



COMPARATIVE STUDY OF AHA-GUIDED INTERVENTIONS FOR MYOCARDIAL INFARCTION FOLLOWED IN A TERTIARY CARE HOSPITAL SETTING IN KHYBER PAKHTUNKHWA, PAKISTAN

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Abstract

Background: Cardiovascular disease is the leading cause of mortality worldwide and the incidence increases with advancing age. Myocardial infarction (MI) is a kind of cardiovascular disease in which there is reduced or no supply of oxygenated blood to the heart muscle due to stoppage or blockage in the coronary artery. Major objective of this research was to find out the pharmacotherapeutic interventions and prescription patterns of patients suffering from myocardial infarction are in accordance with the standard guidelines by American Heart Association (AHA/ACC) for the treatment of MI. The study was carried out at cardiology ward Mardan Medical Complex, Khyber Pakhtunkhwa, Pakistan. A total of 130 patients were selected to be included in the study, that were hospitalized and diagnosed with MI.

Results: Results show that MI is more common in male patients (n=87, 66%), with mean age recorded as 51.7±5 years. Highest number of patients were in the age limit of 51-60 (36.25%). Various

types of MI were observed during the study, with highest percentage of NSTEMI (31%) followed by IWMI (14%). Various medications were prescribed to the patients, among them enoxaparin (18%), aspirin (17%), streptokinase (12%), clopidogrel (9%) and glyceryl trinitrate (5%) were the top prescribed medications. The MI drugs that were frequently used in the treatment of MI includes anti-platelets, antithrombotic agents, beta blockers, nitroglycerin's, ACE, and ARBs. Moreover, the most prescribed dosage form was solid dosage form i.e. tablet(s) followed by injectable.

Conclusion: It was found that 80% of the prescriptions were following the guidelines of AHA/ACC for heart patients. More prospective, randomized studies are needed in Pakistan to uncover all problems associated with prescription of MI if AHA guidelines are not followed.

Key words: Cardiovascular disease, Myocardial infarction (MI), Pharmacotherapeutic interventions, Standard guidelines of American Health Association (AHA)

1. BACKGROUND

Myo is a Greek word means muscles, Cardial is derived from Greek word cardium meant heart and infarction is tissue death due to inadequate supply of blood. Myocardial Infarction (MI) is a type of Cardiovascular disease in which the flow of oxygenated blood to the cardiac muscles is suddenly cut off due to blockage or stoppage in the coronary Arteries [1]. MI is the irreversible damage of the myocardial tissues due to long-time ischemia that cause hypoxia. Cholesterol in fat coagulates into plaques, which holdback arteries and causes the reduction in blood supply. When plaque builds up in arteries, it is pertained to be as CAD [2]. Cardiovascular illnesses are becoming progressively common due to lack of physiological activity, highly fatty food intake, and other factors. WHO defines MI as unusual CV problems characterized by the blockage of arteries entering the heart or by myocardial ischemia which is also known as "Heart attack". MI is a life-threatening disease caused by a reduction in blood flow to the cardiac muscles [3]. The word MI was distinguished and introduced in USA in 1912 and then recognized in UK few years later. MI was first presented in 1912 and now it's the leading cause of mortality in the world. It's a medical emergency and may damage the heart muscles permanently resulting in death of the individual. WHO estimated 14 million deaths across the world from MI, with 15 million individuals suffering from MI per year in USA [4]. CV distortions are increasing because of high fatty food intake and lack of physical activity. Other risk factors include: cigarette smoking, atherosclerosis, diabetic mellitus, pregnancy, dyslipidemia, hypercholesterolemia, obesity, family history of CAD coronary abnormalities, coronary artery embolism, prime coronary vasospasm, ventricular hypertrophy, hyper triglyceridemic, hyperhomocysteinemia, and CKD [5].

It has been estimated that 11million peoples in the US have coronary attacks.in US, about 3.2 million retrospectives and 6 million peoples have concurrent MI reported each annual calculation. People living in Asian countries are more prone to MI. South Asians in UK have 50% greater rate of myocardial infarction than whites living there. In industrial countries MI causes 30-35% of deaths. According to a study, 30% of Pakistani population are suffering from MI over 45 years of Age, while 5% chances in people having age less than 40Y [6]. In Pakistan, MI is the second most causative agent of death. NSTEMI prevails 60-75% in Pakistan. It prevails more in male than female. About 67.5% of Pakistani individuals living in rural areas are experiencing the greater attacks of heart diseases [7]. MI occurs due to prolong ischemia that causes irreversible damage to the heart tissues. In majority of cases, it is a result of partially (NSTEMI) or completely (STEMI) intracoronary thrombus [8]. Studies concluded that ST elevated MI is induced due to complete thrombotic occlusion which can be managed by Fibrinolytics. NSTEMI is due to biased CA snag which may be worsened by Prothrombotic State followed by fibrinolytic therapy. Infarction may occur due to long and severe coronary spasm in the absence of CAD which may be caused by Alcoholism, ergot therapy, and severe stress. Some rare causes include Coronary artery segmentation, nitroglycerin recession, serum sickness, and carbon monoxide poisoning etc. [9].

There are various types of MI. Type I also termed as spontaneous MI. Patient experience rupturing, fissuring, cracking, eroding, or dissecting of atherosclerotic plaques that result in the constitution of a thrombus in CA and will leads towards low oxygen supply to the heart [10]. Type II also called as MI due to Ischemic imbalances. It may occur due to anemia, low BP, embolus, endothelial dysfunction, LV hypertrophy, respiratory system depression that further contributes towards low oxygen supply and high oxygen demand by the myocardium [11]. Type III is a type of MI that is characterized by having no biomarkers available at the blood of the patient. Heart muscles dies prior to the biomarkers in the blood sample of the patient for checking or testing. In this type of MI, we experience novel changes in the ECG or novel LBBB. Type IV is relating to the Percutaneous Coronary Intervention (PCI). Biomarkers will be available for testing e.g. Troponin I value will be greater by 5 times the 99th percentile URL. Type V is induced due to Coronary artery bypass graft process (CABG). In this type of MI cardiac biomarkers are greater by 10 times the 99th percentile URL having normal value of less than 99th percentile Upper reference limit [11, 12].

Signs and symptoms of MI Include: Throbbing, Suffocating, Choking, Severe chest pain radiating to left shoulder and jaw, Epigastric pain, Dyspnea, Anxiety, shortness of breath, nausea, vomiting, sweating, shock, and fear. Risk factors of MI include: Lipids abnormal value, cigarette smoking and people who smoke (bedies, cigars, pipes, sheesha), obesity, regular alcohol intake, certain nutrition's (fried foods, salty snacks, unexperienced vegetables, uncooked or partially cooked vegetables), psychosocial factors of leading stress (depression, joblessness, financial problems, and family pressure) are all considered as risk factors for Acute MI [13, 14]. The most efficient way of diagnosing is Electrocardiogram (ECG). Some other biochemical tests are also available like WBC counts, Trop I test, D. dimer test, APTT test, INR test, creatinine kinase test, creatinine phosphokinase, lactic dehydrogenase, myoglobin test is also used for the diagnosis of MI [15, 16].

A group of cardiologists founded American Heart association in 1924. American Heart Association (AHA) is working for the treatment, management, and prevention of Heart attack for more than 90 years. AHA provides guidelines for the treatment of MI/ Heart attack that is given below. These guidelines were presented to the physician, nurses and other healthcare providers that cope directly with the patients that suffers from AMI [17]. This study is an attempt to study the pharmacotherapeutic interventions for MI patients in MMC Mardan, Khyber Pakhtunkhwa, Pakistan and its comparative analysis with the standard guidelines of American Heart Association. This study will serve as basis for future research related to standard care in MI care.

2. METHODS

2.1 Study design and duration

This study was carried out at Cardiology Ward MTI Mardan Medical Complex (MMC), Mardan, KPK, Pakistan under the supervision of Manager Pharmacy services and nursing head.

2.2 Inclusion and exclusion criteria

Only hospitalized patient data were collected having clearly been diagnosed as suffering from Myocardial infarction. All the data taken from concurrent and hospitalized patients. The following data were excluded

- Having no proper diagnosis
- Having other cardiovascular disease than MI
- Newly admitted patients
- Diagnosis awaited patients
- Expired patients
- Prospective data
- Unwilling of patient attendees

- Patient having no attendees
- Patient whose demography were missing
- Discharged patients at ward
- Patients whose admit card were missing

2.3 Data Collection

All the data were collected at Cardiology Ward MTI MMC Mardan by the proper approval of worthy Medical Director, Pharmacy Director, and Nursing Head. After inclusion and exclusion criteria total 130 patients' data were collected on the prescribed Proforma. The data collection was totally legal and by the proper approval from the M.S Hospital prior to the requisition letter by the authors. Before collecting data, the data collector was counselled about ethical and social interaction with patients, attendees, Nurses, Physicians and other healthcare technicians. All the data was collected for checking the treatment protocols of the hospital duly matching the standard protocols provided by the AHA.

2.4 Data Collection proforma

Data was collected on the prescribed proforma below:

1. PATIENT DEMOGRAPHIC DATA

Patient name	Gender	Age	ward	Admission date	Address	Profession	LOE

2. CHIEF COMPLAINTS

3. LAB DATA/BIOCHEMICAL TESTS

Biochemical test	Observed value	Normal range	Remarks

4. DIAGNOSIS

5. MEDICATIONS PRESCRIBED

Dosage form	Trade name	Generic name	Dose	Frequency	Price	Intervention	others

2.5 Data interpretation and analysis

During the said period of 2 months about 130 patients' data were collected and analyzed. All the data collected is purely concurrent data with admitted patients. All the graphs, tables, charts, figures, and tables were simulated at MS Excel 365. Other applications were also used for data interpretation and

findings like Medscape, Pharmaguide, Pharmapaedia, drugs.com and BNF were used for information related to drugs, their doses, their route, their interaction, and other purposes related.

2.6 Standard guidelines by AHA for the treatment of MI

The following table gives us the standard guidelines that is provided by AHA to the patients that are suffering from MI at any tertiary care hospital. It includes all the classes of medicines that are prescribed and contains the full management protocols for MI patients (Table 1). All the data that was studied at MMC Mardan was evaluated with the standard protocols for results.

Table 1. Standard guidelines by AHA for the treatment of MI

Description		Dose	Max dose	Frequency
Oxygen		Supplied when saturation is less than 90%		
Nitroglycerin		0.4 mg	6.4 mg	BD
Analgesics	Morphine	2-4 mg	2-8 mg	OD
	Nalbuphine	10mg/ml	20mg/ml	
Beta blockers	Atenolol	5-10 mg	100mg	OD
	Metoprolol	12.5-25mg	200mg	OD
	Carvedilol	3.125mg	50mg	QID
	Bisoprolol	1.25 mg	10mg	QID
Fibrinolytics	or Streptokinase	1.5 MU / year	As per need	
Antithrombotic	Alteplase	100mg / 90 min		
Agents	Retepase	10 U / 2 min		
	Tenecteplase	30-50mg		
PCI				
Antiplatelets	Clopidogrel	300 mg	600mg	BD
	Aspirin	162-325 mg	500mg	QID
	Ticlopidine			
Glycoprotein iib/iiia inhibitors	Abciximab	0.24 ug/kg/min	0.5 ug/kg/min	OD
	Tirofiban			
	Eptifibatide	180mcg/kg	360mcg/kg	OD
ACE inhibitors	Captopril	6.25mg	50mg	TID
	Enalapril	2.5mg	10-20mg	BID
	Fosinopril	5-10mg	40mg	OD
	Lisinopril	2.5-5 mg	20-40mg	QID
	Ramipril	1.25-2.5 mg	10mg	QID
	Quinapril	5mg	20mg	BID
ARBs	Losartan	25-50mg	50-150mg	QID
	Valsartan	20-40mg	160mg	BID
	Candesartan	4-8mg	32mg	QID
Glucose control	insulin	As per need	As per need	
CCBs	Diltiazem	30-60mg	400mg	TDS
	verapamil	40-120mg	400mg	TDS
Aldosterone antagonist	Spironolactone	12.5-25mg	50mg	QID
	Eplerenone	25mg	50mg	QID

3. RESULTS

The total number of data collected were 130 (n=130), having male dominance and have majority of people belonging to urban areas. Age limit between 51-60 were reported to have a greater number of effected persons with MI (36.2%). All the thick and thins of the data were simulated into tables, figures and graphs that are discussed below. Through statistical interpretation, the data was presented to highlight the significant findings.

3.1 Gender wise Distribution

Among 130 patients, n=87 (66.92%) were male and n=43 (33.08%) were female (Figure 1).

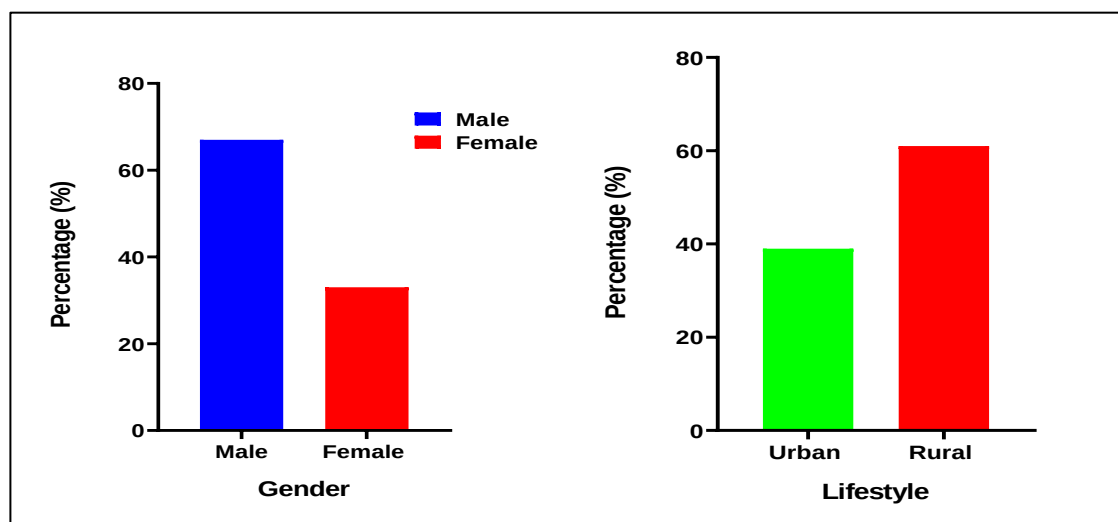


Figure 1: Gender and lifestyle based distribution of patients

3.2 Area wise Presentation

During the study patients from many districts participated (Figure 2). Amongst them, patients belonging to areas of Mardan were n=99 (76.1%) recorded the highest frequency followed by Swabi, Malakand, Nowshera and Dir Lower, respectively.

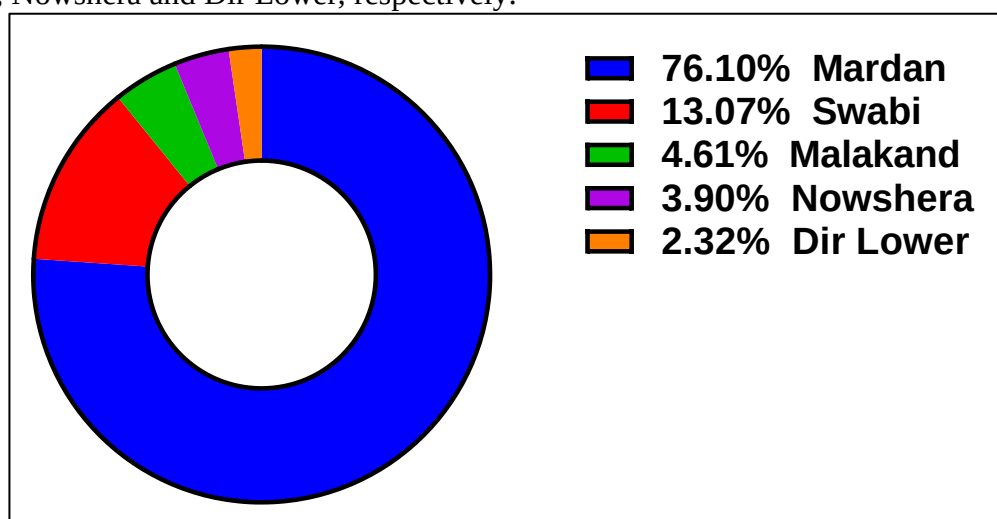


Figure 2: Region based percentage of MI patients

3.3 Age wise Distribution

Among 130 patients, the highest number of cases reported were in 51-60Y with (18.46%) cases, followed by 41-50Y (21.50%), 61-70Y (16.61%), 71-80Y and 81-90Y having a percentage of 9.23% and 7.45%, respectively. Lowest number of cases reported were at the age ranging 91Y> (3.31%) and 31-40Y (6.15%).

3.4 Types of MI

MI is classified into various types. In this study, the highest number of cases were classified into NSTEMI (Non-ST segment Elevated MI) n=41 (31%) followed by IWMI (14%) and AWTMI (13%), respectively. The percentages are mentioned in (Figure 3).

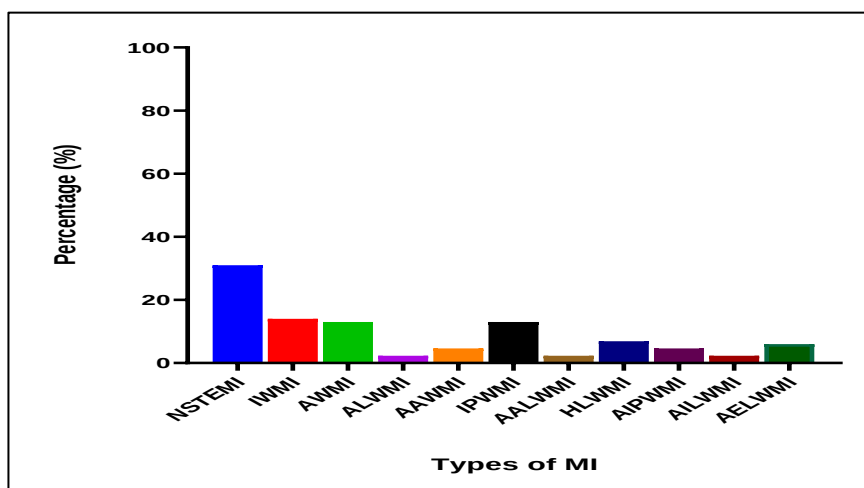


Figure 3: Presentation of MI types

***Legends:** AAWMI: Anterior wall MI, IWMI: Interior wall MI, ALWMI: Anterior-Lateral wall MI, AAWMI: Acute Anterior wall MI, IPWMI: Inferior Posterior wall MI, NSTEMI: non-ST segment elevated MI, AALWMI: Acute Anterior Lateral wall MI, HLWMI: high lateral wall MI, AIPWMI: Acute Interior-posterior wall MI, AILWMI: Acute Interior-Lateral wall MI, AELWMI: Acute Exterior-Lateral wall MI.

3.5 Pharmacotherapeutic interventions and Medication analysis

In this study, the total number of drugs prescribed to n=130 patients were 688 having an average of 5.2 drugs per encounter. Among them, the frequency of all the prescribed drugs was calculated. Highest number of drugs prescribed to MI patient was enoxaparin (60mg) n=124 (18.2%) followed by aspirin and streptokinase, respectively. Other medications prescribed were Streptokinase (12.5%), clopidogrel (9.88%), atorvastatin (8%), ramipril (1.45%), rlyceryl trinitrate (4.35%), metoprolol (5.96%), nalbuphine (5.66%), furosemide (2.32%), rosuvastatin (2.18%), bisoprolol (1.45%) and captopril (1.16%) of all the medications prescribed. Table 2. shows the frequency and percentage of different drugs prescribed during treatment dwell time to the MI patients. Among them the highest frequency is of tablets n=362 (52.61%) (Table 3).

Table 2. Percentage of medicines prescribed

Generic name	Percentage (%)
Enoxaparin	18.2
Aspirin	17.87
Streptokinase	12.5
Clopidogrel	9.88
Atorvastatin	8%
Pentaprazole	7.26
Nalbuphine+dimenhydrinate	5.66
Metoprolol	4.36
Glyceryl trinitrate	4.06
Furosemide	2.32
Rosuvastatin	2.18
Metoprolol	1.6%
Cefoperazone + sulbactam	1.45
Ramipril	1.45
Bisoprolol	1.45
Captopril	1.16

Ferrous sulphate	0.29
Glyceryl trinitrate	0.29
Lactulose	0.14

Table 3. Percentage of different dosage forms prescribed

Dosage form prescribed	Frequency (n)	Percentage (%)
Tablets	362	52.61
Injectable	325	47.23
Capsules	0	0
Syrups	1	0.14
Suspension	0	0
Total	n = 688	100

3.6 Comparison of prescribed drugs with AHA guidelines

In the following Table 4, we compared the prescribed medications to the already prescribed criteria by American Heart Association.

Table 4. Comparison of prescribed medications with AHA standards

Description	Prescribed strength	Frequency	Standard by AHA
Streptokinase	1.5 MU	SOS/ 60mins	1.5 MU/ year
Nalbuphine	20mg/ml	SOS	10-20mg/ml BD
Aspirin	300mg	OD	125-325mg QID
Clopidogrel	75mg	OD	300mg BD
Metoprolol	25-50mg	BD	12.5-50mg OD
Ramipril	1.25-2.5mg	OD	1.25-10mg QID
Glyceryl trinitrate	2.6-6.4mg	BD	0.4-6.4mg BD
Bisoprolol	2.5-5mg	BD	1.25-10mg OD
Captopril	12.5-25mg	TDS	6.25-50mg TDS

3.7 Comparison of MI prescriptions to AHA guidelines

Upon comparison to AHA guidelines, it was concluded that 80% (n=105) prescriptions followed 100% of AHA guidelines for MI patients. While 9% (n=12) followed 75% drugs prescribed according to AHA guidelines. In addition, 06.15% (n=8) showed 50% of the medications prescribed according to the AHA guidelines (Table 5). Furthermore, 3.84% (n=5) of the prescribed prescriptions were less than 50% following the guidelines by AHA.

Table 5. Comparison of prescriptions to AHA guidelines

No of Prescriptions	Percentage %	Percentage % of drugs prescribed according to AHA
105	80.76	100
12	9.23	75
8	6.15	50
5	3.84	Less than 50
0	0	Contradicting AHA guidelines

3.8 Comparison of medications findings and their percentage with standard Medications prescribed by AHA

In the following Table 6. major findings of my research is given. Those medications that were observed in my research studies are mentioned against their respective class and doses that were prescribed by American heart association.

Table 6. Comparison of observed medications with AHA standard medications

Description		Dose	Max dose	Observed medications	% Of the observed medication
Oxygen		Supplied when saturation is less than 90%		130	100
Nitroglycerin		0.4 mg	6.4 mg	Glyceryl trinitrate	23
Analgesics	Morphine	2-4 mg	2-8 mg	Nalbuphine	30
	Nalbuphine	10mg/ml	20mg/ml		
Beta blockers	Atenolol	5-10 mg	100mg	Metoprolol	31
	Metoprolol	12.5-25mg	200mg		
	Carvedilol	3.125mg	50mg		
	Bisoprolol	1.25 mg	10mg		
Fibrinolytics or Antithrombotic Agents	Streptokinase	1.6 MU / year	As per need	Streptokinase	95
	Alteplase	100mg / 90 min			
	Retepase	10 U / 2 min			
	Tenecteplase	30-50mg			
PCI					
Antiplatelets	Clopidogrel	300 mg	600mg	Clopidogrel	52
	Aspirin	162-325 mg	500mg	Aspirin	94
	Ticlopidine				
Glycoprotein iib/iiia inhibitors	Abciximab	0.24 ug/kg/min	0.5 ug/kg/min		
	Tirofiban				
ACE inhibitors	Eptifibatide	180mcg/kg	360mcg/kg	Captopril	6.15
	Captopril	6.25mg	50mg		
	Enalapril	2.5mg	10-20mg		
	Fosinopril	5-10mg	40mg		
	Lisinopril	2.5-5 mg	20-40mg		
	Ramipril	1.25-2.5 mg	10mg		
	Quinapril	5mg	20mg		
ARBs	Losartan	25-50mg	50-150mg	Valsartan	12
	Valsartan	20-40mg	160mg		
	Candesartan	4-8mg	32mg		
	Glucose control	insulin	As per need		
CCBs	Diltiazem	30-60mg	400mg		
	verapamil	40-120mg	400mg		
Aldosterone antagonist	Spironolactone	12.5-25mg	50mg		
	Eplerenone	25mg	50mg		

4. DISCUSSION

Coronary heart disease is the single most common causative agent of death globally. MI causes more than 15% of all the deaths in the world. In gender wise study male have more mortality than females suffering from MI. The world is now fully developed and have some advanced treatment protocols for the treatment of MI and that is the most important factor in reducing the mortality rates of people suffering from MI but unfortunately countries of south Asia, Latin America and other developing countries shows a rise in the mortality of patients suffering from MI. Dyslipidemia, smoking, stress, diabetes, hypertension, obesity, alcoholism, inactivity and sedentary diet routines are all attributed to the rise in the risk of MI. Most of the data in Jayaraj et al resembles our research work in terms of etiology, epidemiology and other parameters related to MI [18]. A total 20750 MI patients were selected for analysis by Ahmadi et al in Iran. 15033 out of them were males and 5717 were female. Age limit was from 22 to 105years. Out of the total number, about 22% were diabetic, 26% active smokers and 37% were hypertensive. In men, they noted more cases of LBBB than women while women have major incidence of chest discomfort than males. During their study, MI were concluded IWMI (18.67%), NSTEMI (19%) and AWTMI (17.33%) were noted. Their major therapy noted was SK (45%), Aspirin (34%), Lipid-lowering drugs (15%), Beta blockers (35%) and blood thinners (19%) [19]. In Pakistan a qualitative study was conducted for the treatment given to patients suffering from MI. A total of 2663 patients were studied, and their medication were assessed. They had a mortality rate of 8.8%. among this study aspirin (73%) and clopidogrel (66%) were the highly prescribed medications. Similarly, in this study enoxaparin and aspirin was the same medications

prescribed against MI and it was known that majority of these drugs follows the standard guidelines by AHA [20].

Thrombolytic therapy is the major therapy for MI patients in Pakistan. Study was carried out in a tertiary care center in Lahore, Pakistan, for the effectiveness of patients with streptokinase (SK). SK 1.5MU was injected with the time interval of 60 mins to 100 patients. Among them 72 were male and 28 were female. Only those patients were selected that have reached the hospital within 12 hours of onset of symptoms of MI. It was studied that almost 90% patients recovered with usage of SK. The mortality rate was almost 90% lower than those patients who were not treated with SK therapy or who were marked late for SK. Thrombolytic therapy was the most efficient therapy for the treatment of occlusion of coronary therapy. Almost every patient who arrived before 12 hours of the onset of symptoms were thrombolyzed and showed more than 90% survival chance than those patients who were late for Streptokinase [21]. B-blockers and ACE inhibitors are the choice of treatments in cardiovascular patients. Beta blockers are often used for arrhythmia, blockage, hypertension etc. while ACE inhibitors are used for the treatment as well as prevention of Heart attack and have a cardio protective effect. ACE inhibitors (Captopril, Ramipril) and Beta Blockers (Bisoprolol, Carvedilol, Metoprolol) were used as a choice of treatment for cardiac patients [22]. In most of the cases were NSTEMI as diagnosed. A study was carried out by the Wu et al and they assumed that after studying 2300 cases in 99 hospitals of England most cases were NSTEMI. Similarly, during this study patient were diagnosed with various types of Myocardial infarction among them the most common was NSTEMI (31%), followed by AWTMI (13%), IWTMI (14%), AAWTMI (9%), ALWTMI (3%), IPWTMI (2%), AEAWTMI (5%) and AILWTMI (6%), respectively [23]. Mortality rate was less than 5% due to less time from door to hospital (less than 3 hours of onset). It was concluded that 80% (n=105) prescriptions follow 100% of AHA guidelines for MI patients as a study by nabel et al shows 81% compliance to the AHA guidelines [24]. While 09% (n=12) followed 75% drugs prescribed according to AHA. 6.15% (n=8) shows 50% of the medications prescribed according to the AHA guidelines. In addition, 3.84% (n=5) of the prescribed prescriptions were less than 50% following the guidelines by AHA. It was also noted that none of the prescriptions goes 100% against the guidelines of AHA. Lastly, this study is in accordance with the already studied protocols by nabel et al and rogers et al [24, 25].

As this study was confined to a single tertiary care hospital in District Mardan, Khyber Pakhtunkhwa, Pakistan, there remains a room for additional research studies on the mentioned topic to assess the prevalence of MI patients on a national and global scale. Longitudinal studies are required to evaluate the long-term impact of lifestyle, diet, medications, and evaluate clinical outcomes. Future research should explore potential side-effects, drug-drug interactions, polypharmacy, and effects of non-therapeutic interventions on the overall health of MI patients in Pakistan.

5. CONCLUSION

The central motive of this research was to assess the treatment and management of patients suffering from MI that cope with the guidelines of American Heart association (AHA). It was concluded that the prevalence of MI was more in males than females. Its prevalence is high in urban areas (Mardan District). The age group from 51-60 years shows majority of myocardial cases. The risk of mortality and morbidity are reduced with utilization of thrombolytic agents. With advancement in the treatment protocols of MI in Pakistan, the mortality rate is reducing. Mortality rate of patients is greatly contributed to their door-to-hospital time delay. The MI drugs that were frequently used in the treatment of MI includes Anti-platelets, Antithrombotic agents, beta blockers, nitroglycerin's, ACE, and ARBs. This study revealed that all the drugs prescribed were according to the guidelines provided by American Heart Association for MI and this study shows significant resemblance of prescriptions to the AHA guidelines (80%). It is concluded that if AHA guidelines are followed by hospitals as their Emergency treatment for MI patients the risk of mortality will be less, and patient compliance will increase. However, more progressive work is needed in this regard.

Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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