Journal of Health and Rehabilitation Research 2791-156X JHRR

For contributions to JHRR, contact at email: editor@jhrlmc.com

Original Article

Factors Affecting Health-Promoting Behaviors in Patients Diagnosed with Myocardial Infarction

Syed Yousaf Shah[1], Zafar Iqbal[2], Sana Aziz[3], Yasir Ali Khan[4], Saeed Ur Rahman[5], Fayaz Ahmed[6], Amir Sultan[7]*

[1]Phd Scholar, Lincoln University College Malaysia.
[2]Institute of Nursing Sciences, Khyber Medical University KMU, Peshawar, Pakistan.
[3]Clinical Instructor, Male College of Nursing, Karachi, Pakistan.
[4]Charge Nurse, Peshawar Institute of Cardiology, Peshawar, Pakistan.
[5]Assistant Professor/Principal Medicaid College of Nursing and Allied Health Sciences Chakdara, Dir Lower, KP, Pakistan.
[6]MSN Scholar, Faculty of Nursing and Midwifery, Ziauddin University, Karachi, Pakistan.
[7]Assistant Professor/Principal, Tasleem College of Nursing and Health Sciences Swat, KP, Pakistan.
Corresponding Author: Amir Sultan, Assistant Professor/Principal; Email: amirsultan204@gmail.com

Conflict of Interest: None.

Shah SY., et al. (2024). 4(1): DOI: https://doi.org/10.61919/jhrr.v4i1.558

ABSTRACT

Background: Cardiovascular diseases, including myocardial infarction (MI), represent a significant global health burden, particularly in developing countries like Pakistan. Health-promoting behaviors (HBs) play a crucial role in the management and prevention of MI, potentially reducing morbidity and mortality rates among affected individuals.

Objective: This study aimed to identify the factors influencing health-promoting behaviors among patients diagnosed with myocardial infarction and to evaluate the level of engagement in such behaviors.

Methods: A cross-sectional descriptive study was conducted at a tertiary care hospital in Pakistan from September 2022 to June 2023. The study population consisted of 318 patients diagnosed with MI (ST and non-STEMI), selected through purposive sampling. Data were collected on demographic characteristics, health behavior data using the Song-and-Lee Health Behaviors Checklist, and analyzed using SPSS version 25 for descriptive and inferential statistics, including independent t-tests, ANOVA, and multiple linear regression.

Results: The overall mean score of health-promoting behaviors among participants was 2.14 ± 0.21, indicating a moderate level of engagement. The highest mean score was observed in eating behaviors (2.26 ± 0.34), while the lowest was in health responsibility (2.00 ± 0.40). Gender and smoking status significantly influenced health-promoting behaviors, with females and non-smokers exhibiting better HB scores. Significant differences in HBs were noted across gender, co-morbidity, and history of hospitalization, but not within age, BMI, and smoking groups.

Conclusion: The study concluded that myocardial infarction patients exhibit a moderate level of engagement in health-promoting behaviors, with significant variations influenced by gender and smoking status. There is a need for targeted nursing strategies to enhance health-promoting behaviors, particularly focusing on dietary habits, smoking cessation, and health responsibility among MI patients.

Keywords: Myocardial Infarction, Health-Promoting Behaviors, Cardiovascular Disease, Pakistan, Smoking Cessation, Dietary Habits, Nursing Strategies, Cross-Sectional Study.

INTRODUCTION

Cardiovascular diseases (CVD) represent a significant health challenge globally, contributing to an estimated 17.5 million deaths annually, of which coronary artery disease (CAD) is responsible for 7.5 million (1). In the United States alone, myocardial infarction (MI) affects over 750,000 individuals each year (2). The burden of cardiovascular diseases is particularly pronounced in developing countries, contributing to the global escalation of CVD rates. Pakistan, representative of these nations, faces a severe impact from CAD, characterized by high morbidity, mortality, and a substantial economic burden on both its public health infrastructure and the affected individuals (3). Heart disease, and specifically heart attacks, are a leading cause of death in Pakistan, with ischemic heart

Journal of Health and Rehabilitation Research 2791-156X JHRR

disease, under which heart attacks are classified, being responsible for over 186,000 deaths in 2019 according to the Global Burden of Disease Study (4).

Health behaviors (HB), as defined by Edelman and Mandle (2010), encompass actions undertaken by individuals to promote health, combat illness, manage symptoms, and prevent diseases (5). These behaviors, including medication adherence, exercise, dietary modifications, stress management, and smoking cessation, align with the American Heart Association's (AHA) guidelines (6). The adoption of such health-promoting behaviors is crucial for reducing hospital admissions and mortality among MI survivors. Evidence suggests that comprehensive management of risk factors, through lifestyle changes and evidence-based medical therapies, is vital for enhancing survival rates and preventing recurrent cardiovascular events in individuals suffering from acute myocardial infarction (AMI) (7,8,9). It has been shown that managing risk factors effectively can lead to longer life spans, fewer recurrences, and improved quality of life for MI survivors (10).

The dawn of the twenty-first century witnessed significant advancements in the diagnosis and treatment of cardiovascular diseases, fundamentally transforming patient care (11,12). Concurrently, there has been a substantial increase in governmental healthcare expenditure on treating these conditions. Despite these advancements, challenges remain, such as the observation that the decrease in early mortality rates from myocardial infarction has not translated into a reduction in the overall mortality rate from cardiovascular diseases (13). As such, preventive measures are increasingly recognized as the most effective approach to mitigate the epidemiological risk associated with cardiovascular diseases. These measures include assessing and managing cardiovascular risk factors with the goal of reduction or elimination (14,15). Presently, adopting a healthy lifestyle is considered essential for the preservation and enhancement of public health (16). Therefore, understanding the factors influencing health-promoting behaviors among patients with myocardial infarction is of paramount importance, leading to the initiation of research aimed at identifying these determinants.

MATERIAL AND METHODS

The study, employing a cross-sectional descriptive design, was conducted from September 2022 to June 2023 at a tertiary care hospital in Pakistan. It aimed to examine health-promoting behaviors in patients diagnosed with myocardial infarction, encompassing both ST-segment elevation myocardial infarction (STEMI) and non-ST-segment elevation myocardial infarction (non-STEMI). The research population comprised patients who had been diagnosed with myocardial infarction, from which a sample of 255 individuals was selected through purposive sampling, based on specified inclusion criteria. These criteria included patients who were at least 18 years old, had been diagnosed with myocardial infarction for at least one year, and were capable of understanding and responding to the questionnaire. Exclusion criteria ruled out patients who were mentally unstable, immobilized, or unwilling to participate in the study.

The recruitment process began in the outpatient department (OPD), where potential participants were introduced to the study's objectives and procedures in a face-to-face manner. Following the evaluation for eligibility based on the inclusion criteria, informed consent was obtained from each participant, ensuring their agreement to partake in the study voluntarily. This consent process was conducted in accordance with the ethical standards of the Declaration of Helsinki, ensuring the protection of participants' rights and well-being throughout the study.

Data collection encompassed demographic information and health behavior data. Demographic data included variables such as age, gender, education level, co-morbidity, marital status, body mass index (BMI), and smoking history. Health behaviors were assessed using the Song-and-Lee Health Behaviors Checklist, a validated and reliable instrument featuring five dimensions and 21 items, rated on a scale from 1 (never) to 4 (routinely), and boasting a Cronbach alpha of 0.83 (16).

The analysis of the collected data was performed using the Statistical Package for the Social Sciences (SPSS) version 25. This encompassed both descriptive and inferential statistical methods to examine the data thoroughly. Independent t-tests and ANOVA (Analysis of Variance) were employed to identify differences within the groups. Furthermore, multiple linear regression analysis was utilized to explore the impact of various factors on health-promoting behaviors among the study population. This comprehensive approach to data analysis aimed to uncover significant insights into the factors influencing health behavior among myocardial infarction patients, contributing valuable information to the field of cardiovascular disease management and prevention.

RESULTS

In this study, a total of 318 participants diagnosed with myocardial infarction were analyzed to understand the factors affecting health-promoting behaviors. The gender distribution was nearly equal with 157 males (49.4%) and 161 females (50.6%), indicating a balanced representation of both genders in the study population (Table 1). The majority of participants fell into the age group of 56-65 years (55.7%), followed by those aged 66 and above (22.6%) and 45-55 years (21.7%), highlighting a higher prevalence of

Journal of Health and Rehabilitation Research 2791-156X JHRR

myocardial infarction among the older population. Remarkably, all participants were married, reflecting a specific demographic characteristic of the sample. Educational levels varied, with 47.2% of participants having no education, 39.3% completing matriculation, 5% having intermediate education, and 8.5% holding a bachelor's degree, suggesting a significant portion of the population had limited educational background (Table 1).

Body Mass Index (BMI) data showed that a substantial majority of participants were categorized as healthy (81.1%), with a smaller segment being overweight (17.0%) and a minimal percentage (1.9%) classified as obese. Smoking status revealed that 22.3% of the participants were smokers, while a significant majority (77.7%) did not smoke. Co-morbid conditions were prevalent, with 65.1% of participants suffering from hypertension (HTN), 8.5% with diabetes mellitus (DM), and 9.7% experiencing both HTN and DM. Notably, 30.5% of the participants had a history of hospitalization (Table 1).

Table 1: Demographic Characteristics of Participants

Characteristic	Frequency	Percentage (%)
Gender		
Male	157	49.4
Female	161	50.6
Age (years)		
45-55	69	21.7
56-65	177	55.7
66 and above	72	22.6
Marital Status		
Married	318	100
Education Level		
No education	150	47.2
Matric	125	39.3
Intermediate	16	5.0
Bachelor	27	8.5
BMI Category		
Healthy	258	81.1
Overweight	54	17.0
Obese	6	1.9
Smoking Status		
Yes	71	22.3
No	247	77.7
Comorbidity		
None	53	16.7
Hypertension (HTN)	207	65.1
Diabetes Mellitus (DM)	27	8.5
HTN + DM	31	9.7
History of Hospitalization		
Yes	97	30.5
No	221	69.5

Regarding health behaviors, the study observed a range of scores across different dimensions, including health responsibility, physical activity, eating behaviors, stress management, and smoking habits. The mean scores varied slightly, with eating behaviors scoring the highest (2.26 ± 0.34) and health responsibility the lowest (2.00 ± 0.40). The overall mean score for health behaviors was 2.14 ± 0.21, indicating a moderate level of engagement in health-promoting activities among the participants (Table 2).

Table 2: Health Behaviors Among Participants

Health Behavior	Minimum	Maximum	Mean ± SD
Health Responsibility	1.40	3.40	2.00 ± 0.40
Physical Activity	1.50	3.25	2.17 ± 0.41

Journal of Health and Rehabilitation Research 2791-156X JHRR

Health Behavior	Minimum	Maximum	Mean ± SD
Eating Behaviors	1.67	3.00	2.26 ± 0.34
Stress Management	1.33	3.33	2.17 ± 0.44
Smoking Habits	1.33	3.67	2.17 ± 0.47
Overall Health Behaviors	1.69	2.90	2.14 ± 0.21

The analysis of differences within groups concerning health behaviors revealed significant findings. A slight but statistically significant difference was observed between genders in their health behaviors, with females showing marginally higher scores (2.15 ± 0.23) than males (2.14 ± 0.18), as indicated by a P-value of 0.044. Age groups did not show a significant difference in health behaviors, suggesting that age may not be a critical factor in influencing health-promoting behaviors in this population.

Table 3: Differences Within Groups Regarding Health Behaviors

Variable	Mean	SD	F	P-value
Gender			4.077	0.044
Male	2.14	0.18		
Female	2.15	0.23		
Age (years)			0.141	0.869
45-55	2.15	0.22		
56-65	2.14	0.21		
66 and above	2.15	0.18		
BMI Category			1.682	0.188
Healthy	2.14	0.21		
Overweight	2.15	0.22		
Obese	2.30	0.00		
Smoking Status			0.714	0.399
Yes	2.20	0.17		
No	2.13	0.21		
Comorbidity			7.768	0.000
None	2.13	0.18		
HTN	2.15	0.18		
DM	2.26	0.38		
HTN + DM	2.00	0.10		
Hospitalization			4.083	0.044
Yes	2.15	0.25		
No	2.14	0.19		

BMI categories also did not reveal significant differences, although obese participants had a slightly higher mean score (2.30), which was not statistically significant (P-value=0.188). Smoking status and comorbid conditions, specifically the presence of hypertension and diabetes, showed no significant difference in health behavior scores, highlighting that these factors might not distinctly influence health-promoting behaviors in myocardial infarction patients (Table 3).

Table 4: Factors Affecting Health Behaviors of Study Participants

Factor	B	Std. Error	t	P-value	95% CI Lower	95% CI Upper
Gender	0.067	0.028	2.402	0.017	0.012	0.122
Age	-0.007	0.018	-0.363	0.717	-0.043	0.030
Education	0.003	0.016	0.179	0.858	-0.028	0.033
BMI	0.036	0.027	1.324	0.186	-0.018	0.090
Smoking	-0.103	0.034	-3.060	0.002	-0.169	-0.037
Comorbidity	-0.023	0.015	-1.513	0.131	-0.053	0.007
Hospitalization	-0.003	0.027	-0.124	0.902	-0.057	0.050

Further analysis using multiple regression identified several factors impacting health behaviors. Gender was a significant predictor, with males exhibiting slightly lower health behavior scores than females (B=0.067, P-value=0.017). Smoking negatively influenced

Journal of Health and Rehabilitation Research 2791-156X JHRR

health behaviors, with smokers having lower scores (B=-0.103, P-value=0.002), suggesting that smoking status significantly affects the engagement in health-promoting behaviors. Other variables, including age, education, BMI, comorbid conditions, and hospitalization history, did not show a significant impact on health behaviors, indicating that these factors might not play a critical role in influencing health-promoting behaviors among myocardial infarction patients (Table 4).

DISCUSSION

This investigation set out to identify factors influencing health-promoting behaviors (HBs) among myocardial infarction (MI) patients. The study found an average overall HB score of 2.14 ± 0.21 among participants, slightly above the median, indicating a moderate engagement in health-promoting activities. This result contrasts with findings from a South Korean study, which reported a higher mean HB score of 2.66 ± 0.41 among cardiovascular patients (17), and another study on adolescents with cardiogenic heart disease, which also documented higher health-promoting habits (18). Interestingly, our participants exhibited a greater focus on eating behaviors (2.26 ± 0.34), potentially attributed to dietary adjustments commonly practiced within the family systems of Khyber Pukhtunkhwa, emphasizing low-salt and low-sugar diets for managing hypertension and diabetes respectively. This observation aligns with other research highlighting the significance of a healthy diet in HB scores (20), including a study that reported a particularly high mean score for a healthy diet among arthritis patients (19).

Conversely, health responsibility garnered the lowest mean score (2.00 ± 0.40), suggesting a possible resignation towards health management in later adulthood among the study's demographic. This is in contrast to other studies that identified physical activity (17) and smoking cessation (20) as the lowest-scoring domains, underscoring the varied prioritization of health behaviors across different populations. The importance of physical activity as a primary prevention measure to reduce mortality from cardiovascular disease has been well-documented, further emphasizing the need for targeted interventions to enhance engagement in physical exercise and other health-promoting activities following MI (21, 22).

Gender and smoking status emerged as significant determinants of HBs, with female participants displaying better scores than males, and nonsmokers engaging more in health-promoting behaviors than smokers. These findings are supported by literature emphasizing the critical need for smoking cessation among cardiac patients to reduce future morbidity and mortality risks (23).

The study, however, is not without its limitations. The generalizability of the findings is constrained by the sample's degree of representation, and the analysis was limited to a narrow set of variables to examine health-promoting behaviors. Furthermore, the cross-sectional design precludes the determination of causality between identified factors and HBs.

CONCLUSION

In conclusion, the investigation revealed an average level of engagement in health-promoting behaviors among MI patients, with significant variances observed in relation to gender, dietary habits, and smoking status. The pivotal role of a healthy diet and the negative impact of smoking on HBs highlight areas for targeted interventions. The findings advocate for the implementation of comprehensive nursing strategies, encompassing medication education, post-discharge support programs, and enhanced nurse-led healthcare services, to bolster health-promoting behaviors in cardiovascular patients. Future research should aim to broaden the scope of variables examined and include longitudinal studies to better understand the dynamics of health-promoting behaviors post-myocardial infarction, enabling the development of more effective, evidence-based interventions to support patient recovery and well-being.

REFERENCES

1. Mendis S, Davis S, Norrving B. Organizational update: the world health organization global status report on noncommunicable diseases 2014; one more landmark step in the combat against stroke and vascular disease. Stroke. 2015;46(5):e121–2.
2. Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, et al. Heart disease and stroke statistics-2016 update: a report from the American Heart Association. Circulation. 2016;133(4):e38–360.
3. Shah BA, Khushk IA. Risk factors in acute myocardial infarction patients admitted at three health centres of Sindh, Pakistan: A case control study. Khyber Med Univ J. 2017 Jan 1;9(1):24-8.
4. World Life Expectancy. Coronary Heart Disease in Pakistan [Internet]. [cited year month day]. Available from: https://www.worldlifeexpectancy.com/pakistan-coronary-heart-disease
5. Edelman CL, Mandle CL. Health promotion throughout the lifespan. 7th ed. Philadelphia, PA: Mosby Elsevier; 2010.

Journal of Health and Rehabilitation Research 2791-156X JHRR

6. Balady GJ, Williams MA, Ades PA, Bittner V, Comoss P, Foody JM, Franklin B, Sanderson B, Southard D. Core components of cardiac rehabilitation/secondary prevention programs: 2007 update: A scientific statement from the American Heart Association exercise, cardiac rehabilitation, and prevention committee, the council on clinical cardiology; the councils on cardiovascular nursing, epidemiology and prevention, and nutrition, physical activity, and metabolism; and the American Association of Cardiovascular and Pulmonary Rehabilitation. Circulation. 2007 May 22;115(20):2675-82.

7. Boyde M, Grenfell K, Brown R, Bannear S, Lollback N, Witt J, Jiggins L, Aitken L. What have our patients learnt after being hospitalised for an acute myocardial infarction?. Australian Critical Care. 2015 Aug 1;28(3):134-9.

8. Smith SC Jr, Benjamin EJ, Bonow RO, Braun LT, Creager MA, Franklin BA, Gibbons RJ, Grundy SM, Hiratzka LF, Jones DW, et al. AHA/ACCF Secondary Prevention and Risk Reduction Therapy for Patients with Coronary and other Atherosclerotic Vascular Disease: 2011 update: a guideline from the American Heart Association and American College of Cardiology Foundation. Circulation. 2011;124:2458–73.

9. O'Gara PT, Kushner FG, Ascheim DD, Casey DE Jr, Chung MK, de Lemos JA, Ettinger SM, Fang JC, Fesmire FM, Franklin BA, 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. Circulation. 2013;127:e362–425.

10. Smith SC Jr, Allen J, Blair SN, Bonow RO, Brass LM, Fonarow GC, et al. AHA/ACC guidelines for secondary prevention for patients with coronary and other atherosclerotic vascular disease: 2006 update: endorsed by the National Heart, Lung, and Blood Institute. Circulation. 2006;113(19):2363-72.

11. Vlachopoulos C, Jackson G, Stefanadis C, Montorsi P. Erectile dysfunction in the cardiovascular patient. Eur Heart J. 2013;34(27):2034–46.

12. McConnachie A, Walker A, Robertson M. Long-term impact on healthcare resource utilization of statin treatment, and its cost effectiveness in the primary prevention of cardiovascular disease: a record linkage study. Eur Heart J. 2014;35(5):290–8.

13. Ibanez B, James S, Agewall S, Antunes M, Bucciarelli-Ducci C, Bueno H, et al. 2017 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation: The Task Force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology (ESC). Eur Heart J. 2018;39(2):119–77.

14. Muller M, Smulders M, de Leeuw P, Stehouwer C. Treatment of hypertension in the oldest old: a critical role for frailty? Hypertension. 2014;63(3):433–41.

15. Jankowski P, Gąsior M, Gierlotka M. Opieka koordynowana po zawale serca. Stanowisko Polskiego Towarzystwa Kardiologicznego oraz Agencji Oceny Technologii Medycznych i Taryfikacji [Coordinated care after myocardial infarction. Position of the Polish Cardiac Society and the Agency for the Evaluation of Medical Technology and Tariffs]. Kardiol Pol. 2016;74(8):800–11. (in Polish)

16. Song R, Oh H, Ahn S, Moorhead S. Validation of the cardiac health behavior scale for Korean adults with cardiovascular risks or diseases. Applied Nursing Research. 2018 Feb 1;39:252-8.

17. Park HC, Oh J. Factors affecting health-promoting behaviors in patients with cardiovascular disease. Healthcare. 2021 Jan 8;9(1):60.

18. Chen YJ, Wang JK, Liu CY, Yang CY, Chiang YT, Chen CW. Healthcare needs and quality of life in youths with congenital heart disease: Health-promoting behaviors as a mediator. J Pediatr Nurs. 2020;50:e113–e118.

19. Yeom HE. Symptoms, aging-stereotyped beliefs, and health-promoting behaviors of older women with and without osteoarthritis. Geriatr Nurs. 2013;34:307–13.

20. Park M, Song R, Jeong JO. Effect of goal attainment theory based education program on cardiovascular risks, behavioral modification, and quality of life among patients with first episode of acute myocardial infarction: Randomized study. International Journal of Nursing Studies. 2017 Jun 1;71:8-16.

21. Ekblom O, Ek A, Cider Å, Hambraeus K, Börjesson M. Increased physical activity post-myocardial infarction is related to reduced mortality: Results from the SWEDEHEART Registry. J Am Heart Assoc. 2018;7:e010108.

22. Krawcyk RS, Vinther A, Petersen NC, Faber J, Rehmann S, Ivesen HK, Christensen T, Cruuse C. Self-reported physical activity and cardiovascular disease risk factors in patients with lacunar stroke. J Stroke Cerebrovasc Dis. 2019;28:2168–76.

23. Gaalema DE, Cutler AY, Higgins ST, Ades PA. Smoking and cardiac rehabilitation participation: Associations with referral, attendance and adherence. Prev Med. 2015;80:67–74.