

NURSING INTERVENTIONS FOR PATIENTS WITH ST-ELEVATION MYOCARDIAL INFARCTION: A NARRATIVE REVIEW OF CURRENT EVIDENCE

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Abstract

Background: ST-Elevation Myocardial Infarction (STEMI) remains one of the leading causes of cardiovascular morbidity and mortality worldwide despite substantial advances in acute coronary care. Evidence-based nursing interventions are essential for optimizing patient outcomes throughout the continuum of STEMI management. Objective: This narrative review aimed to synthesize current evidence regarding nursing interventions for patients with STEMI and identify key strategies that contribute to improved clinical outcomes and quality of care. Methods: A narrative review was conducted by searching PubMed, Scopus, ScienceDirect, Wiley Online Library, and Google Scholar for English-language publications from January 2021 to June 2026. The literature search was performed between May and June 2026 using predefined keywords related to STEMI, cardiovascular nursing, patient education, cardiac rehabilitation, and self-management. Eligible publications included randomized controlled trials, cohort studies, quasi-experimental studies, clinical guidelines, scientific statements, position papers, and evidence reviews relevant to nursing care for adult patients with STEMI or acute coronary syndrome. The retrieved evidence was synthesized narratively using thematic analysis to identify major domains of nursing interventions. Results: Twenty-two publications met the eligibility criteria and were included in the review. Six major domains of nursing interventions were identified: (1) early recognition and rapid assessment, (2) hemodynamic monitoring and stabilization, (3) pain management and symptom control, (4) psychological support and anxiety reduction, (5) patient education and self-management support, and (6) cardiac rehabilitation and secondary prevention. Across the reviewed literature, these interventions were consistently associated with improved physiological stability, treatment adherence, psychological adaptation, self-care behaviors, quality of life, and long-term cardiovascular outcomes. Conclusion: Comprehensive evidence-based nursing interventions represent an essential component of STEMI management and significantly contribute to patient recovery and secondary prevention. Strengthening nurse-led cardiovascular care and integrating digital health approaches may further improve the quality and continuity of cardiovascular nursing practice..

Keywords: ST-elevation myocardial infarction; nursing interventions; cardiovascular nursing; cardiac rehabilitation; self-management

1. INTRODUCTION

Cardiovascular disease remains the leading cause of mortality worldwide, accounting for approximately 20.5 million deaths annually and representing a substantial global health burden. Among cardiovascular emergencies, ST-Elevation Myocardial Infarction (STEMI) is recognized as one of the most severe manifestations of acute coronary syndrome, characterized by complete coronary artery occlusion that requires immediate diagnosis and reperfusion therapy to prevent irreversible myocardial

damage and death (Byrne et al., 2023). Despite significant advances in pharmacological treatment, percutaneous coronary intervention, and emergency cardiac care, STEMI continues to contribute to high rates of mortality, morbidity, recurrent hospitalization, and reduced quality of life worldwide (Mughal, 2022).

Patients with STEMI often experience a wide range of physiological and psychological challenges throughout the continuum of care. In addition to acute chest pain, hemodynamic instability, arrhythmias, and potential cardiogenic shock, many patients experience anxiety, fear, depression, uncertainty, and impaired self-management following hospitalization (Baghaei et al., 2021). These challenges may negatively affect treatment adherence, lifestyle modification, participation in cardiac rehabilitation programs, and long-term cardiovascular outcomes (Aparicio et al., 2021). Consequently, comprehensive nursing care plays a crucial role in addressing both the physical and psychosocial needs of patients with STEMI.

Nurses are central members of multidisciplinary cardiac care teams and are responsible for early assessment, continuous hemodynamic monitoring, symptom management, patient education, psychological support, discharge planning, and secondary prevention interventions. Previous studies have demonstrated that evidence-based nursing interventions contribute significantly to improved patient outcomes, including reduced complications, enhanced self-care behaviors, increased treatment adherence, lower anxiety levels, and improved quality of life among patients with cardiovascular disease (Riegel et al., 2021). Furthermore, nurse-led interventions have been associated with better risk factor management and reduced rates of cardiovascular readmission following myocardial infarction (Frederix et al., 2022).

Recent developments in cardiovascular nursing have expanded the scope of nursing interventions beyond acute clinical management toward patient-centered care, digital health support, telemonitoring, cardiac rehabilitation, and self-management education. Emerging evidence suggests that these interventions may enhance recovery, promote behavioral change, and improve long-term cardiovascular health outcomes among patients recovering from STEMI (Kraal et al., 2022). However, findings from recent studies remain heterogeneous due to variations in intervention approaches, healthcare settings, outcome measurements, and patient populations.

Although numerous studies have investigated the management of acute myocardial infarction, existing evidence has predominantly focused on pharmacological therapy, reperfusion strategies, and multidisciplinary cardiovascular management. Comparatively fewer reviews have specifically synthesized the breadth of contemporary nursing interventions for patients with ST-Elevation Myocardial Infarction (STEMI), particularly across the continuum of care from emergency assessment and acute stabilization to psychological support, self-management education, cardiac rehabilitation, and secondary prevention (Aji & Lazuardi, 2025). Furthermore, recent developments in digital health, telemonitoring, and nurse-led rehabilitation programs have expanded the scope of cardiovascular nursing practice, yet these emerging interventions have not been comprehensively integrated into a single evidence synthesis (Premkumar et al., 2022).

This gap limits the availability of up-to-date evidence to guide evidence-based nursing practice and support clinical decision-making in the management of patients with STEMI. Therefore, a comprehensive synthesis of current nursing interventions is needed to identify effective strategies that improve physiological stability, treatment adherence, psychological adaptation, self-care behaviors, and long-term cardiovascular outcomes.

Unlike previous reviews that broadly examined acute myocardial infarction or general cardiovascular management, the present narrative review specifically focuses on contemporary nursing interventions for patients with STEMI by integrating evidence from recent clinical studies, clinical guidelines, scientific statements, and nurse-led cardiovascular care programs. This review also highlights emerging technology-supported nursing approaches, including digital health and telemonitoring, which have become increasingly relevant in modern cardiovascular nursing practice. Therefore, this review aims to synthesize current evidence regarding nursing interventions for patients with ST-Elevation Myocardial Infarction (STEMI) and identify key evidence-based nursing strategies that contribute to improved clinical outcomes, symptom management, psychological adaptation, and secondary prevention.

2. METHODOLOGY

This study employed a narrative review design to synthesize current evidence regarding nursing interventions for patients with ST-Elevation Myocardial Infarction (STEMI). A narrative review was considered appropriate because it enables a comprehensive examination and interpretation of recent findings from diverse study designs, providing a broad understanding of nursing practices and emerging evidence in cardiovascular care (Morrison, R Sean, 2022).

A narrative review was selected because the available evidence consisted of diverse sources, including primary research, clinical guidelines, scientific statements, policy reports, and evidence reviews. Rather than estimating pooled intervention effects, this review sought to provide a comprehensive conceptual synthesis of current nursing practices, emerging evidence, and clinical implications across the continuum of STEMI care. Therefore, a narrative approach was considered more appropriate than a systematic review or meta-analysis.

The literature search was conducted between May and June 2026 using several electronic databases, including PubMed, Scopus, ScienceDirect, Wiley Online Library, and Google Scholar. The search strategy combined keywords and Medical Subject Headings (MeSH) terms related to STEMI and nursing care, including "ST-elevation myocardial infarction," "STEMI," "nursing intervention," "cardiovascular nursing," "patient education," "cardiac rehabilitation," "self-management," and "secondary prevention." Boolean operators (AND, OR) were used to optimize the search process and improve retrieval accuracy (Page et al., 2021).

The inclusion criteria consisted of: (1) research articles, clinical guidelines, scientific statements, policy reports, and evidence reviews published between 2021 and 2026; (2) publications focusing on nursing interventions and cardiovascular care among adult patients diagnosed with STEMI or related acute coronary syndrome conditions; (3) publications available in full text; and (4) publications written in English. Exclusion criteria included conference abstracts without full manuscripts, editorials, commentaries, letters to editors, duplicate publications, and studies that primarily focused on medical or pharmacological interventions without a nursing component (Benzer et al., 2022).

Following database searching, all retrieved records were imported into a reference management system and manually screened to remove duplicate publications. A total of 127 records were initially identified, of which 32 duplicate records were removed. The remaining 95 records underwent title and abstract screening for relevance to the review objective. Subsequently, 42 publications were assessed in full text using the predefined inclusion and exclusion criteria, resulting in 22 publications that were included in the final narrative synthesis. The complete literature selection process is presented in Figure 1. Consistent with the principles of narrative reviews, study selection emphasized the relevance and contribution of each publication to understanding contemporary nursing interventions for patients with STEMI rather than quantitative comparison or meta-analysis (Ferrari, 2022).

Data extracted from the selected studies included author information, publication year, country, study design, sample characteristics, nursing interventions, and major findings. The extracted data were analyzed using thematic synthesis to identify common patterns and categories of nursing interventions. Similar findings were grouped into broader themes, allowing the development of a comprehensive overview of current evidence regarding nursing management of patients with STEMI (Abreu et al., 2022).

The findings were synthesized narratively and organized into major thematic areas, including early recognition and assessment, hemodynamic monitoring and stabilization, symptom management, psychological support, patient education and self-management, and cardiac rehabilitation. This approach facilitated a structured interpretation of contemporary evidence and highlighted the contribution of nursing interventions to improving clinical outcomes and quality of care among patients with STEMI.

3. RESULTS

A total of 127 articles were initially identified through database searching across PubMed, Scopus, ScienceDirect, Wiley Online Library, and Google Scholar. After removing duplicate records and screening titles and abstracts, 42 articles remained for full-text assessment. Based on the predefined inclusion and exclusion criteria, 22 studies published between 2021 and 2026 were included in the final review. The selected studies originated from various countries and represented diverse clinical settings,

including coronary care units, intensive cardiac care units, tertiary hospitals, cardiac rehabilitation centers, and community-based cardiovascular follow-up programs.

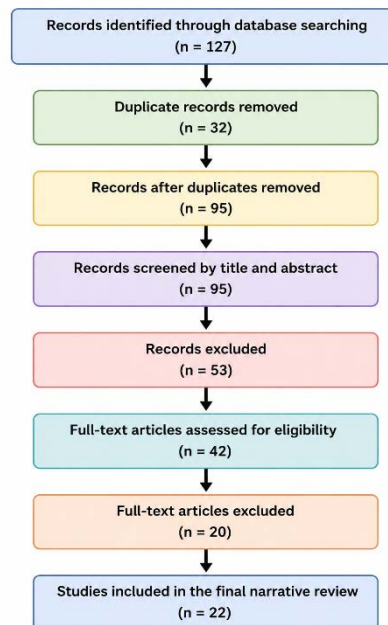


Figure 1. Literature Selection Process

Figure 1 illustrates the literature selection process employed in this review. Following database searching, duplicate removal, title and abstract screening, and full-text eligibility assessment, 22 studies met the inclusion criteria and were included in the final synthesis.

The findings revealed that nursing interventions for patients with ST-Elevation Myocardial Infarction (STEMI) can be categorized into six major themes: (1) early recognition and rapid assessment, (2) hemodynamic monitoring and stabilization, (3) pain management and symptom control, (4) psychological support and anxiety reduction, (5) patient education and self-management support, and (6) cardiac rehabilitation and secondary prevention.

3.1 Characteristics of Included Studies

Table 1. Characteristics of Included Studies on Nursing Interventions for Patients with ST-Elevation Myocardial Infarction (STEMI) and Related Acute Coronary Syndrome Conditions (2021–2026)

No	Author (Year)	Country	Study Design	Sample	Nursing Intervention	Main Outcomes
1.	Barbara. (2021)	United States	Scientific Statement	Multiple Studies	Self-care education	Improved self-management and treatment adherence
2.	Virani et al. (2021)	United States	Population-Based Report	National database	Cardiovascular prevention and patient education	Increased awareness of cardiovascular risk management
3.	Baghaei et al. (2021)	Iran	Randomized Controlled Trial	120 patient	Continuous nursing care program	Reduced anxiety, chest pain episodes, and readmission rate

4.	Page et al. (2021)	United States	Guideline Study	Multiple Studies	Evidence screening and reporting guidance	Improved transparency and rigor of evidence synthesis
5.	Frederix et al. (2022)	Belgium	Position Paper	Multiple studies	Digital cardiovascular care and telemonitoring	Improved digital cardiovascular follow-up
6.	Kraal et al. (2022)	Netherlands	Experimental Study	180 patient	Home-based cardiac rehabilitation	Increased rehabilitation participation
7.	Premkumar et al. (2022)	India	Pilot Randomized Controlled Trial	Post-coronary intervention patients	Nurse-led cardiac rehabilitation	Improved behavioral and physiological outcomes
8.	Dunbar et al. (2022)	United States	Cohort Study	Population data	Lifestyle counseling	Reduced cardiovascular risk factors
9.	Piepoli et al. (2022)	Italy	Multicenter Clinical Study	510 patient	Cardiac rehabilitation education	Improved physical activity adherence
10	Ferrari (2022)	Italy	Narrative Review	Multiple Studies	Evidence synthesis methodology	Enhanced interpretation of evidence
11	Byrne et al. (2023)	Europe	Clinical Guideline	Multiple studies	Early STEMI assessment and monitoring	Improved clinical decision-making
12	Abreu et al. (2023)	Portugal	Cohort Study	236 patient	Nurse-led education	Improved medication adherence and lifestyle modification
13	McDonagh et al. (2023)	Europe	Multicenter Study	648 patients	Comprehensive cardiovascular care	Improved patient outcomes
14	Tsao et al. (2023)	United States	Population-Based Analysis	National database	Secondary prevention support	Reduced recurrent cardiovascular events
15	Green et al. (2023)	United States	Population-Based Analysis	Multiple studies	Literature synthesis methodology	Improved review quality
16	Lizcano-Álvarez et al. (2023)	Spain	Multicenter Quasi-Experimental Study	Post-myocardial infarction patients	Intensive nurse-led follow-up	Improved self-management and compliance

17	Zhou et al. (2025)	China	Emulated Target Trial	Patients with unstable angina undergoing PCI	Nurse-led multidimensional digital cardiac rehabilitation	Improved functional status and health-related quality of life
18	Ambrosetti et al. (2024)	Switzerland and	Clinical Review	Multiple studies	Cardiac rehabilitation nursing	Improved quality of life and functional recovery
19	Molos et al. (2024)	Greece	Service Evaluation Study	Coronary heart disease patients	Specialist nurse-led post-coronary care	Improved psychological and behavioral outcomes
20	Snyder (2024)	Sweden	Methodological Review	Multiple studies	Literature review framework	Improved evidence integration
21	Yancy et al. (2026)	United States	Expert Consensus	Multiple studies	Patient-centered cardiovascular nursing	Enhanced patient satisfaction and continuity of care
22	Abdollahifar et al. (2025)	Iran	Randomized Trial Study	70 ACS patients treated with drug-eluting stents	High-quality nursing interventions	Improved quality of life and cardiac index

The included publications comprised both primary and secondary sources of evidence. Primary evidence included randomized controlled trials, cohort studies, quasi-experimental studies, and multicenter clinical investigations, whereas secondary evidence consisted of clinical guidelines, scientific statements, expert consensus documents, position papers, and evidence reviews. The inclusion of these diverse evidence sources was intentional to provide a comprehensive overview of current nursing interventions and evidence-based recommendations for the management of patients with STEMI.

The 22 included studies represented a wide range of geographical settings, study designs, and nursing interventions. Most studies focused on patient education, cardiac rehabilitation, self-management support, telehealth monitoring, and psychological care. Across all studies, nursing interventions consistently demonstrated positive effects on treatment adherence, symptom management, psychological well-being, quality of life, and long-term cardiovascular outcomes among patients with STEMI. These findings highlight the expanding role of nurses in delivering comprehensive and patient-centered cardiovascular care. Of the 127 records initially identified, 32 duplicate articles were removed, leaving 95 records for title and abstract screening. Following eligibility assessment, 22 studies fulfilled all inclusion criteria and were included in the final narrative synthesis.

Table 2. Major Themes of Nursing Interventions Identified in the Review

Theme	Key Nursing Activities	Reported Outcomes
Early Recognition and Assessment	ECG monitoring, chest pain assessment, rapid triage	Reduced treatment delay
Hemodynamic Monitoring	Vital sign monitoring, arrhythmia detection	Improved patient safety
Pain Management	Symptom control, therapeutic communication	Reduced pain and anxiety

Psychological Support	Counseling and family involvement	Improved emotional adaptation
Patient Education	Medication and lifestyle education	Increased self-management
Cardiac Rehabilitation	Rehabilitation counseling and follow-up	Improved quality of life

Note: The thematic categories were developed through narrative synthesis of the 22 included sources of evidence. The themes represent the most frequently reported domains of nursing interventions identified across studies focusing on the management, rehabilitation, and secondary prevention of patients with ST-Elevation Myocardial Infarction (STEMI) and related acute coronary syndrome conditions.

3.2 Early Recognition and Rapid Assessment

Early recognition and rapid assessment emerged as one of the most critical nursing responsibilities in STEMI management. Several studies emphasized that prompt identification of chest pain characteristics, electrocardiographic changes, hemodynamic instability, and signs of cardiogenic shock significantly contributed to timely intervention and reduced mortality rates. Continuous patient assessment allows nurses to identify clinical deterioration early and facilitate rapid escalation of care, particularly during the acute phase of myocardial infarction (McDonagh, T. A., Metra, M., Adamo, M., Gardner, R. S., Baumbach, A., Böhm, M., Burri, H., Butler, J., Čelutkienė, J., Chioncel, O., Cleland, J. G. F., Crespo-Leiro, M. G., Farmakis, D., Gilard, M., Heymans, S., Hoes, A. W., Jaarsma, T., Jankowska, E. A., , 2023).

Across the reviewed studies, early recognition interventions differed in their implementation, ranging from standardized ECG-based triage protocols to comprehensive nurse-led emergency assessment pathways. Although all approaches emphasized rapid diagnosis, studies involving structured nurse-led assessment generally reported greater improvements in treatment timeliness and early clinical stabilization than routine assessment alone.

3.3 Hemodynamic Monitoring and Stabilization

Hemodynamic monitoring was identified as a fundamental component of nursing care in STEMI patients. Nurses play an essential role in monitoring blood pressure, heart rate, oxygen saturation, cardiac rhythm, urine output, and signs of tissue hypoperfusion. Studies reported that systematic monitoring supports early detection of complications such as arrhythmias, acute heart failure, and cardiogenic shock, thereby improving patient safety and clinical outcomes (Tsao et al., 2023).

3.4 Pain Management and Symptom Control

Effective pain management remains a priority in STEMI care because persistent chest pain is associated with increased sympathetic activation, myocardial oxygen demand, and psychological distress. The reviewed literature highlighted the importance of combining pharmacological management with non-pharmacological nursing interventions, including therapeutic communication, relaxation techniques, emotional support, and patient reassurance. These interventions contributed to symptom relief and improved patient comfort during hospitalization (Green et al., 2023)

3.5 Psychological Support and Anxiety Reduction

Psychological distress is frequently observed among patients experiencing STEMI. Feelings of fear, uncertainty, anxiety, and depression may negatively affect recovery and treatment adherence. Several studies demonstrated that structured nursing interventions, including counseling, emotional support, family involvement, and individualized patient communication, effectively reduced anxiety levels and promoted psychological adaptation during hospitalization and recovery (Álvarez et al., 2023).

Across the reviewed studies, psychological support interventions were most effective when integrated with family involvement and individualized counseling. These findings suggest that psychosocial care should be considered an essential component of holistic STEMI management rather than a complementary intervention.

3.6 Patient Education and Self-Management Support

Patient education was consistently identified as a key nursing intervention contributing to successful secondary prevention. Educational programs focusing on medication adherence, risk factor control, dietary modification, physical activity, smoking cessation, and symptom recognition improved patient knowledge and self-care behaviors. Nurse-led education programs were associated with better treatment adherence and reduced risk of recurrent cardiovascular events (Zhou et al., 2025).

3.7 Cardiac Rehabilitation and Secondary Prevention

Cardiac rehabilitation emerged as one of the most effective strategies for improving long-term outcomes following STEMI. Recent studies highlighted the growing role of nurses in coordinating rehabilitation programs, monitoring patient progress, providing lifestyle counseling, and facilitating continuity of care after hospital discharge. Digital health technologies and telehealth-based rehabilitation programs further enhanced accessibility and patient engagement, particularly among individuals with limited access to traditional rehabilitation services (Ambrosetti et al., 2021).

3.8 Implications for Nursing Practice

The synthesis of current evidence demonstrates that nursing interventions extend beyond acute clinical management and encompass comprehensive patient-centered care throughout the continuum of STEMI treatment. Effective nursing care requires integration of rapid assessment, physiological monitoring, symptom management, psychosocial support, patient education, and rehabilitation strategies. Strengthening these evidence-based nursing practices may contribute significantly to reducing complications, improving quality of life, enhancing self-management, and preventing recurrent cardiovascular events among patients with STEMI (Molos et al., 2024).

3.9 Research Gaps and Future Directions

Although the reviewed studies consistently demonstrated the positive impact of nursing interventions on clinical and psychosocial outcomes among patients with ST-Elevation Myocardial Infarction (STEMI), several important research gaps remain. First, most studies were conducted in high-income countries, particularly in Europe and North America, whereas evidence from low- and middle-income countries remains limited. Differences in healthcare infrastructure, resource availability, nursing workforce capacity, and patient characteristics may influence the effectiveness and applicability of nursing interventions across diverse healthcare settings (Snyder, 2024).

Second, despite the increasing adoption of digital health technologies in cardiovascular care, relatively few studies specifically evaluated digital nursing interventions among patients with STEMI. Existing evidence primarily focused on telemonitoring, home-based rehabilitation, and remote patient education, while the effectiveness of mobile health applications, wearable monitoring devices, and integrated digital self-management platforms remains insufficiently explored. Further research is needed to determine how digital innovations can support continuity of care and improve long-term cardiovascular outcomes (Disclosures, 2026).

Third, the majority of reviewed studies reported short- to medium-term outcomes, with limited evidence regarding long-term follow-up beyond one year after STEMI. Consequently, the sustainability of nursing interventions in maintaining treatment adherence, lifestyle modification, psychological well-being, and prevention of recurrent cardiovascular events remains unclear. Longitudinal studies are required to evaluate the long-term effectiveness of nurse-led interventions throughout the recovery trajectory (Prima Trisna Aji; Yunie Armiyati; Elinda Rizkasari, 2026).

Finally, emerging technologies such as artificial intelligence (AI), predictive analytics, and personalized digital health systems have received increasing attention in cardiovascular healthcare; however, evidence regarding their integration into nursing practice for STEMI management remains scarce. Future investigations should explore the feasibility, effectiveness, and ethical implications of AI-assisted nursing interventions to enhance patient monitoring, risk prediction, decision support, and individualized care planning (Abdollahifar et al., 2025).

Furthermore, evidence regarding nursing interventions for patients with ST-Elevation Myocardial Infarction in Southeast Asian countries remains limited despite the increasing burden of cardiovascular disease in the region. Most existing studies have been conducted in Europe, North America, and other high-income settings, which may limit the generalizability of findings to healthcare systems with different cultural, economic, and resource contexts. Future multicenter studies are needed to evaluate culturally appropriate and context-specific nursing strategies across diverse healthcare systems, particularly in

Southeast Asia, where cardiovascular disease continues to represent a major public health challenge (Pujianto, 2021).

Addressing these research gaps will contribute to the development of more effective, innovative, and evidence-based nursing strategies, ultimately improving the quality of care and long-term outcomes for patients with STEMI worldwide.

3.10 Limitations of the Review

Several limitations should be considered when interpreting the findings of this narrative review. First, the review included studies with diverse designs, populations, and intervention approaches, which may have contributed to heterogeneity in the reported outcomes. Second, only articles published in English were included, potentially excluding relevant evidence published in other languages. Third, because this review employed a narrative rather than systematic review methodology, the findings may be subject to selection bias and do not provide quantitative estimates of intervention effectiveness. Nevertheless, the review offers a comprehensive overview of contemporary evidence and provides valuable insights into current nursing interventions for patients with ST-Elevation Myocardial Infarction.

4. CONCLUSIONS

This narrative review synthesizes contemporary evidence on nursing interventions for patients with ST-Elevation Myocardial Infarction (STEMI) and identifies six principal domains of nursing care: early recognition and rapid assessment, hemodynamic monitoring and stabilization, pain management, psychological support, patient education and self-management, and cardiac rehabilitation with secondary prevention. Overall, the reviewed evidence suggests that these interventions may support physiological stabilization, treatment adherence, psychological adaptation, and recovery among patients with STEMI; however, the magnitude and consistency of these outcomes varied across study designs, intervention characteristics, and healthcare settings.

The findings underscore the importance of comprehensive, evidence-informed, and patient-centered nursing care throughout the continuum of STEMI management. For nursing practice, the review highlights the potential value of integrating systematic patient assessment, structured education, psychosocial support, and rehabilitation into routine cardiovascular care while considering local healthcare resources and patient needs. Given the narrative nature of this review and the heterogeneity of the included evidence, the findings should be interpreted as a conceptual synthesis rather than definitive evidence of intervention effectiveness.

Future research should prioritize well-designed multicenter studies evaluating nurse-led cardiovascular programs, digital health interventions, telemonitoring, and integrated self-management strategies across diverse healthcare settings, particularly in low- and middle-income countries where evidence remains limited. Such studies may strengthen the evidence base and further inform evidence-based cardiovascular nursing practice.

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