WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

PATTERN OF MEDICINE PRESCRIPTION IN STABLE ANGINA AT A TERTIARY CARE HOSPITAL

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DOI: https://doi.org/10.17605/OSF.IO/U8RG3

ABSTRACT

Background: Stable angina is widespread diseases in Pakistan so; this study was designed to evaluate the prescribing trends and to find out the most prescribed drug in Stable angina in public sector hospital Multan, Pakistan and assessing its prevalence in both genders. The purpose of the study was to identify the therapeutic agents being prescribed majorly in Pakistan and to analyze that whether the current prescription patterns are in accordance with evidence based guidelines. **Materials and Methods:** A cross-sectional study was conducted from January-2019 to April-2019, through collection of data from prescriptions of patients suffering from stable angina in public sector hospitals of Multan Pakistan. Data observations from the total 200 prescriptions collected from the hospitals of Multan graphically demonstrated the trends of drug classes per prescription. **Results:** The study identified that in the treatment of stable angina Antiplatelet are the most frequently prescribed drug class in Multan and adjacent areas. Followed by CCBs on 2nd rank and nitrates on 3rd rank, ACE inhibitors and ARBs on 4th number, after which statins occupy the 5th position, lastly comes the position of beta blocker i.e. 6th and diuretics are the least prescribed class. Results: The study identified that in the treatment of stable angina Antiplatelet are the most frequently prescribed drug class in Multan and adjacent areas. Followed by CCBs on 2nd rank and nitrates on 3rd rank, ACE inhibitors and ARBs on 4th number, after which statins occupy the 5th position, lastly comes the position of beta blocker i.e. 6th and diuretics are the least prescribed class. **Conclusion:** The anti-platelet blocker drugs were the most prescribed drug class followed by calcium channel and vasodilators occupying the second and third rank respectively. The study also revealed that men are 1.5 times more vulnerable to the development of angina than the females. The study is also showing sound evidence that there is need to follow guidelines for proper treatment.

KEYWORDS: Stable angina, prescribing trends, prevalence, treatment strategies.

INTRODUCTION

Stable angina is ischemic heart disease characterized by the symptoms of chest pain, sensation of pressure, pain in jaws, left shoulder, left arm, over the sternum, lower cervical and upper thoracic The evaluation of prescribing trends in ambulatory care cardiac patients above 50 years of age in Multan reveal; the prevalence of the Ischemic heart disease in Multan hospitals is (35.7%), which is higher compared to the other cardiac diseases. In addition, mortality rate due to cardiovascular problems is (85%) in developing countries and observed that cardiovascular diseases arise mostly due to co-morbid conditions. The most prevalent co-morbidities are HTN (47.7%), DM (40.5%), Hyperlipdemia (6.3%),COPD (3.6%), hepatitis (0.9%), pulmonary edema (0.9%)and case of IHD the mainly are HTN (29%) and DM (19%).[1] Almost 1.6-3.2% dies with angina annually. In both sexes, increasing age is a risk factor for stable angina.[2] Past medical history, smoking cessation, diet control cholesterol levels, hypertension, body weight etc is necessary for it. All these factors used to make recommendations and make pharmacological therapy decision easy.[3] Smoking cessation not only improves quality of life but also lessen the prognosis of disease. For addicts absolute quit of smoking is almost impossible. Hence, tapering of it is the solution and for this patient needs an assistance.[4] Fish oil capsule decreases 85% sudden death in men Olive oils and nuts are also supposed to low the cardiovascular events before prognosis.[5] If blood pressure in SIHD (stable ischemic heart disease) is 140/90mmHg or higher pharmacological treatment should also give along with the incitation of life style modification.[6] It is recommended to keep Blood Pressure 130-139/80-85 mmHg, while manifesting with diabetes mellitus, BP should be maintained below 140/85mmHg.[7] In classification of Canadian cardiovascular society system, little walk shall be helpful in the Grade-I stable angina patients but in the case of

Grade II, III, IV the symptoms of angina can be exacerbate. Initial treatment of stable angina includes **A** = Aspirin& anti-angina drugs, **B**= beta blockers and blood pressure, **C**= Cigarette smoking and cholesterol, **D**=diet and diabetes **E**=Education and exercise.[8] In Europe from euro heart survey, Aspirin is prescribe 78%, Statins 48%, 67%betablockers, and 37% ACE inhibitors. The most prescribing drug by the cardiologist is Aspirin.[9] **Gender Prevalence:** Many studies were conducted to see the relation of stable angina with age and gender. The Euro Heart Survey of stable angina selected persons with stable angina and designed clinical trials within 4-week of diagnosis and collected follow up data within 1 year. In this survey, 3779 patients were included; (42%) were female. The chances of women to undergo an exercise ECG, coronary angiography, anti-platelet and Statins therapy were less than in men. The chances of revascularization in women with coronary diseases were also less than men ratio to suffer death or MI was double in them during 1-year follow-up period of data collection.[10] Gender is a significant variable to study trend, prevalence and prognosis of coronary artery disease with angina. In 2006, a designed study was conducted by taking less percentage of women than men in order to check trends of prevalence of Stable angina among them. The study revealed that such trend among genders is almost same with a moderate increase occurrence in females with angina i.e. (22.6%). Chest pain is twice likely to occur in females as compared to men and complexities are far more severe in females.[11] Given the current rise of angina in Pakistan, this study was designed to evaluate the prescribing trends of stable angina and to find out the most prescribed drug in a stable angina in public sector hospitals Multan, Pakistan and assessing its prevalence in both genders.

MATERIALS AND METHODS

A cross-sectional study was conducted from January2019 to April-2019, through collection of data from prescriptions of patients suffering from stable angina in public sector hospitals of Multan Pakistan (Multan Institute of Cardiology & Nishtar Hospital Multan). 200 prescriptions were collected and studied for the drugs prescribed, major parameter of study was the prescribing trends of stable angina. Medication profile of each patient containing complete prescription data was studied along with medical service file (containing documentation about type of visits, hospital testing record and instruction of the drug prescribed). In addition, further information was also gathered by verbally questioning patients. Statistical analysis of data was performed using SPSS 20 and results are plotted in form of bar and pie charts.

Inclusion and Exclusion Criteria
Patients were randomly selected from out patients departments of hospitals with an age group of greater than 35 years and equal preference was given to both genders. The patients having post bypass angina, prinzmetal and unstable angina were excluded.

RESULTS

The overall graphical presentation of drugs according to their percentages is represented in figure-1.
Figure 2 to 6 illustrate the results of the study revealing information about usage of each drug of each prescribed class among the study population.

Vasodilators
Among vasodilators class (77%) GTN is prescribed, while Isosorbide is prescribed (10%), combination of Isosorbide mononitrate and GTN is also being prescribed 10% while diluted Nitroglycerine was prescribed (3%) in public sector hospital Multan, Pakistan, (Figure 2).

Beta Blockers (BB)
Metoprolol (45%) is the drug of choice in this class while Bisoprolol (21%) is the second most prescribed drug. Atenolol (18%) is the third most choice of physicians; Carvedilol (11%) is forth on rank. In combination Bisoprolol and metoprolol showed (3%) trend of prescription. Propranolol individually and in combination of metoprolol and carvedilol showed same trends of prescribing i.e. (1 %), (Figure 3).

Antiplatelet Drugs
Aspirin is at the top of prescription with trend of (45%). While combination of aspirin and clopidogril also showed almost equal trend with a percentage of (44%).Clopidogril is the least prescribed Antiplatelet with (11%), (Figure 4).

Antihyperlipidemics (statins)
Among Antihyperlipidemics, only statins are being prescribed in publics sector hospitals of Multan. Atorvastatin was the most prescribed drug with (75%), rosuvastatin on second with (20%) and simvastatin with (5%) trends in prescriptions, (Figure 5).

Calcium Channel Blockers (CCBs)
Calcium channel blockers are usually prescribed in co-morbid conditions in which beta blockers cannot be prescribed like COPD, patients on Digoxin therapy etc. Compared with beta blockers Calcium channel blockers are of less use in South Asia. In Multan CCBs are prescribed in percentages as Amlodipine (87%) and Nifedepine with percentage of (13%), (Figure 6).

ACE Inhibitors/Angiotensin Receptor Blockers
Drugs under this class are further combination of two subclasses, however collectively the percentage of drugs of this class is Lisinopril (47%), Losartan (44%), Captopril 6% and Enalapril with percentage of (3%) (Figure7).

Diuretics
Diuretics are the backbone of treatment in maximum patients with cardiovascular diseases. The Frequency of drugs among this class is, Furosemide (63%), Spironolactone (23%), and Combination of Spironolactone with Furosemide is also surpassing many

sole drugs with percentage of (9%), Hydrochlorothiazide 3% and Amiloride with (2%) (Figure 8).

Prevalence of Stable Angina in Male vs. Females. In Literature, Studies revealed that men are at more risk of stable angina than women, while prognosis of disease is more severe and complex in females than males. The study-designed data graphically shows that in population of Multan, Pakistani men are more vulnerable to occurrence of angina than women. The percentage of men is (60 %) which is more than that of women *i.e.* (40 %), (Figure9).
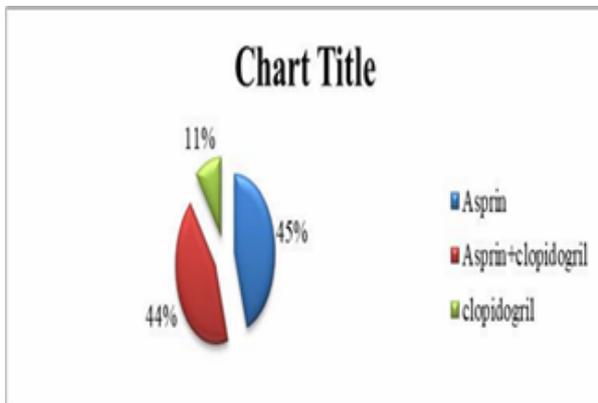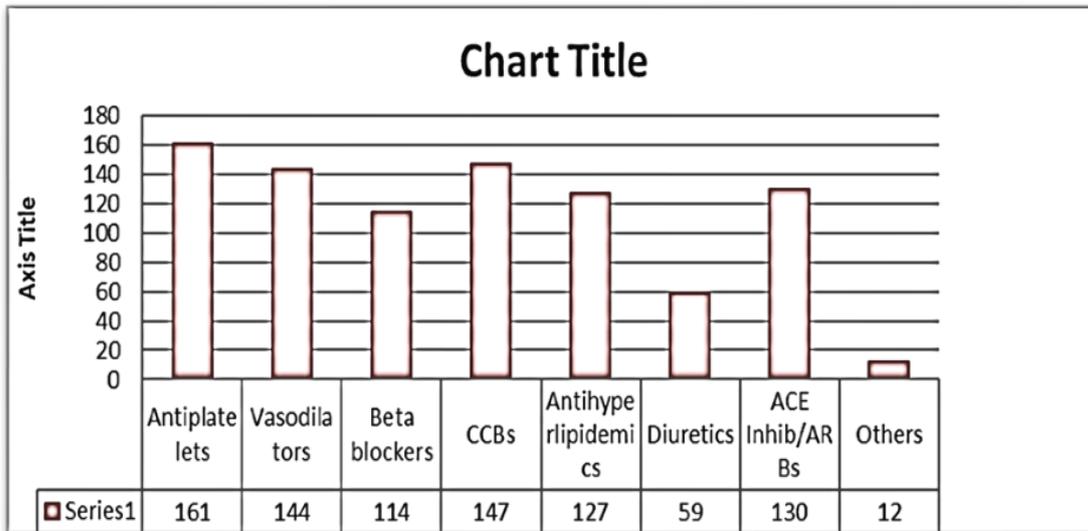
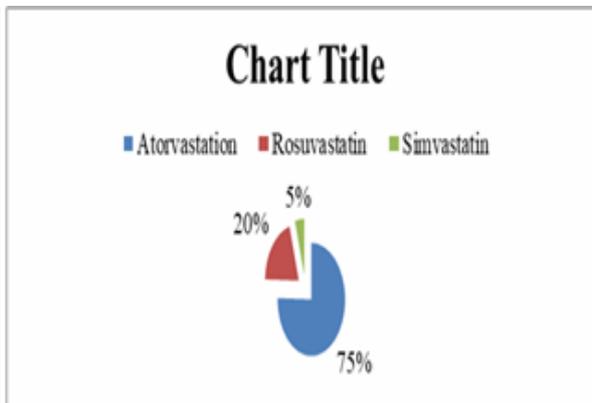Fig 4: Prescribing trends of anti-platelets
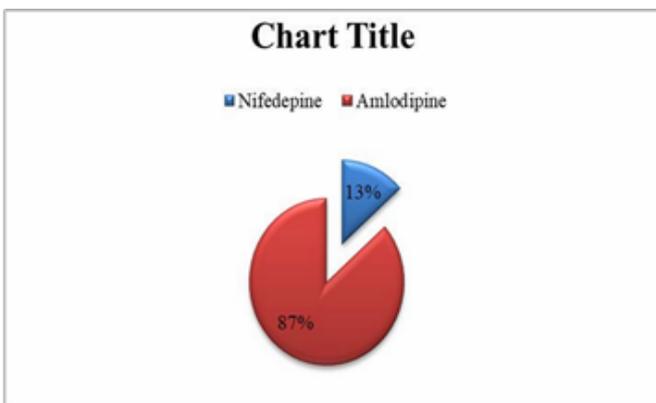
Fig 5: Prescribing trends of anti hyperlipidemics
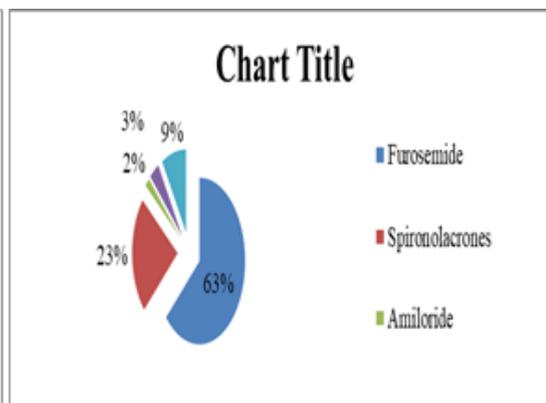
Fig 6: Prescribing trends of calcium channel blockers

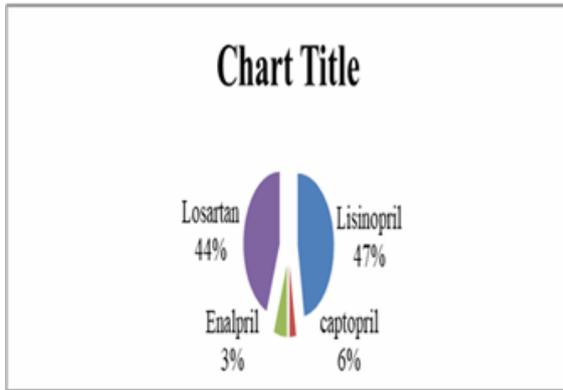Fig 7: Prescribing trends of diuretics
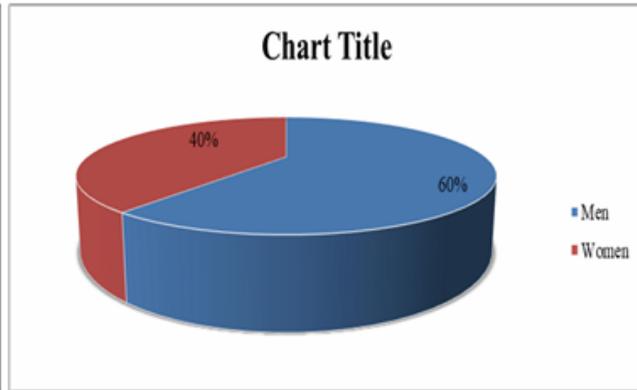
Fig 8: Prescribing Trends of ACE Inhibitors and ARBs.

Fig 9: Prevalence of stable angina

DISCUSSION

In Multan, an important city of Pakistan, cardiovascular diseases are prevailing due to malnutrition, sluggish life style and also from increasing psychological stress. An occurrence of chest pain is the alarming situation indicating angina, and when untreated, leads to unstable angina or myocardial infarction. Optimum therapy for stable angina is ruling out the incidence of myocardial infarction to significant extent. Numerous guidelines of treatment are available to ensure optimum therapy and safe use of medicine. American heart association and European society of cardiology are among such bodies that are continuously optimizing the therapy by standardizing the guidelines. Data observations from the total 200 prescriptions collected from the hospitals of Multan graphically demonstrate the trends of drug classes per prescription. The study identified that in the treatment of stable angina. Antiplatelet are the most frequently prescribed drug class in Multan and adjacent areas. Followed by CCBs on 2nd rank and nitrates on 3rd rank, ACE inhibitors and ARBs on 4th number, after which statins occupy the 5th position, lastly comes the position of beta blocker *i.e.*, 6th and diuretics are the least prescribed class. Among anticoagulant agents the most prescribed drug is aspirin (45%) and then combination of aspirin and Clopidogril (44%) in Multan Pakistan. In Europe from euro heart survey, Aspirin is prescribed (78%), Statins (48%), 67%betablockers, and (37%) ACE inhibitors. The most prescribing drug by the cardiologist is Aspirin.[9] After which CCBs are on 2nd rank and among the calcium channel blockers the most prescribed drug is amlodipine (87%) in public sector hospitals of Multan Pakistan. Nitrates are on 3rd rank and among them glyceryl trinitrate is (77%) prescribed in Multan hospitals. Short acting sublingual or buccal nitrates are preferred for short-term relief along with 75-150 mg Aspirin. In case of allergy, it is contraindicated and instead of it 75mg Clopidogril can be taken. Statins, ACE, beta-blockers stop the progression of disease.[12] These are vasodilators and they improve the quality of life. Nitroglycerin is most common drug, used for the treatment of acute attack of angina. Patients have to consider the postural hypotension, headache hence, after taking nitrates patient need some rest. There two types of nitrates, long acting and short acting. Long acting nitrates are preferred in chronic stable angina, while short acting is for the acute episode of angina in which glyceryl trinitrate is most common. Sometimes, long acting nitrates show resistance and mask the effect of short acting nitrates. Patients resistant to these nitrates are at risk in this situation. However, it is not a proved point that nitrates do not interfere with altering the mortality and morbidity cases.[13] ACE inhibitors and ARBs on 4th number, in which lisinorpril (47%) and losartan (44%) is in Multan hospitals used respectively. Statins lie in trend on 5th position; atorvastatin is mostly use i.e. (75%) in antihyperlipidemics in Multan hospitals. Beta blocker ranking on 6th position metoprolol (45%) is used and diuretics are the least prescribed class among the guidelines, among the antihyperlipidemics furosemide (63%) used in Multan. Ivabridine have dose-dependent improvements in exercise tolerance and development of ischemia during exercise. A novel class of antianginal drugs, which is effective for 3 months of use.[14] Ivabridine is new drug, prescribed for the lowering of heart rate. The European medicine agency (EMA) approved that this drug can symptomatically treat the chronic stable angina. Its shows similar drop in heart rate as 100mg Atenolol. BEAUTIFUL AND SHIFT trails shows Ivabridine have safety profile and adverse effect is bradycardia. In the patients, who have angina with myocardial infarction and heart failure, the mortality rate reduced by (25%) non-fatal (10%) and (15%) hospitalized.[15] But in Pakistan there is no use of this drug. An effective treatment of angina requires the utilization of evidence based guidelines to guide therapeutic decisions. A single appropriate selection from the armamentarium can pave way for optimal therapeutic outcomes. As far as the issue of Evidence based treatment of angina is concerned, prospective studies have shown that aggressive blood pressure control and serum LDL level optimization alone can produce paramount effects in angina incidence reduction.[16] The JNC-8 Guidelines recommend the use Thiazide Diuretics as the initial line of therapeutic regimen.[17] However, our study reveals that of the 200

prescriptions analyzed, only 59 prescribed Diuretics in Multan. Thus, only one fourth of the patients actually received an optimal standardized therapeutic regimen. The rest of the three quarters failed to receive blood pressure control treatment as recommended by the JNC-8 Guidelines. The study also revealed that the occurrence of Stable angina is more prevalent amongst males accounting for (60%) of the total cases, whereas, females demonstrate an incidence rate of (40%). Hence, men are more vulnerable than women to develop stable angina in Pakistan. In European countries, 20,000-40,000 out of one million are suffering from Stable angina. Literature studies revealed that population with intake of plant based diet like low calorie, along with high consumption of omega 3 fatty acids, olive oil, fresh food and low fats, sodium and sugars are at a low risk of coronary artery disease and atherosclerosis. Hence, public health awareness campaigns are being running to improve life style modifications. According to American heart association study 2010 in USA, angina is prevailing at frequency of (4.6%) affecting 10,200,000 persons and patients with coronary artery disease 17,600,000. Hence, angina affects (58%) patients with coronary artery disease. Annually 500,000 new cases are presented and the prevalence increases with age. The prognosis of new onset angina starting within 2-3 months is slow in which only (10%) of patients may suffer with coronary death disease and nonfatal myocardial infarction. South Asian people are more susceptible than people of white region towards stable angina i.e. Asian (59.9%) and white people (52.5%). Moreover, clinical aspects lead to even complexities in South Asian people than that of white people.[2]

CONCLUSION

The class of drug that is most frequently prescribed in Stable Angina in health care sectors of Multan Pakistan is Anti platelet class of Drug, among which Aspirin is the most prescribed drug. Moving away from standard guidelines, risk of stable angina is increasing with age men are at more risk of stable angina. For optimal therapy and safe use of medicine, at least one beta blocker should be added in the therapy. Beta –Blockers have same effects and are associated with fewer adverse events than calcium channel blockers. In randomized trials of patients who have stable angina, (8%) of patients show withdrawal effects. Patients were less likely to discontinue β-blockers than calcium channel blockers.[18]The main objective is to prevent the patients for myocardial infarction, thrombolytic events and death, to improve the quality of life, to relief patients and alleviate the symptoms of disease. Males above 35 with increased serum lipids level should regularly check their B.P and should avoid fatty diet. By the opinion of experts of American college of cardiology/American heart association writing committee, evaluate the patients every 4 to 6 months during first year of treatment. If condition of patient is stable, annual assessment is organized and when angina symptoms become complicated, then appointment should take from relevant physician who will decide frequency of visit according to severity of disease. However, for this purpose, there should be no communication gap between physician and patient and proper counseling of patient is very important to improve life style.

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