti-Platelets		98	
Aspirin	E Prin	66	67.34%
Clopidogrel	Clavix	32	32.65%
Anti-Anginals		121	
Nitroglycerine	Glynit	48	39.66%
Isosorbide mononitrate	Ismo	73	60.33%
Beta blockers		142	
Metoprolol	Actiblok	94	66.19%
Carvedilol	Caditone	48	33.80%
Diuretics		112	
Indapamide	Atekind -D	62	55.35%
Furosemide	Lasix	21	18.75%
Spironolactone	Aldactone	38	33.92%
ARBs		89	
Telmisartan	Telsartan-H	59	66.29%
Olmesartan	Olmecip	30	33.70%
Miscellaneous		78	
Amlodipine	Adopin	42	53.84%
Valsartan	Diovan	36	46.15%

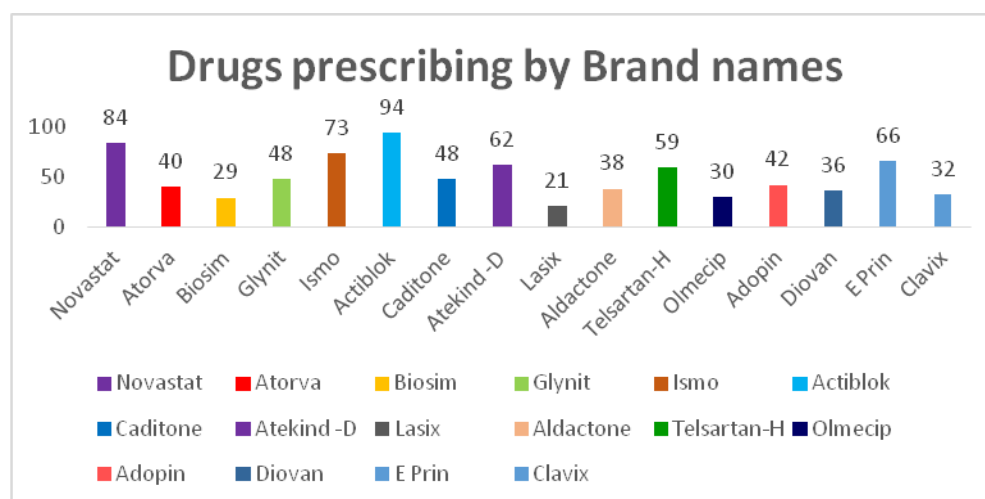


Fig. 10. Drugs prescribing by Brand names.

Resistance and Replacement Percentage

Table 11. Resistance and Replacement Percentage.

S. no	Patient	Clopidogrel Resistance	Aspirin Replacement	Ticlopidine Replacement
1	Hypertension	(2) 1.33%	(2) 1.33%	-
2	Diabetes mellitus	(10) 6.66%	(6) 4%	(4) 2.66%
3	Dyslipidaemia	(3) 2 %	-	(3) 2%
4	Previous CAD	(4) 2.66 %	(4) 2.66%	-
5	Previous Coronary Artery Bypass Graft Surgery	(2) 1.33%	(2) 1.33%	-
6	Myocardial Infarction	(3) 2%	(1) 0.66%	(2) 1.33%
7	Angina Pectoris	(4) 2.66 %	(1) 0.66%	(3) 2%

Resistance and Replacement Percentage

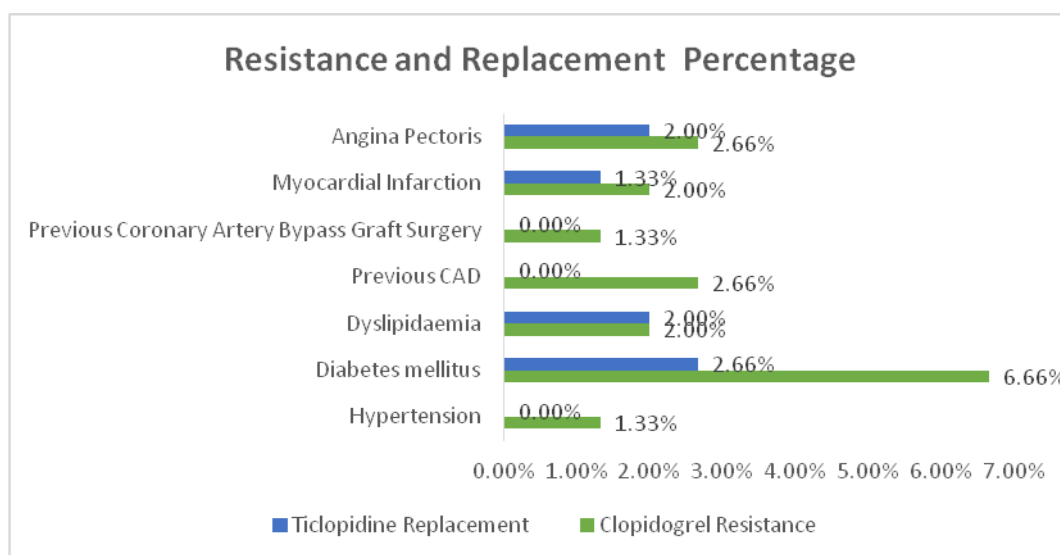


Fig. 11. Resistance and Replacement Percentage.

39 prescriptions out of the sample of 150 prescriptions have more than 3 drugs in their prescription while 85 prescriptions have 11-15 range of drugs in their prescriptions thus exhibiting polypharmacy and about 26 prescriptions have more than 15 drugs thus exhibiting polypharmacy.

This gives an overall frequency of polypharmacy of 111 prescriptions i.e. 74 %, where polypharmacy refers to the use of at least 11 types of medicines to treat a single patient.

The majority of the patients with prescriptions exhibiting polypharmacy were male (86, 65.5%). The proportion of females with polypharmacy is significantly lower than the equivalent proportion for the males.

Table 12. Frequency Replacement Percentage.

Drug Class	Frequency	Individual drugs	Description/Recommendation
Antihyperlipidemic	84	Rosuvastatin	These should be consider if therapeutic objectives are not achieved from specified drug therapy
	40	Atorvastatin	
Anti-Anginals	48	Nitroglycerine	Consider reducing particularly if mobility has decreased with less need for medication.
	73	Isosorbide mononitrate	
Beta blockers	94	Metoprolol	Likely symptomatic benefit
	48	Carvedilol	
Diuretics	62	Indapamide	For dependent ankle oedema – consider alternative ways of managing oedema; consider medication causes e.g. calcium channel blocker
	21	Furosemide	
ARBs	59	Telmisartan	Risk of hypotension is potentiated by concomitant diuretic use. Incidence of dizziness affects twice as many patients with heart failure than hypertension
	30	Olmesartan	
Miscellaneous	42	Amlodipine	Contribution to ankle swelling Contribution in rapid weight gain
	36	Valsartan	

Table 13. Range of Poly-Pharmacy prescribed Drugs.

S.No.	Range	Number of Patients
1.	>3	39
2.	11-15	85
3.	>15	26

CONCLUSION

Antiplatelet treatment is the foundation of auxiliary avoidance following an acute coronary syndrome (ACS) or ischaemic stroke, and antiplatelet specialists have been appeared to move forward clinical result in these conditions. Be that as it may, in spite of the utilize of antiplatelet treatment in these populaces, cardiovascular occasions still happened. A few thinks about have been carried out to survey certain clinical perspectives when utilizing antiplatelet in patients who have endured ACS or ischaemic stroke. Antiplatelet treatment is regularly endorsed as an auxiliary avoidance medicine in arrange to anticipate repetitive occasion, be that as it may, there are patients who encounter a stroke while taking antiplatelet.

The research fundamentally checked the patient's data like age, sex, past and current therapeutic profile and the diverse lesson of medicines and its basic inside the treatment. The data is collected from patients profile helpful records.

In this study of 150 patients were chosen by the consideration and prohibition criteria. Out of the 150 chosen patients 103 (68.66%) patients were male and the remaining 47 (31.33%) patients were female. The patients were partitioned in several age group: between 51 – 55 years (9%), 56 - 60years (52%), 61 - 65years (73%), 66- 70years (8%), 71-75years (3%). Coronary heart disease may affect any age of the life but by increasing the age the chance for disease is also increased. In this study the maximum number of patients comes under the age 61-65 years followed by 55-60 years of old.

In this study most of the patients came beneath the category of male than female, it may be due to their everyday exercises, smoking and alcoholic propensities. The Social history status shows 45.63% are chain smokers, 8.73% are Alcoholic, 31.06% are Both smoking & Alcohol consumption and 14.56% are having none of the habits.

The patients are diagnosed with other comorbid diseases, 83% patients are suffering from Hypertension, 25.8% are suffering from Diabetes mellitus. 22.7% are suffering from Previous CAD, 42.7% are suffering from Previous Percutaneous Coronary Intervention (PCI).

The use of DAPT is more prominent and efficient in preventing cerebral and coronary events in patients. The major coronary events like MI and strokes can be prevented with the use of DAPT therapy.

The major cause of stent thrombosis is the failing to use of combination therapy after revascularization, which puts the patient at high risk of developing MACE. The moratlity rate and complications are significantly low in the combination therapy.

There is a significant increase in the chance of developing stent thrombosis in the patients who had bare metal stents. While drug eluting stents lowers the risk of stent thrombosis

The bleeding criteria usually depends upon the history of bleeding, increase in age, Thrombocytopenia, strokes, MI, use of NSAIDS, kidney failure, Anorexia and due to drinking, smoking, tobacco use further increases the risk than others.

In our study we conclude the prescriptions were analysed and evaluated with the utilization of high end prescribing antihypertensive drugs and other preferred therapies. This study has indicated that dual antiplatelet therapy in cardiovascular diseases patients at Prime Hospital is mostly appropriate but it was found to be administered higher than Single Anti-Platelet Therapy. Taking after DAPT cessation, there were no contrasts of cardiovascular occasion chance when proceeded either aspirin or clopidogrel monoantiplatelet treatment.

The main focus of our study was the prescription of Aspirin and Clopidogrel both as single drug and in combination, the medication given while admission of patient in the hospital were 20, (13.33%) of Aspirin, 7, (4.66%) of Clopidogrel and 25, (16.66%) Aspirin + Clopidogrel and medication given while discharging of patient in the hospital were 46, (37.70%) of Aspirin, 25, (20.49%) of Clopidogrel and 51, (41.80%) Aspirin + Clopidogrel 65.33% were Other Miscellaneous drugs.

CONCLUSION

Generic medications should be prescribed by doctors to cause ease to the poor suffering patients coming from remote/rural areas. The cost of revascularization should be decreased to help patients with financial crisis. Patients and their families should be educated about harmful side effects of these medications. Proper diet and lifestyle changes should be advised by the doctors. They should strictly recommend patients for follow up to check for any life threatening side effects of drugs.

REFERENCES

1. Kirchhof P, Benussi S, Kotecha D, Ahlsson A, Atar D, Casadei B, et al. 2016 ESC Guidelines for the management of atrial fibrillation developed in collaboration with EACTS. *Eur Heart J.* 2016; 37 (38):2893±962. <https://doi.org/10.1093/eurheartj/ehw210> PMID: 27567408.
2. Lip GY, Huber K, Andreotti F, Arnesen H, Airaksinen KJ, Cuisset T, et al. Management of antithrombotic therapy in atrial fibrillation patients presenting with acute coronary syndrome and/or undergoing percutaneous coronary intervention/ stenting. *Thrombosis and haemostasis.* 2010; 103(1):13
3. Gibson CM, Mehran R, Bode C, Halperin J, Verheugt FW, Wildgoose P, et al. Prevention of Bleeding in Patients with Atrial Fibrillation Undergoing PCI. *The New England journal of medicine.* 2016; 375.
4. G.S.B. Wells, D. O'Connell, et al., The Newcastle-Ottawa Scale (NOS) for Assessing the Quality of Nonrandomised Studies in Meta-analysis Ottawa Hospital Research Institute assessed 15 October 2016.
5. Gao F, Zhou YJ, Wang ZJ, Shen H, Liu XL, Nie B, et al. Comparison of Different Antithrombotic Regimens for Patients With Atrial Fibrillation Undergoing Drug-Eluting Stent Implantation. *Circulation Journal.* 2010; 74(4):701-8.
6. Kang DO, Yu CW, Kim HD, Cho JY, Joo HJ, Choi RK, et al. Triple antithrombotic therapy versus dual antiplatelet therapy in patients with atrial fibrillation undergoing drug-eluting stent implantation. *Coronary artery disease.* 2015; 26(5):372-80. Epub 2015/03/15.
7. Mennuni MG, Halperin JL, Bansilal S, Schoos MM, Theodoropoulos KN, Meelu OA, et al. Balancing the Risk of Bleeding and Stroke in Patients With Atrial Fibrillation After Percutaneous Coronary Intervention (from the AVIATOR Registry). *The American journal of cardiology.* 2015; 116(1):37-42.
8. Rubboli A, Schlitt A, Kiviniemi T, Biancari F, Karjalainen PP, Valencia J, et al. One-year outcome of patients with atrial fibrillation undergoing coronary artery stenting: an analysis of the AFCAS registry. *Clin Cardiol.* 2014; 37(6):357±64.
9. Sambola A, Mutuberria M, Garcia Del Blanco B, Alonso A, Barrabes JA, Alfonso F, et al. Effects of Triple Therapy in Patients With Non-Valvular Atrial Fibrillation Undergoing Percutaneous Coronary Intervention Regarding Thromboembolic Risk Stratification. *Circ J.* 2016; 80(2):354±62.
10. Suh SY, Kang WC, Oh PC, Choi H, Moon CI, Lee K, et al. Efficacy and safety of aspirin, clopidogrel, and warfarin after coronary artery stenting in Korean patients with atrial fibrillation. *Heart and vessels.* 2014; 29(5):578±83. Epub 2013/08/27.



54878478451190805



Submit your next manuscript to **IAJPR** and take advantage of:

Convenient online manuscript submission

Access Online first

Double blind peer review policy

International recognition

No space constraints or color figure charges

Immediate publication on acceptance

Inclusion in **Scopus** and other full-text repositories

Redistributing your research freely

Submit your manuscript at: editorinchief@iajpr.com

