International Research Journal of Pharmacy and Medical Sciences
ISSN (Online): 2581-3277

Myocardial Infarction – Life Style Modifications Heart Approach to Understand Myocardial Infarction

Rachana Saparagiriyajar Giriswamy*[1], Shobha Kadabahalli Rajanna[2], Divya Shree Turuvekere Ramachandraiah[3], Shashikala Krishnamurthy[1], Sreelakshmi Veerendra[1], Asha Bananahalli Siddabhovi[1], Pavan Kumar Chikkavalli Muddanna[4]

[1]Final Year M.Sc. Nursing, Department of Medical Surgical Nursing, Adichunchanagiri College of Nursing, Adichunchanagiri University, B G Nagara, Nagamangala Taluk, Mandya District, Karnataka, India-571448

[2]Professor, Department of Medical Surgical Nursing, Adichunchanagiri College of Nursing, Adichunchanagiri University, B G Nagara, Nagamangala Taluk, Mandya District, Karnataka, India-571448

[3]Lecturer, Department of Medical Surgical Nursing, Adichunchanagiri College of Nursing, Adichunchanagiri University, B G Nagara, Nagamangala Taluk, Mandya District, Karnataka, India-571448

[4]Ph.D Scholar, Department of Pharmacy Practice, Sri Adichunchanagiri College of Pharmacy, Adichunchanagiri University, B.G. Nagara, Mandya, Karnataka, India- 571448

***Abstract*—*Myocardial infarction remains one of the leading causes of morbidity worldwide, and a major part of its burden is linked to well-established risk factors such as hypertension, diabetes, smoking, physical inactivity, and poor dietary habits. [14] While patients often receive intensive medical attention during hospitalization, the true challenge frequently begins after discharge. Many individuals struggle to adapt to the required lifestyle modifications, and as a result, the risk of complications and hospital readmissions remains high. Despite being aware of the importance of long-term behavioral change, patients commonly encounter personal, social, and environmental barriers that interfere with their recovery and adherence to medical advice. This study was designed to explore not only the predictors of readmission and the continuation of unhealthy lifestyle behaviors but also the lived experiences of patients in the critical period following a myocardial infarction. By examining both clinical and non-clinical factors, the study seeks to understand why some individuals fail to maintain the recommended lifestyle changes, what obstacles they encounter in daily life, and how these challenges affect their overall recovery. Issues such as limited social support, financial constraints, emotional distress, lack of motivation, and inadequate follow-up guidance often play a significant role, yet they are not always captured in traditional clinical assessments. By identifying these underlying factors, this study aims to provide insights that can help healthcare professionals offer more personalized support and develop interventions that address the real-world difficulties patients face after hospitalization. Ultimately, the goal is to reduce preventable readmissions and promote sustainable lifestyle changes that support long-term cardiac health.*

***Keywords*—** *Myocardial Infraction, Life Style Changes, ECG, Cardiovascular Diseases, Cardiac Rehabilitation, Orem's hypothesis.*

I. Introduction

The phrase "heart attack" describes myocardial infarction (MI), which occurs when the blood flow to a portion of the myocardium is cut off or decreased. AMI may be "quiet" and unreported, or it may be a catastrophic event that causes hemodynamic deterioration and sudden death. Coronary artery disease is the leading cause of death in the United States and the primary cause of the majority of myocardial infarctions. When coronary artery blockage occurs, the myocardium is deprived of oxygen. Heart cells may necrotize and die as a result of prolonged oxygen supply loss Patients may have chest pain or pressure that radiates to the jaw, arm, neck, or shoulder. In addition, myocardial ischemia may be connected to aberrant ECG readings.to the physical examination and history, as well as elevated biochemical markers such as cardiac troponins (Figure 1). [2]

II. Definition

A heart attack, sometimes referred to as a myocardial infarction (MI), happens when blood flow in one of the heart's coronary arteries slows or ceases, resulting in infarction (tissue death) of the heart muscle. [3]

Risk Factors:

Several risk factors contribute to the likelihood of experiencing a myocardial infarction (Figure 2):

Increased Risk

1. Men are typically more at risk than women at an earlier age.
2. After menopause
3. Genetics
4. Tobacco Use
5. Hypertension
6. Blood Sugar
7. Being overweight
8. Sedentary Lifestyle
9. Poor Nutrition
10. Emotional Stress
11. Heavy Drinking
12. Cluster of Conditions
13. Chronic Inflammation. [4]

Rachana Saparagiriyajar Giriswamy, Shobha Kadabahalli Rajanna, Divya Shree Turuvekere Ramachandraiah, Shashikala Krishnamurthy, Sreelakshmi Veerendra, Asha Bananahalli Siddabhovi, and Pavan Kumar Chikkavalli Muddanna, "Myocardial Infarction – Life Style Modifications Heart Approach to Understand Myocardial Infarction," *International Research Journal of Pharmacy and Medical Sciences (IRJPMS)*, Volume 9, Issue 1, pp. 69-73, 2025.

International Research Journal of Pharmacy and Medical Sciences
ISSN (Online): 2581-3277

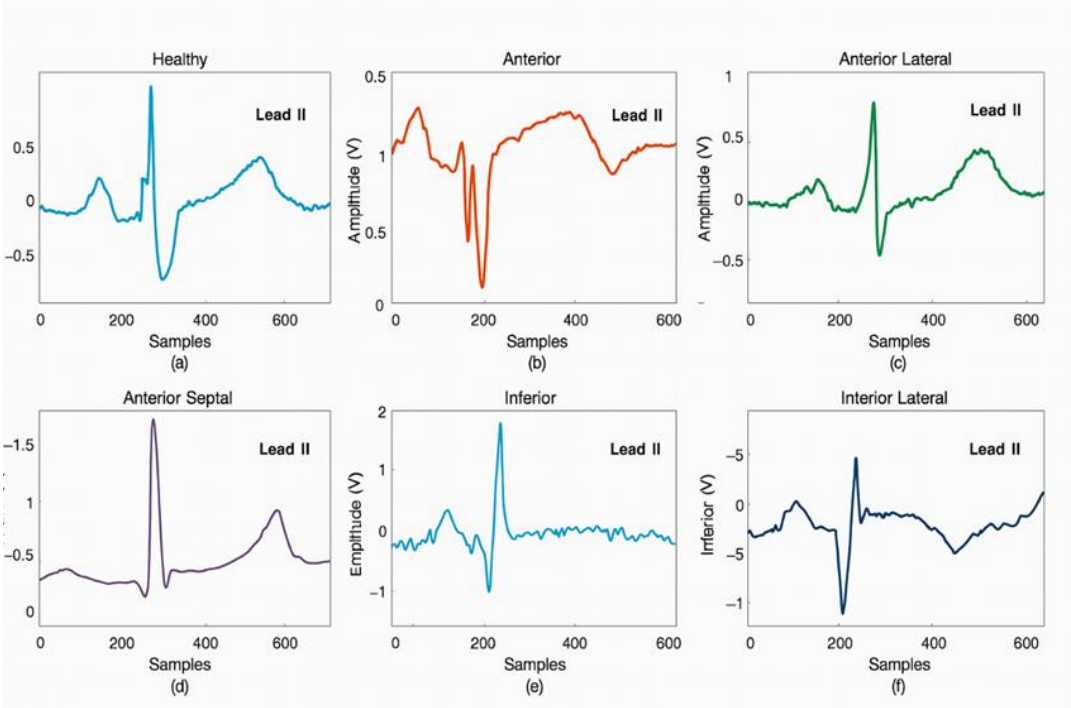

Figure 1: Lead II ECG Patterns in Healthy and MI Subjects Across Different Infraction Locations

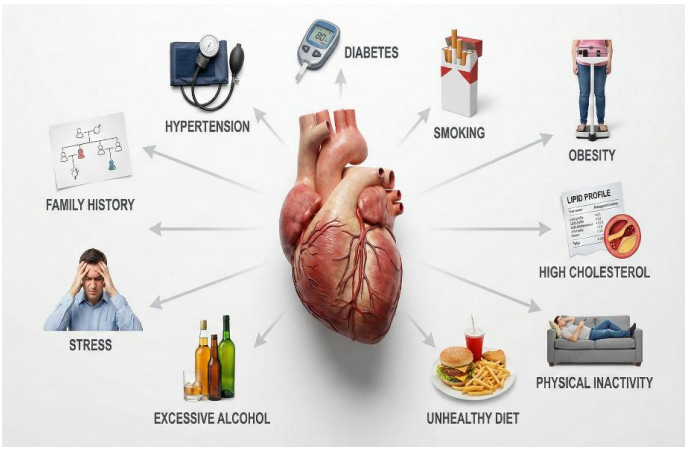

Figure 2: Major Risk Factors Contributing to Cardiovascular Disease

Signs & Symptoms:

Myocardial infarction (MI), also referred to as a heart attack, happens when the heart muscle is damaged because blood supply to a portion of the heart is stopped, typically by a clot. Although MI can appear in a variety of ways, typical symptoms include (Figure 3):

1. Pain or discomfort in the chest
2. Pain in Other Body Parts
3. Breathlessness
4. Sweating (Diaphoresis)
5. Nausea or Vomiting
6. Dizziness or lightheadedness
7. Exhaustion
8. Heart palpitations
9. Fear or a Feeling of Imminence
10. Quiet Myocardial Infarction. [5]

Figure 3: Major Clinical Symptoms Associated with Myocardial Infraction.

Pathophysiology:

Atherosclerosis (fatty plaque accumulation in the coronary artery)
↓
Plaque Rupture or Erosion
↓
Formation of thrombus (blood clot)
↓
Coronary Artery Blockage
↓
Myocardial cell injury (within 20–40 minutes)
↓
Myocardial cell death (infarction/necrosis)
↓
Inflammation followed by the creation of scars (after days to weeks)
↓
Complication risk and loss of heart function (e.g., arrhythmia, heart failure).

Rachana Saparagiriyajar Giriswamy, Shobha Kadabahalli Rajanna, Divya Shree Turuvekere Ramachandraiah, Shashikala Krishnamurthy, Sreelakshmi Veerendra, Asha Bananahalli Siddabhovi, and Pavan Kumar Chikkavalli Muddanna, "Myocardial Infarction – Life Style Modifications Heart Approach to Understand Myocardial Infarction," *International Research Journal of Pharmacy and Medical Sciences (IRJPMS)*, Volume 9, Issue 1, pp. 69-73, 2025.

Diagnostic Evaluation of Myocardial Infarction

1. Clinical Evaluation
2. EKG or ECG, or electrocardiogram
3. Biomarkers of the Heart
   - The most sensitive and specific marker for identifying cardiac muscle injury in blood testing is troponin I or T. Now a days, creatine kinase-MB (CK-MB) is used less frequently.
   - Troponins can stay high for seven to ten days after rising for three to six hours.
4. X-ray of the chest
5. Echocardiogram
   - Heart ultrasound to evaluate
   - Abnormalities in wall motion
   - Valve function and left ventricular function
6. Coronary angiography, also known as cardiac catheterization, is the gold standard for identifying coronary artery blockages.
   - Invasive test; frequently employed when biomarkers or ECG suggest an acute MI.
7. Extra tests, if required; CT coronary angiography; stress testing (only in individuals who are stable following first recovery). [6]

Treatment:

Treatment for Immediate (Emergency):

Traditional Initial Approach (MONA):

- M: Morphine: To relieve pain in the chest.
- O: Oxygen: If the saturation level is less than 90%.
- N: Nitrates: Reduce heart workload by dilatation of blood vessels.
- A: Aspirin: Stops more blood clotting.

Therapy via Reperfusion

restores the obstructed coronary artery's blood flow.

Primary PCI, or percutaneous coronary intervention:

the recommended course of action if it is accessible within ninety minutes.

- The blocked artery is opened by inserting a stent.
- When PCI is not accessible within 120 minutes,

Thrombolytic Therapy (Such as Alteplase or Streptokinase) Is Utilized.

- Breaks apart the clot, however there is a chance of bleeding. Medications After Stabilization

To control cardiac function and stop additional heart attacks:

1. Aspirin and clopidogrel (dual treatment) are antiplatelet medications;
2. Beta-blockers lower the risk of arrhythmia and heart workload;
3. ACE inhibitors or ARBs: Reduce blood pressure and safeguard heart health
4. Statins: Reduced cholesterol levels
5. Heparin is an anticoagulant, particularly during the hospital phase.

Long-Term Administration

Diet, exercise, and quitting smoking are examples of lifestyle modifications. Supervised exercise and education are examples of cardiac rehabilitation.

Consistent follow-up: To track and modify prescriptions. [7]

Life Style Changes:

Lifestyle Modifications to Avoid Heart Attacks Making lifestyle adjustments is crucial to:

Lowering the chance of a first heart attack; Preventing recurrence; and Improving general heart health.

1. Nutritious diet:

Eat more Whole grains, legumes, nuts, fruits, vegetables, and lean proteins (such as fish)

2. Regular Physical Activity

Engage in muscle strengthening exercises two or more days a week

3. Quit smoking

Smoking damages blood vessels and raises the risk of heart attacks [8]

4. Exercise

Get at least 150 minutes of moderate aerobic activity every week.

In one to two years, quitting smoking lowers risk.

5. Limit Alcohol Use: If alcohol is consumed, do so sparingly.

Maximum of one drink per day for females and two drinks per day for males

6. Maintain a Healthy Weight

A BMI of 18.5 to 24.9 is ideal since it lessens the strain on the heart and lowers the risk of high blood pressure and diabetes.

7. Handle Stress

Psychological stress and emotional dysregulation are known to influence cardiovascular outcomes, and emerging evidence suggests that gut–brain interactions may also play a role in stress-related health issues.

8. Engage in stress reduction practices such as:
   - Deep Breathing,
   - Meditation,
   - Yoga,
   - Counseling, or Therapy.
9. Adequate Sleep
   - Adults should strive for 7 to 9 hours of good sleep per night.
   - A higher risk of cardiovascular disease is associated with inadequate sleep. [9]

Figure 4: Preventive Lifestyle Measures for Reducing Cardiovascular Disease Risk

Rachana Saparagiriyajar Giriswamy, Shobha Kadabahalli Rajanna, Divya Shree Turuvekere Ramachandraiah, Shashikala Krishnamurthy, Sreelakshmi Veerendra, Asha Bananahalli Siddabhovi, and Pavan Kumar Chikkavalli Muddanna, "Myocardial Infarction – Life Style Modifications Heart Approach to Understand Myocardial Infarction," *International Research Journal of Pharmacy and Medical Sciences (IRJPMS)*, Volume 9, Issue 1, pp. 69-73, 2025.

Cardiac Rehabilitation:

Definition:

A structured program of medical treatment, exercise, education, and support is called cardiac rehabilitation, and its goal is to help patients recover from heart attacks and avoid more heart issues in the future. [10-16]

Cardiac Rehab Program's Elements:

1. Exercise Training Under Supervision
2. Nutrition Guidance
3. Assistance in Quitting Smoking
4. Handling Stress
5. Education on Medicine
6. Risk factor monitoring (e.g., blood pressure, cholesterol, glucose). [17]

Special Needs of Cardiac Patients

The Self Care Deficit Nursing Theory developed by Orem offers a thorough framework for helping myocardial infarction (MI) patients make healthy lifestyle changes. Selfcare is a taught and intentional behavior that people engage in to preserve their health and wellbeing, but nursing intervention is necessary when self-care is lacking, according to Orem. [18]

Many patients experience difficulties following a MI, including poor food knowledge, trouble following exercise routines, difficulty quitting smoking, and difficulties managing stress.

Assessing these deficiencies and implementing Orem's supportive-educative system—in which the patient is encouraged, mentored, and taught to adopt habits that promote health— are critical tasks for nurses. For instance, nurses can counsel patients to quit smoking and drinking, teach them stress reduction methods like yoga or relaxation, oversee gradual physical activity in cardiac rehabilitation, and educate patients about low-fat and low-salt diets. [19] Patients progressively transition from reliance (completely compensatory care during the acute period) to independence (maintenance of selfcare) with this method. Applying Orem's hypothesis improves adherence to lifestyle modifications, gives MI patients more control over their health, and eventually lowers their likelihood of experiencing another heart attack. [20-25]

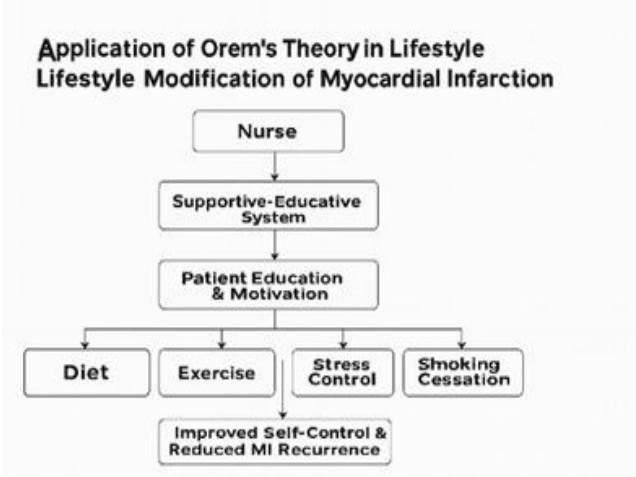

Figure 4: Orem's Theory-Based Model for Lifestyle Modification After Myocardial Infraction

III. Conclusion

A myocardial infarction, often known as a heart attack, is a serious medical emergency that happens when the coronary arteries suddenly get blocked, damaging the heart muscle. Patient outcome s are greatly enhanced by prompt identification, prompt diagnosis, and efficient therapy. To stop additional cardiac episodes and improve quality of life long-term care is necessary, which includes medication adherence, lifestyle changes, and cardiac rehabilitation. [26] Reducing the incidence and impact of myocardial infarction globally continues to be largely dependent on preventive strategies aimed at managing risk factors. [27]

References

1. Nunes S, Rego G, Nunes R. Difficulties of Portuguese patients following acute myocardial infarction: predictors of readmissions and unchanged lifestyles. Asian Nurs Res (Korean Soc Nurs Sci). 2016;10(2):150-7. doe: 10.1016/j.anr.2016.03.005.
2. Lee H, Lee J, Kim H, et al. Factors affecting lifestyle changes after myocardial infarction: a population-based study. Int J Environ Res Public Health. 2022;19(6):3617. doi:10.3390/ijerph19063617.
3. Wikipedia. Myocardial infarction [Internet]. Available from: https://en.wikipedia.org/wiki/Myocardial_infarction
4. Cleveland Clinic. Myocardial infarction: prevention & lifestyle changes [Internet]. Available from: https://my.clevelandclinic.org/
5. American Heart Association. Heart attack symptoms [Internet]. 2023. Available from: https://www.heart.org/en/health-topics/heart-attack/warning-signs-of-a-heart-attack
6. Thygesen K, Alpert JS, Jaffe AS, et al. Fourth universal definition of myocardial infarction. J Am Coll Cardiol. 2018;72(18):2231-64. doi:10.1016/j.jacc.2018.08.1038.
7. Ibanez B, James S, Agewall S, et al. 2017 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation. Eur Heart J. 2018;39(2):119-77. doi:10.1093/eurheartj/ehx393.
8. Muddanna PK, Kumaraswamy M. The impact of smoking on sleep and quality of life: a comprehensive review. International Journal of Research in Medical Sciences. 2024 Sep;12(9):3538.
9. American Heart Association. Life's Essential 8: Your checklist for lifelong heart health [Internet]. 2023. Available from: https://www.heart.org/en/healthy-living/healthy-lifestyle
10. World Health Organization. Cardiac rehabilitation: a WHO priority for secondary prevention of cardiovascular disease [Internet]. 2023. Available from: https://www.who.int/publications/i/item/9789240014886
11. Orem DE. Nursing: Concepts of Practice. 6th ed. St. Louis (MO): Mosby; 2001.
12. Srinivas YR, Ramesh TM, Muddanna PK, Jayappa MK. A review on probiotics and mental health: exploring the gut-brain axis and its therapeutic potential. International Journal of Research in Medical Sciences. 2025 Sep;13(9):3921.
13. World Health Organization. Cardiovascular diseases (CVDs): key facts [Internet]. 2023. Available from: https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)
14. Benjamin EJ, Muntner P, Alonso A, et al. Heart disease and stroke statistics—2019 update. Circulation. 2019;139(10):e56-e528.
15. Reed GW, Rossi JE, Cannon CP. Acute myocardial infarction. Lancet. 2017;389(10065):197-210.
16. Libby P. Mechanisms of acute coronary syndromes. N Engl J Med. 2013;369:883-4.
17. Yusuf S, Hawken S, Ounpuu S, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (INTERHEART Study). Lancet. 2004;364(9438):937-52.
18. Montalescot G, Sechtem U, Achenbach S, et al. 2013 ESC guidelines on stable coronary artery disease. Eur Heart J. 2013;34(38):2949-3003.
19. Baigent C, Blackwell L, Emberson J, et al. Efficacy of statins in vascular disease. Lancet. 2010;376:1670-81.

Rachana Saparagiriyajar Giriswamy, Shobha Kadabahalli Rajanna, Divya Shree Turuvekere Ramachandraiah, Shashikala Krishnamurth y, Sreelakshmi Veerendra, Asha Bananahalli Siddabhovi, and Pavan Kumar Chikkavalli Muddanna, "Myocardial Infarction – Life Style Modifications Heart Approach to Understand Myocardial Infarction," *International Research Journal of Pharmacy and Medical Sciences (IRJPMS)*, Volume 9, Issue 1, pp. 69-73, 2025.

20. Piepoli MF, Hoes AW, Agewall S, et al. 2016 European Guidelines on cardiovascular disease prevention. Eur Heart J. 2016;37(29):2315-81.
21. Anderson JL, Morrow DA. Acute myocardial infarction. N Engl J Med. 2017;376:2053–64.
22. Zhang Y, Huang Z, Ho KW, et al. Lifestyle modifications and recurrent myocardial infarction: a systematic review. Eur J Prev Cardiol. 2020;27(19):2160–71.
23. De Smedt D, Clays E, Annemans L, et al. Effectiveness of cardiac rehabilitation in heart patients. Eur J Prev Cardiol. 2018;25(2):202–13.
24. Smith SC, Benjamin EJ, Bonow RO, et al. AHA/ACCF secondary prevention guidelines for cardiovascular disease. Circulation. 2011;124(22):2458–73.
25. Jneid H, Addison D, Bhatt DL, et al. 2022 AHA/ACC/ASE emergency management of MI guidelines. Circulation. 2022;146:e1–e150.
26. Kones R. Primary prevention of coronary heart disease: integrating risk factors. Int J Gen Med. 2011;4:327–46.
27. Heran BS, Chen JM, Ebrahim S, et al. Exercise-based cardiac rehabilitation for CHD: Cochrane review. Cochrane Database Syst Rev. 2011;7:CD001800.

Rachana Saparagiriyajar Giriswamy, Shobha Kadabahalli Rajanna, Divya Shree Turuvekere Ramachandraiah, Shashikala Krishnamurthy, Sreelakshmi Veerendra, Asha Bananahalli Siddabhovi, and Pavan Kumar Chikkavalli Muddanna, "Myocardial Infarction – Life Style Modifications Heart Approach to Understand Myocardial Infarction," *International Research Journal of Pharmacy and Medical Sciences (IRJPMS)*, Volume 9, Issue 1, pp. 69-73, 2025.