Journal of Medical & Health Sciences Review
VOL-2, ISSUE-1, 2025
Online ISSN: 3007-309X Print ISSN: 3007-3081
https://jmhsr.com/index.php/jmhsr

MAJOR ADVERSE CARDIOVASCULAR EVENTS IN PATIENTS PRESENTING WITH ACUTE CORONARY SYNDROME AT PAEC HOSPITAL, ISLAMABAD IN YEAR 2023

Dr Abdul Manan Bari[1], Dr Sofia Mehmood[2], Dr Qaiser Mehmood Saleem[3],Dr Aneeqa khan[4]

[1]PMO, HOD interventional Cardiology, PAEC Hospital Islamabad

Email: drmanan@hotmail.com

[2]Postgraduate resident of cardiology PAEC Hospital Islamabad

Email: dr.sofiamehmood@gmail.com

[3]PMO PAEC Hospital Islamabad, Email: qsrsaleem@yahoo.com

[4]Postgraduate resident of Cardiology PAEC Hospital Islamabad

Email: aneeqakhan07@gmail.com

Corresponding author: Dr Abdul Manan Bari*, PMO, HOD interventional Cardiology, PAEC Hospital Islamabad, Email: drmanan@hotmail.com

ABSTRACT

Background: Acute Coronary Syndrome (ACS) encompasses a range of serious cardiovascular conditions, including unstable angina, non-ST-segment elevation myocardial infarction (NSTEMI), and ST-segment elevation myocardial infarction (STEMI)[

Objective: This study aimed to examine the frequency of major adverse cardiovascular events (MACE) in ACS patients at the Pakistan Atomic Energy Commission (PAEC) Hospital in Islamabad in 2023.

Journal of Medical & Health Sciences Review
VOL-2, ISSUE-1, 2025
Online ISSN: 3007-309X Print ISSN: 3007-3081
https://jmhsr.com/index.php/jmhsr

Methodology: The study was carried out department of Cardiology, Pakistan Atomic Energy Commission (PAEC), during the period 1st Jan 2023 till 31st December 2023. Male and female patients diagnosed with ACS and received thrombolytic therapy or PCI were enrolled. The patients were followed till hospital discharge and occurrence of MACE during the hospital stay was noted.
Results: A total of 215 individuals were registered. Patients were mostly male (65.11%) and with mean age 58.2 years. ST-elevation myocardial infarction (STEMI) was the most common type of ACS, at 40%, followed by NSTEMI at 34.89% and unstable angina at 25.11%. The most common symptom of ACS was chest pain (85.58%), followed by shortness of breath (30.23%). Hypertension, affecting 45.11% of the population, was followed by diabetes, 29.30% were the most prevalent risk factors. Treatment included antiplatelet drugs (90.23%) and beta-blockers (75.81%) for most patients. PCI was performed on 60.47 percent of patients, whereas thrombolysis was given to 20.47 percent. MACE was observed in 16 patients (7.4%).
Conclusion: The results support earlier studies and emphasize the disease's substantial burden and the need for ongoing care and monitoring after thrombolysis and PCI.
Keywords: Acute Coronary Syndrome, Major Adverse Cardiovascular Events, Myocardial Infarction, Stroke, Cardiovascular-Related Death.

INTRODUCTION

Acute Coronary Syndrome (ACS) encompasses a range of serious cardiovascular conditions, including unstable angina, non-ST-segment elevation myocardial infarction (NSTEMI), and ST-segment elevation myocardial infarction (STEMI)[1,2]. Although there have been improvements in medical treatment, ACS continues to be a significant cause of morbidity and mortality worldwide[3.4]. Gaining insight into the frequency and causes of Major Adverse Cardiovascular Events (MACE) in patients with Acute Coronary Syndrome (ACS) is essential for improving patient care and adopting successful preventative measures[5,6,7].

This prospective research specifically examines patients who were diagnosed with Acute Coronary Syndrome (ACS) at the Pakistan Atomic Energy Commission (PAEC) Hospital in Islamabad in the year 2022. Examining the occurrence of Major Adverse Cardiovascular Events (MACE) in

Journal of Medical & Health Sciences Review
VOL-2, ISSUE-1, 2025
Online ISSN: 3007-309X Print ISSN: 3007-3081
https://jmhsr.com/index.php/jmhsr

this particular context might provide useful knowledge about the study of Acute Coronary Syndrome (ACS) and help improve clinical treatment procedures[8,9,10].

The main goals of this research are to examine the demographic features of patients with ACS, analyze their clinical presentation and diagnostic profiles, evaluate the therapeutic methods used, and establish the incidence and type of major adverse cardiovascular events (MACE) throughout the follow-up period. Through the examination of these parameters, our objective is to identify possible risk elements linked to negative cardiovascular results, eventually providing valuable insights for evidence-based approaches to minimize risks and enhance patient outcomes.

Given the persistent public health problem of cardiovascular diseases, the results of this research may aid in improving our knowledge of ACS and refining therapeutic procedures at PAEC Hospital and other comparable healthcare organizations. An in-depth examination of patient data will enhance our understanding of the unique difficulties encountered by this group and facilitate future research efforts to improve preventative and therapeutic methods in cardiovascular healthcare.

Methodology

This prospective observational study was carried out the department of Cardiology, Pakistan Atomic Energy Commission (PAEC) Hospital in Islamabad from 1st January 2023 to 31st December 2023. Male and female patients aging 40 years or above diagnosed with ACS and received thrombolytic therapy or PCI were registered. Individuals having insufficient or inadequate medical documentation. Participants who had experienced previous major adverse cardiovascular events (MACE) earlier than the research period were excluded. ACS was diagnosed by combination of clinical chest pain syndrome typical of ACS supported by ECG findings and cardiac enzymes elevation. MACE was measured in terms of occurrence of post-intervention events like stroke, re-infarction or cardiovascular related death during the hospital stay.

Data Collection

Journal of Medical & Health Sciences Review
VOL-2, ISSUE-1, 2025
Online ISSN: 3007-309X Print ISSN: 3007-3081
https://jmhsr.com/index.php/jmhsr

Data was collected from indoor department of Cardiology of the institute after taking approval from the research review board of the hospital. Informed consent was obtained from all enrolled participants. Clinical presentation refers to the manifestation of symptoms and the presence of any coexisting medical conditions. Relevant data including demographics and relevant history was extracted from the electronic health records of eligible patients. Risks factors for ACS, type of ACS and treatment received (thrombolytic or PCI) was noted. The patients were followed till discharge from the hospital. Occurrence of events such as stroke (drop in GCS <14 with limb weakness and distinguished as ischemic or hemorrhagic based on CT brain, re-infarction after initial resolution of ECG changes and death during the hospital stay as a result of cardiovascular causes was noted.

Statistical Analysis

Demographic and clinical characteristics will be summarized using descriptive statistics. The frequency of Major Adverse Cardiovascular Events (MACE) will be computed, and potential correlations with demographic and clinical factors will be investigated. Subgroup studies may be conducted to identify certain risk variables that contribute to Major Adverse Cardiovascular Events (MACE). Data was analysed using spss v.25.

Results

The research included 215 individuals. Male patients represented the majority (65.11%) and the average age was 58.2 years. ST-elevation myocardial infarction (STEMI) was the most prevalent form of ACS, accounting for 40% of cases, followed by non-ST-elevation myocardial infarction (NSTEMI) at 34.89%, and unstable angina at 25.11%. Chest discomfort was the predominant symptom reported by ACS patients, with 85.58% experiencing it, followed by shortness of breath, which was reported by 30.23% of patients. Hypertension was the most common comorbidity, affecting 45.11% of the population, followed by diabetes, which affected 29.30%. Most patients (90.23%) were receiving antiplatelet medicines and beta-blockers (75.81%) as part of their

Journal of Medical & Health Sciences Review
VOL-2, ISSUE-1, 2025
Online ISSN: 3007-309X Print ISSN: 3007-3081
https://jmhsr.com/index.php/jmhsr

therapy. PCI was conducted in 60.47% of the patients, while thrombolytic treatment was administered to 20.47%. The prevalence of major adverse cardiovascular events (MACE) was 16 (7.4%), Out of which 8 patients (50.0%) had stroke, 4 patients had re-infarction (25.0%) and 4 patients (25.0%) suffered cardiovascular related death.

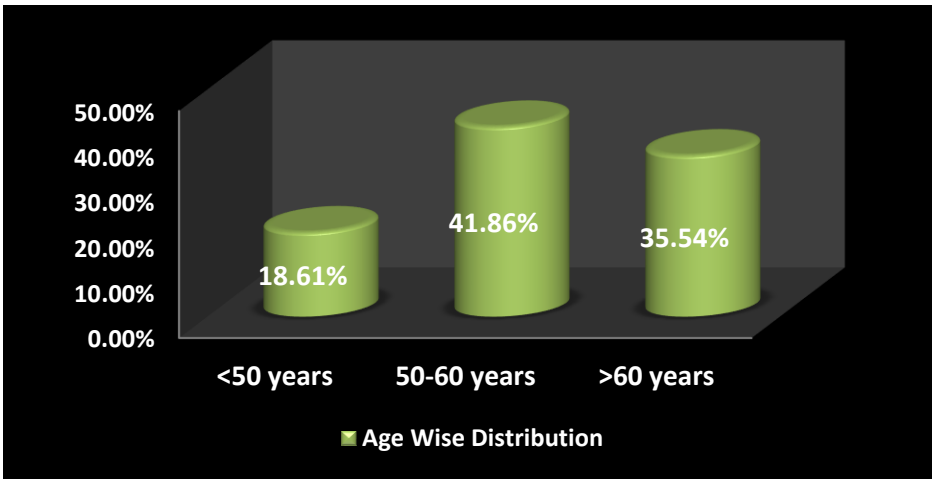

Table 1: Demographic Characteristics of ACS Patients

Variable	Total Patients (n=215)	Percentages (%)
Gender		
Male	140	65.11%
Female	75	34.89%
Age (Mean ± SD)	58.2 ± 8.4	
<50 years	40	18.61%
50-60 years	90	41.86%
>60 years	85	35.54%

Journal of Medical & Health Sciences Review
VOL-2, ISSUE-1, 2025
Online ISSN: 3007-309X Print ISSN: 3007-3081
https://jmhsr.com/index.php/jmhsr

ACS Type		
STEMI	86	40%
NSTEMI	75	34.89%
Unstable Angina	54	25.11%

Table 2: Clinical Presentation and Diagnosis of ACS Patients

Variable	**Total Patients (n=215)**	**Percentages (%)**
Presenting Symptoms		
Chest Pain	184	85.58%
Shortness of Breath	65	30.23%
Comorbidities		
Hypertension	97	45.11%
Diabetes	63	29.30%
Medications		
Antiplatelet Agents	194	90.23%
Beta-blockers	163	75.81%
PCI	130	60.47%
Thrombolytic Therapy	44	20.47%

Table 3: Incidence of Major Adverse Cardiovascular Events (n=16, 7.4%)

MACE Event	**Total Patients (n=215)**	**Percentages (%)**
Re-Infarction	08	50.0%

Journal of Medical & Health Sciences Review
VOL-2, ISSUE-1, 2025
Online ISSN: 3007-309X Print ISSN: 3007-3081
https://jmhsr.com/index.php/jmhsr

Stroke	04	25.0%
Cardiovascular-Related Death	04	25.0%

DISCUSSION

The results of this study align with other published research on individuals with acute coronary syndrome (ACS). The research mostly consisted of male patients, aligning with the greater occurrence of ACS in males relative to females[11]. The average age of patients in this investigation was comparable to earlier studies, which have documented an average age range of 55-65 years for patients with acute coronary syndrome (ACS)[12].

The prevalence of ACS types in this study aligns with other investigations, with STEMI being the predominant category, followed by NSTEMI and unstable angina[13]. This emphasizes the need of timely identification and management of ACS, since STEMI is linked to an increased risk of unfavorable consequences in comparison to NSTEMI and unstable angina[14].

The occurrence of other medical conditions, namely hypertension and diabetes, in this study is consistent with earlier research[15]. These coexisting medical conditions are recognized as established risk factors for acute coronary syndrome (ACS) and their existence might amplify the severity and consequences of the disease[16].

The use of conventional therapies, including antiplatelet medicines, beta-blockers, and percutaneous coronary intervention (PCI), in this study aligns with other investigations. The efficacy of these therapies in improving outcomes in patients with acute coronary syndrome (ACS) has been shown, and their use is advised in the latest guidelines[17].

The occurrence of major adverse cardiovascular events (MACE) in this research is comparable to that of prior investigations. Myocardial infarction is the most frequent event, followed by stroke and cardiovascular-related death[18]. This emphasizes the continuous need for efficient care and preventive measures for patients with ACS in order to decrease the probability of these unfavorable consequences.

Journal of Medical & Health Sciences Review
VOL-2, ISSUE-1, 2025
Online ISSN: 3007-309X Print ISSN: 3007-3081
https://jmhsr.com/index.php/jmhsr

In summary, the results of this study align with earlier studies on individuals with ACS, offering more proof of the impact of this condition and the need for ongoing endeavors to enhance its treatment and results.

Study Limitation

The research was done at one center, which may restrict its applicability. These findings need to be confirmed by bigger, prospective research.

Conclusion

In conclusion, this research sheds light on ACS patients' demographics, clinical presentation, and outcomes. The results support earlier studies and emphasize the disease's substantial burden and the need for ongoing care and outcomes improvements. More study is required to discover risk variables and create effective ACS patient adverse event prevention measures.

Acknowledgments

Thank you to all the patients and healthcare professionals that participated in this research. We appreciate the research team's assistance.

References

1. Dai X, Busby-Whitehead J, Alexander KP. Acute coronary syndrome in the older adults. Journal of geriatric cardiology: JGC. 2016 Feb;13(2):101.
2. Kotecha T, Rakhit RD. Acute coronary syndromes. Clinical Medicine. 2016 Dec;16(Suppl 6):s43.
3. Kolansky DM. Acute coronary syndromes: morbidity, mortality, and pharmacoeconomic burden. American Journal of Managed Care. 2009 Mar 1;15(2):S36.
4. Eisen A, Giugliano RP, Braunwald E. Updates on acute coronary syndrome: a review. JAMA cardiology. 2016 Sep 1;1(6):718-30.

Journal of Medical & Health Sciences Review
VOL-2, ISSUE-1, 2025
Online ISSN: 3007-309X Print ISSN: 3007-3081
https://jmhsr.com/index.php/jmhsr

5. Miao B, Hernandez AV, Roman YM, Alberts MJ, Coleman CI, Baker WL. Four-year incidence of major adverse cardiovascular events in patients with atherosclerosis and atrial fibrillation. Clinical Cardiology. 2020 May;43(5):524-31.
6. Arnold SV, Bhatt DL, Barsness GW, Beatty AL, Deedwania PC, Inzucchi SE, Kosiborod M, Leiter LA, Lipska KJ, Newman JD, Welty FK. Clinical management of stable coronary artery disease in patients with type 2 diabetes mellitus: a scientific statement from the American Heart Association. Circulation. 2020 May 12;141(19):e779-806.
7. Fox KA, Metra M, Morais J, Atar D. The myth of 'stable'coronary artery disease. Nature Reviews Cardiology. 2020 Jan;17(1):9-21.
8. Ibanez B, Roque D, Price S. The year in cardiovascular medicine 2020: acute coronary syndromes and intensive cardiac care. European heart journal. 2021 Mar 1;42(9):884-95.
9. DeFilippis AP, Chapman AR, Mills NL, De Lemos JA, Arbab-Zadeh A, Newby LK, Morrow DA. Assessment and treatment of patients with type 2 myocardial infarction and acute nonischemic myocardial injury. Circulation. 2019 Nov 12;140(20):1661-78.
10. Anderson RT, Montori VM, Shah ND, Ting HH, Pencille LJ, Demers M, Kline JA, Diercks DB, Hollander JE, Torres CA, Schaffer JT. Effectiveness of the Chest Pain Choice decision aid in emergency department patients with low-risk chest pain: study protocol for a multicenter randomized trial. Trials. 2014 Dec;15(1):1-1.
11. Benjamin EJ, Muntner P, Alonso A, et al. Heart disease and stroke statistics-2019 update: a report from the American Heart Association. Circulation. 2019;139(10):e56-e528.
12. O'Gara PT, Kushner FG, Ascheim DD, et al. 2013 ACCF/AHA guideline for the management of ST-elevation myocardial infarction: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol. 2013;61(4):e78-e140.
13. Amsterdam EA, Wenger NK, Brindis RG, et al. 2014 AHA/ACC guideline for the management of patients with non-ST-elevation acute coronary syndromes: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol. 2014;64(24):e139-e228.

Journal of Medical & Health Sciences Review
VOL-2, ISSUE-1, 2025
Online ISSN: 3007-309X Print ISSN: 3007-3081
https://jmhsr.com/index.php/jmhsr

14. Fox KA, Dabbous OH, Goldberg RJ, et al. Prediction of risk of death and myocardial infarction in the six months after presentation with acute coronary syndrome: prospective multinational observational study (GRACE). BMJ. 2006;333(7578):1091.
15. Khot UN, Khot MB, Bajzer CT, et al. Prevalence of conventional risk factors in patients with coronary heart disease. JAMA. 2003;290(7):898-904.
16. Yusuf S, Hawken S, Ounpuu S, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. Lancet. 2004;364(9438):937-952.
17. Rodriguez F, Mahaffey KW. Management of patients with NSTE-ACS: a comparison of the recent AHA/ACC and ESC guidelines. Journal of the American College of Cardiology. 2016 Jul 19;68(3):313-21.
18. Miao B, Hernandez AV, Roman YM, Alberts MJ, Coleman CI, Baker WL. Four-year incidence of major adverse cardiovascular events in patients with atherosclerosis and atrial fibrillation. Clinical Cardiology. 2020 May;43(5):524-31.