International Journal of Enhanced Research in Medicines & Dental Care (IJERMDC),
ISSN: 2349-1590, Vol. 13 Issue 8, August 2026

A Study to Assess the Effectiveness of Structured Teaching Program on Early Signs and Immediate Treatment of Myocardial Infarction in High-Risk Patients of Myocardial Infarction in Selected Hospital of Bangalore

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ABSTRACT

Introduction: Myocardial infarction (MI), commonly caused by coronary artery disease (CAD), remains one of the leading causes of mortality and morbidity worldwide. It is a life-threatening condition resulting from the obstruction of blood flow to the heart due to plaque buildup in the coronary arteries. Early recognition of warning signs and prompt initiation of immediate treatment are crucial in reducing complications and improving survival. Therefore, educating high-risk patients about the early signs and immediate management of MI is essential.

Methods: A quasi-experimental one-group pre-test and post-test research design was adopted to assess the effectiveness of a Structured Teaching Programme (STP) on knowledge regarding the early signs and immediate treatment of myocardial infarction among high-risk patients in a selected hospital. A total of 60 patients participated in the study using an appropriate sampling technique. Baseline knowledge was assessed using a structured questionnaire before administering the Structured Teaching Programme. A post-test was conducted after the intervention using the same tool. Data were analyzed using descriptive and inferential statistics, including the paired *t*-test.

Results: The findings revealed a significant improvement in the participants' knowledge following the Structured Teaching Programme. The mean pre-test knowledge score was 13.12, which increased to 23.41 in the post-test, with a mean difference of 10.29. The calculated paired *t*-value was 12.86, which exceeded the table value (t_{59} = 2.02, $p < 0.05$), indicating a statistically significant difference between the pre-test and post-test knowledge scores. Hence, the research hypothesis (H_1) was accepted.

Discussion and Recommendations: The study demonstrated that the Structured Teaching Programme was effective in significantly improving knowledge regarding the early signs, symptoms, and immediate management of myocardial infarction among high-risk patients. The findings highlight the importance of structured educational interventions in enhancing patient awareness, promoting timely recognition of MI symptoms, and facilitating early treatment-seeking behavior. Such educational programmes can play a vital role in reducing delays in emergency care and improving cardiovascular health outcomes.

Keywords: Myocardial Infarction, Coronary Artery Disease, Structured Teaching Programme, High-Risk Patients, Knowledge, Early Signs and Symptoms, Immediate Management, Patient Education, Quasi-Experimental Study, Nursing Intervention.

INTRODUCTION

Myocardial infarction (MI), commonly known as a heart attack, occurs when blood supply to part of the heart muscle is suddenly reduced or blocked, most often due to a thrombus forming in a coronary artery already narrowed by atherosclerotic plaque buildup (1). While gradual narrowing of the coronary arteries may allow collateral vessels to develop and preserve perfusion, rupture of an atherosclerotic plaque can cause a thrombus to form rapidly at the site of vascular injury, abruptly obstructing blood flow and precipitating infarction and myocardial damage (1,2). Coronary artery disease — characterized by the buildup of fatty, cholesterol-rich plaques — is the most common underlying cause of MI, and without an adequate supply of oxygen-rich blood the affected myocardium begins to die, with the extent of damage increasing the longer the blockage persists (2).

Although some infarctions occur suddenly, many patients experience warning signs hours to weeks beforehand. The most common early symptom is recurrent chest pain or pressure (angina), typically triggered by exertion or emotional stress and relieved by rest. This transient reduction in coronary blood flow is an important warning sign, and its early recognition can prompt timely care that helps prevent progression to a full infarction (3).

Despite substantial advances in diagnosis and treatment, MI remains one of the leading causes of death worldwide (4). Patients with ST-segment elevation myocardial infarction (STEMI) require immediate intervention, as early treatment significantly reduces complications and mortality. Pre-hospital strategies, such as direct referral to the cardiac catheterization laboratory, help save critical time by avoiding delays in the emergency department; because these pathways depend on accurate information relayed by paramedic staff, international guidelines emphasize meeting defined time targets for early recognition and management of STEMI to improve outcomes (4).

At the cellular level, occlusion of a coronary artery — most often following rupture of a vulnerable atherosclerotic plaque — produces ischemia and oxygen deprivation. Myocardial necrosis begins within approximately 30 minutes of occlusion, and when perfusion is severely and persistently reduced for an extended interval, usually 2 to 4 hours or more, extensive infarction with permanent loss of function occurs in the affected regions (5). MI remains a common cause of death, most often due to ventricular fibrillation soon after the onset of ischemia; once a patient reaches hospital, the primary goal of treatment is to limit infarct size. Fibrinolytic therapy with streptokinase restores coronary patency and significantly reduces mortality, and aspirin is mandatory unless there is an absolute contraindication (6)

The recommendations included here provide guidance on appropriate care. As far as possible, these are based on clear evidence that allows a robust understanding of the benefits, tolerability, harms and costs of alternative patterns of care.

NEED FOR STUDY

The scale of the problem makes the case on its own. Cardiovascular disease was responsible for close to a third of the 58 million deaths recorded worldwide in 2005 — a toll matching that of infectious disease, malnutrition, and maternal and perinatal causes combined. What makes this especially concerning is that nearly half of these deaths occurred in people still under 70, during their most productive years, with this age group also bearing the majority of the associated disease burden (7). Projections for the following decade painted an equally troubling picture: while deaths from infectious and nutritional causes were expected to decline, non-communicable diseases — cardiovascular disease chief among them — were projected to climb sharply, with much of this burden falling on low- and middle-income countries where prevention and affordable treatment remain out of reach for many (8).

Recognizing this trajectory, the World Health Organization placed non-communicable diseases firmly on the global health agenda through its Global Strategy for the Prevention and Control of Non-communicable Diseases, followed by targeted efforts around tobacco control, diet, and physical activity aimed at the risk factors shared across cardiovascular disease, cancer, diabetes, and chronic respiratory illness (9). This shift in emphasis — toward prevention rather than cure alone — reflects a broader consensus that myocardial infarction, as one of the leading causes of illness and premature death worldwide, calls for population-level action: less salt and dietary fat, more fruits and vegetables, more physical activity, and less smoking, supported by policies that make the healthier choice the easier one (10).

The numbers behind ischemic heart disease specifically reinforce this urgency. It accounted for an estimated 12.6% of deaths globally in 2002 and stands as the leading cause of death in developed nations, trailing only AIDS and lower respiratory infections in developing ones (11). In the West, heart disease remains the single biggest killer of both men and women, responsible for more than a quarter of all deaths, with someone suffering a heart attack every two minutes in the UK alone — yet public recognition of symptoms and personal risk continues to lag behind the actual threat, even though

much of that risk is modifiable through exercise, diet, weight management, stress reduction, and avoiding tobacco and excess alcohol (12).

Evidence also shows that myocardial infarction is not confined to older adults, and that its risk factors are neither simple nor uniform across populations. Large-scale longitudinal data have linked stroke, high cholesterol, diabetes, and hypertension to elevated MI risk in men, and diabetes, hypertension, high cholesterol, and financial strain to elevated risk in women — while regular physical activity emerged as one of the strongest protective factors identified (13). Compounding this, roughly half of cardiac deaths occur within an hour of symptom onset, often before the patient ever reaches a hospital — underscoring how much depends on a patient's own ability to recognize warning signs and act immediately (13).

Taken together, this body of evidence points to a persistent gap: high-risk patients frequently lack adequate knowledge of the early warning signs of myocardial infarction and the immediate actions that can improve survival. Addressing this gap through structured education is therefore both timely and necessary, which is why the investigator undertook this study to assess the effectiveness of a structured teaching programme on early signs and immediate treatment of myocardial infarction among high-risk patients in a selected hospital in Bangalore.

Statement Of Problem

A study to assess the effectiveness of structured teaching program on early signs and immediate treatment of myocardial infarction in high-risk patients of MI in selected hospital of Bangalore.

Objectives Of The Study

- To assess the level of knowledge among high-risk patients about early signs and immediate treatment of Myocardial infarction.
- To evaluate the effectiveness of structured teaching program among high-risk patients about early signs and immediate treatment of Myocardial infarction
- To find out the association between the pre-test level and post-test of knowledge among high-risk patients and their selected demographic variables

Hypotheses

H-1: There is a significant difference between pre-test knowledge and post-test knowledge of high-risk patients regarding early signs and immediate treatment of Myocardial infarction.

H-2: There is a significant association between pre-test knowledge scores of high-risk patients and their selected demographic variables.

Delimitation Of The Study

- The high-risk patients who are available at the time of data collection.
- The high-risk patients who are willing to participate in the study
- The study is limited to 60 samples only.
- The study is delimited to MI patients only.

METHODOLOGY

A quasi-experimental, one-group pretest–posttest design was used to evaluate the effectiveness of a structured teaching programme on high-risk patients' knowledge of the early warning signs and immediate management of myocardial infarction (MI). This approach was chosen because it allowed knowledge levels to be measured both before and after the intervention within the same group, directly capturing any change attributable to the teaching programme.

The study was conducted at TR Multi-Specialty Hospital, Bangalore, selected for its proximity to the investigators' institution, logistical feasibility, and access to an adequate pool of eligible patients. The target population comprised high-risk MI patients in general, with the accessible population restricted to those admitted to this hospital during the study period. Using purposive sampling, 60 high-risk patients meeting the inclusion criteria were enrolled. Eligibility required a history of at least one recognized MI risk factor — hypertension, smoking, diabetes, physical inactivity, obesity, hypercholesterolemia, prior acute MI, or chronic kidney disease — and sufficient comprehension of Kannada or English to complete the questionnaire. Patients unwilling to participate were excluded.

Three categories of variables were examined: the structured teaching programme (independent variable); patients' resulting knowledge of MI warning signs and emergency response (dependent variable); and demographic characteristics including age, sex, religion, education, marital status, diet, and personal habits.

Data were collected using a structured knowledge questionnaire developed after a review of relevant literature and consultation with subject experts. The tool comprised two sections: Part A captured sociodemographic details, and Part B assessed knowledge through structured interview items, scored as inadequate (0–10), moderate (11–20), or adequate (21–30). Content validity was established through review by ten experts (eight from medical-surgical nursing), yielding content validity indices of 0.81 for Part A and 1.0 for Part B; the tool was subsequently refined based on their feedback. Reliability, assessed via the split-half technique on a pilot sample of 10 patients, yielded a coefficient of 0.83, indicating acceptable internal consistency.

Ethical approval was obtained from the research committee and from the hospital administration prior to data collection. Written informed consent was secured from all participants, with anonymity and confidentiality maintained throughout, and data used exclusively for the purposes of the study.

RESULTS

The data collected was organized and presented under following sections:
Section-1: Demographic variables of high-risk patient of MI
Section-2: Assess the pre-test and post-test knowledge regarding early signs and immediate treatment of MI
Section-3: Evaluating the effectiveness of structured teaching programme on knowledge regarding early signs and immediate treatment of MI.
Section-4: Association between the level of pre-test and demographic variables

SECTION-1. Demographic variables of high-risk patient of MI

Table 1: Frequency and percentage distribution of participants N=60

Variable	Variable particulars	Frequency	Percentage
Age in years	Below 50 years	15	25%
	51-60 years	22	37%
	61-70 years	17	28%
	Above 71 years	6	10%
Gender	Male	46	77%
	Female	14	23%
Educational status	PUC	21	35%
	Under graduate	34	57%
	Post graduate	02	3%
	Noformal education	03	5%
Religion	Hindu	41	68%
	Muslim	05	9%
	Christian	14	23%
Marital status	Married	60	100%

	Unmarried	0	0%
Diet	Vegetarian	12	20%
	Non-vegetarian	48	80%
Personal habits	Smoking	22	36%
	Alcoholism	18	30%
	Smoking & alcoholism	15	25%
	No such habit	05	9%

SECTION: 2. Findings related to pre-test level and post test level of knowledge score

Table 2: Comparison of Pre-test and Post-test Level of Knowledge Regarding Early Signs and Immediate Treatment of MI (N = 60)

Level of Knowledge	Pre-test (N = 60)				Post-test (N = 60)			
	Frequency	Mean	Mean %	SD	Frequency	Mean	Mean %	SD
Inadequate (0–10)	48	7.53	25.1	0.32	0	0	0	-
Moderate (11–20)	12	13.68	45.6	0.82	24	18.41	12.3	2.03
Adequate (21–30)	0	0	0	0	36	26.31	87.7	1.12

Note: Mean % represents the group mean expressed as a percentage of the maximum possible score (30).

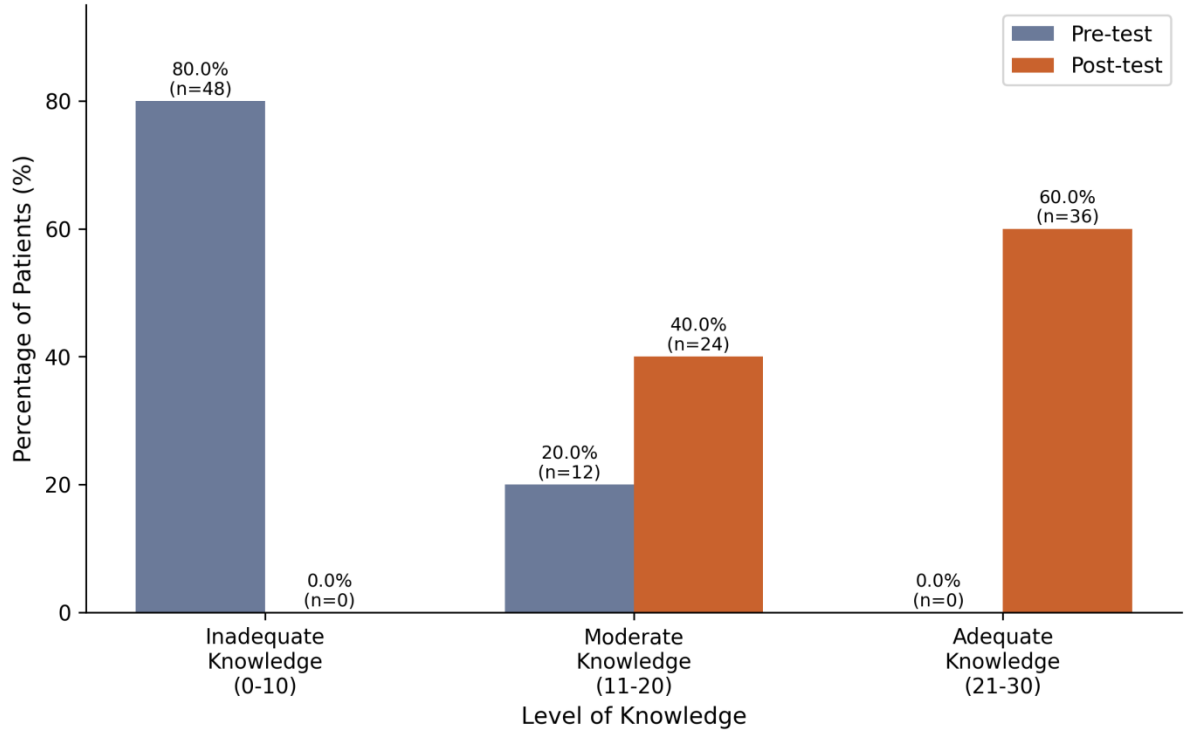

Fig: Comparison of Pre-test and Post-test Level of Knowledge Regarding Early Signs and Immediate Treatment of MI

SECTION-3. Evaluating the effectiveness of structured teaching programme on knowledge regarding early signs and immediate treatment of mi

Table 3: The effectiveness of structured teaching programme on knowledge regarding early signs and immediate treatment of MI. N=60

Areas	Mean	SD	Paired t-value	DF	Significant test, table value
Pre test	13.12	2.06	12.86	59	2.02
Post test	23.41	1.41			

SECTION 4: Association between pre-test knowledge level with demographic variables

Table 4: Association between the level of knowledge with the selected demographic variables (N = 60)

Demographic Variable	Category	Below Median (f)	Above Median (f)	χ^2 Value	df	Table Value	Inference
Age (in years)	Below 50 yrs	10	05	3.42	3	7.81	NS
	51–60 yrs	12	10				
	61–70 yrs	04	13				
	Above 71 yrs	04	02				
Gender	Male	34	12	2.85	1	6.21	NS
	Female	08	06				
Education	PUC	10	11	3.864	3	7.81	NS
	Undergraduate	22	12				
	Post Graduate	00	02				
	No formal education	01	02				
Religion	Hindu	22	19	3.01	2	2.920	**S**
	Muslim	03	02				
	Christian	10	04				
Marital Status	Married	42	18	2.62	1	6.21	NS
	Unmarried	00	00				
Diet	Vegetarian	10	02	1.32	2	2.290	NS
	Non-Vegetarian	22	26				
Personal Habits	Smoking	12	10	2.834	3	7.81	NS
	Alcoholism	09	09				
	Smoking & Alcoholism	04	11				
	No such habit	05	00				

NS = Not Significant at $p<0.05$; S = Significant at $p<0.05$

DISCUSSION

The discussion is presented under the following sections: (1) Demographic variables, (2) Pre-test and post-test knowledge, (3) Effectiveness of the structured teaching programme, (4) Association between pre-test knowledge and demographic variables.

Section 1: Demographic Variables of High-Risk Patients of MI

- In age, the highest number of samples, 22 (37%), belonged to the 51–60 years age group; 17 (28%) were between 61–70 years; 15 (25%) were below 50 years; and the remaining 6 (10%) belonged to the above-71-years group.
- In gender, the highest number of samples, 46 (77%), were male, and the remaining 14 (23%) were female.
- In education, the highest number of samples, 34 (57%), were undergraduates; 21 (35%) had PUC-level education; 3 (5%) had no formal education; and 2 (3%) were postgraduates.
- In religion, the highest number of samples, 41 (68%), were Hindu; 14 (23%) were Christian; and 5 (9%) were Muslim.
- In marital status, all samples (100%) were married.
- In diet, the highest number of samples, 48 (80%), were non-vegetarian, and 12 (20%) were vegetarian.
- In personal habits, the highest number of samples, 22 (36%), reported smoking; 18 (30%) reported alcoholism; 15 (25%) reported both smoking and alcoholism; and 5 (9%) reported no such habit.

Section 2: Pre-test and Post-test Level of Knowledge Score

The pre-test data showed that the mean percentage of Inadequate-level knowledge, before the structured teaching programme, was 25.1% (SD 0.32), and the mean percentage of Moderate-level knowledge was 45.6% (SD 0.82).

The post-test data showed that the mean percentage of Moderate-level knowledge was 61.3% (SD 2.03), and the mean percentage of Adequate-level knowledge was 87.7% (SD 1.12).

Section 3: Effectiveness of the Structured Teaching Programme

The findings revealed that the pre-test mean level of knowledge was lower than the post-test mean level of knowledge (13.12 < 23.41). The obtained paired t-value was 12.86, which was greater than the table value (t_{59}, 0.05 = 2.02), indicating that the increase in post-test knowledge was statistically significant.

H1: There is a significant difference between pre-test and post-test knowledge scores following the structured teaching programme on early signs and immediate treatment of MI. The obtained t-value was significant at the 0.05 level; hence the research hypothesis was accepted.

Section 4: Association Between Pre-test Knowledge Level and Demographic Variables

The chi-square value for religion ($\chi^2 = 3.01$, $p<0.05$) was significant at the 0.05 level; hence H2 was accepted for this variable.

The chi-square values for age ($\chi^2 = 3.42$), gender ($\chi^2 = 2.85$), educational qualification ($\chi^2 = 3.864$), marital status ($\chi^2 = 2.62$), diet ($\chi^2 = 1.32$), and personal habits ($\chi^2 = 2.834$) were not significant at the 0.05 level; hence H2 was rejected for these variables.

NURSING IMPLICATIONS OF THE STUDY

The findings of this study carry implications across four areas of nursing practice.

Nursing Practice: The evidence supports the use of structured teaching programmes to improve high-risk patients' recognition of early MI warning signs and their ability to respond appropriately, potentially aiding in prevention and better health habits.

Nursing Education: Curricula should prepare nurses to disseminate health information and support community self-care, using methods such as discussion, brainstorming, PowerPoint presentations, and handouts, alongside short-term courses and in-service training on MI prevention and management.

Nursing Administration: Nurse administrators should formulate policies that keep staff updated on current prevention and treatment strategies, and organize staff development and in-service programmes focused on early MI signs and immediate response.

Nursing Research: Further research is needed on innovative teaching methods, effective educational materials, and multimedia-based client education specific to MI early recognition and management.

LIMITATIONS

- The study was conducted among high-risk patients of MI admitted to TR Hospital, which limits its generalizability.
- The purposive sampling technique used may not give a true representation of the study population.
- The research design was limited to a one-group pre-test–post-test design.

RECOMMENDATIONS

- The study can be replicated on a larger sample to validate the findings and support generalization.
- An experimental study can be conducted on early signs and immediate treatment of MI across all patients, in terms of knowledge gain.
- A descriptive study can be undertaken to analyze the presence of risk factors.
- A similar study can be conducted using a pre-test–post-test design with a control group.
- A comparative study can evaluate the effectiveness of a structured teaching programme against other teaching methods, such as a self-instructional module or video-based method.

SUMMARY

This study was undertaken to assess the effectiveness of a structured teaching programme (STP) on knowledge of early signs and immediate treatment of myocardial infarction among high-risk patients admitted to TR Multi-Specialty Hospital, Bangalore. A quasi-experimental, one-group pretest–posttest design was adopted, with 60 high-risk MI patients selected through purposive sampling based on defined inclusion criteria. A structured knowledge questionnaire, validated for content (CVI of 0.81 and 1.0 for Parts A and B) and reliability (split-half coefficient of 0.83), was used to measure knowledge before and after the intervention. A pilot study conducted on 10 similar participants confirmed the feasibility and clarity of the tool prior to the main study.

Pre-test scores were recorded to establish participants' baseline knowledge of MI warning signs and emergency response, following which the structured teaching programme was administered. Post-test scores were then collected to measure the change in knowledge. [Insert key findings here — e.g., mean pre-test score, mean post-test score, and the statistical significance of the difference.] The demographic profile of participants — including age, sex, education, and personal habits — was also analyzed for its association with baseline knowledge levels.

CONCLUSION

The findings of this study indicate that [high-risk MI patients had inadequate/moderate knowledge of early signs and immediate treatment of MI prior to the intervention, and that] the structured teaching programme was effective in improving this knowledge, as reflected in the significant gain between pre-test and post-test scores. This supports the value of structured, planned health education as a low-cost, replicable intervention for equipping high-risk patients with the knowledge needed to recognize MI symptoms early and act promptly — a factor directly tied to reduced delay in seeking treatment and, potentially, to better survival outcomes. The study reinforces the role nurses can play beyond direct patient care, as educators and health promoters, particularly for populations who carry elevated cardiovascular risk but limited awareness of it. Wider adoption of similar structured teaching interventions in clinical and community settings could contribute meaningfully to MI prevention and early intervention efforts.

BIBLIOGRAPHY

1. Braunwald, E., Fauci, A. S., Kasper, D. L., Hauser, S. L., Longo, D. L., & Jameson, J. L. (2001). *Harrison's principles of internal medicine* (14th ed., Vol. 1). McGraw-Hill.
2. Browne, L. (n.d.). *Cardiology: Part 9. Acute myocardial infarction* (pp. 41–42).
3. Dillon, M. D., Herrera-Goncalves, D., Sakowicz, T. L., & Moose, P. E. (2006). Assisting women to learn myocardial infarction symptoms. *Journal of Cardiovascular Nursing, 21*(3), 217–223.
4. Hagen, T. P., & Reikvam, A. (2003). Marked increase in the number of myocardial infarctions following the introduction of new diagnostic criteria. *Tidsskrift for den Norske Laegeforening, 123*(21), 3041–3043.
5. Kumar, V., Abbas, A. K., & Fausto, N. (2004). *Robbins and Cotran pathologic basis of disease* (7th ed.). Saunders.
6. Australian Prescriber. (2018). *Acute myocardial infarction*. https://www.australianprescriber.com/magazine/19/2/52/4/
7. Brundtland, G. H. (2002). *Cardiovascular disease: Reducing the risk*. Informal Briefing, INB 5, Geneva, Switzerland.

8. Eshah, N. F., & Bond, A. E. (2009). Lifestyle and health-related factors associated with coronary heart disease. *International Journal of Nursing Practice, 15*(3), 131–139.
9. Reikvam, A., & Hagen, T. P. (2011). Changes in myocardial infarction mortality. *Tidsskrift for den Norske Laegeforening, 131*(5), 468–470.
10. Polit, D. F., & Hungler, B. P. (1991). *Nursing research: Principles and methods* (6th ed.). J. B. Lippincott.
11. Wikipedia contributors. (n.d.). *Myocardial infarction*. Wikipedia. https://en.wikipedia.org/wiki/Myocardial_infarction
12. Medindia. (n.d.). *Heart attack*. https://www.medindia.net/patients/patientinfo/heart-attack.htm
13. Peterson, E. D., Pollack, C. V., Jr., Roe, M. T., Parsons, L. S., Littrell, K. A., Canto, J. G., & colleagues. (2003). Early use of glycoprotein IIb/IIIa inhibitors in non-ST-elevation acute myocardial infarction: Observations from the National Registry of Myocardial Infarction (NRMI) 4. *Journal of the American College of Cardiology, 42*, 45–53.