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ABSTRACTS

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Internalization of medication adherence in the context of family caregiver support: A thematic analysis of the experience of heart failure patients

Seyede Fatemeh Gheiasi, Elham Navab

assistant-professor, Operating Room And Anesthiology, Zanjan University Of Medical Sciences, Zanjan,
Professor, ICU Nursing, Tehran University Of Medical Sciences, Tehran,

fatemeh.gheiasi@gmail.com

Introduction

The chronic nature of heart failure requires sustained medication adherence to manage symptoms and prevent disease exacerbations. However, many patients face challenges in continuing medication therapy. The present study aimed to understand the experiences of heart failure patients with medication adherence and the supportive role of family caregivers.

Materials and Methods

This descriptive qualitative study was conducted from May 2020 to June 2021. The research population included all patients with heart failure and their family caregivers in heart failure clinics affiliated with Tehran University of Medical Sciences. Participants were selected purposively until data saturation. In-depth semi-structured interviews were used to collect data. Qualitative data were managed in MAXQDA2020 software and data analysis was performed using the thematic analysis approach using the 6-step method of Brown and Clark. The trustworthiness of data was evaluated using Lincoln and Guba criteria.

Results

A total of 20 interviews were conducted with heart failure patients and their family caregivers. The heart failure patients participating in the study had a mean age of 56.60 ± 9.62 years, a mean duration of heart failure of 5.60 ± 6.04 years, and a mean left ventricular ejection fraction of 20 ± 8.45%. From the data analysis, two themes of "internalization of medication adherence" and "the supportive role of family caregivers" were identified and extracted.

Conclusion

According to the findings, medication use is sustainable when it exceeds the prescribed level and becomes a part of the daily life and health identity of the heart failure patient. In this regard, patients came to understand that medication therapy is necessary to maintain the stability of physical conditions and prevent the recurrence of disease symptoms. Also, the role of family caregivers in reminding, accompanying, emotional monitoring, and creating a sense of security was an important factor in medication adherence. Strengthening meaning-based education, motivational interviewing, and family support-based interventions can

increase the sustainability of medication adherence in heart failure patients. These findings can be used in designing continuous and follow-up care programs for heart failure patients.

Keywords

Heart failure, Medication adherence, Caregiver

Comparison of serum levels of IL-2, IL-6, IL-10, IFN-γ(balance TH1/TH2) and cortisol in young male athletes and non-athletes with their impact on cardiovascular diseases

Mahdi Ghasemi Artiyan

Doctoral-degree, Free, Free, Mashhad,

mahdi_gh_495@yahoo.com

Introduction

An imbalance in the Th1/Th2 immune response, specifically a shift towards Th1 dominance, is associated with increased risk factors for heart disease. This imbalance can be seen in conditions like coronary artery disease (CAD) and type 2 diabetes mellitus (T2DM), where elevated Th1 cytokines and suppressed Th2 cytokines are observed. This suggests that the type of inflammation, driven by Th1 or Th2 responses, may play a crucial role in the development and progression of cardiovascular diseases.

Materials and Methods

This is an applied research that its data is gathered by free method. So in order to carry out the research among healthy and volunteer people, 20 of them (weight:78± 4.1 kgs , height: 179 ± 3.59 ms , age: 26 ± 4.38 BMI: 24 ± 1.51) are sorted in athletes group (scientific group) and 12 of them (weight:79± 4.62 kgs , height: 181 ± 2.51 ms , age: 25 ± 4.32 BMI: 24 ± 1.63) in non-athletes group (control group). The scientific group includes those athletes who has at least 6 months of regular aerobic exercise and the control group are the people who haven't had any sport experience. Blood samples for evaluating the above factors in Elisa method are taken from both groups. Considering that the data were normal, with a T test, the independent student in the meaningful level of (P≤ 0/005) is examined.

Results

Comparing the average amount of IL-2 , IL-6 , IL-10, IFN-γ and serum Cortisol hormone in both groups, the amount of IL-6 and Cortisol hormones in the scientific group has reduced considerably (p<0/05)

Conclusion

The results of this research showed that aerobic exercise changed the balance of Th1/Th2 to TH1. The variations of these cytokines demonstrated the imbalance of Th1 and Th2 cytokines existed in cardiac injuries induced by fine particle. The imbalance of Th1/Th2 cytokines might be one of the mechanisms of immunotoxicity of cardiovascular system induced by ambient fine particles

Keywords

th1/th2

Nurse-Led Transitional Care in Heart Failure: A Structured Narrative Review Focused on Actionable, Low-Resource Elements

Sharareh Zeighami Mohammadi

Assistant-professor, Clinical Cares And Health Promotion Research Center, Karaj Branch, Islamic Azad University, Karaj, Iran ., , Karaj,

zeighami20@yahoo.com

Introduction

:Early post-discharge decompensation drives high 30-day readmissions in heart failure (HF). Nurse-led transitional care can close safety gaps, yet programs vary and may be resource-intensive. To synthesize 2015–2025 evidence and distill a pragmatic, nurse-led bundle that reduces readmissions and improves symptom control using low-resource components.

Materials and Methods

A structured narrative review of PubMed, CINAHL, and Scopus identified trials, implementation studies, and reviews on nursing roles in telemonitoring, self-care education, and decision support. Findings were integrated thematically with attention to feasibility in constrained settings.

Results

Time-critical follow-up: Standardized discharge plus nurse contact within 72 hours and one virtual/home visit within two weeks consistently uncovered fluid overload, medication errors, and coordination gaps, lowering 30-day readmissions. Low-tech telemonitoring: Daily weight, blood pressure, and a dyspnea/edema checklist linked to nurse-executed algorithms for rapid diuretic titration and physician escalation shortened time-to-intervention without costly devices. Tiered self-care education: Family-involved teach-back on sodium/fluid management and adherence to high-value pharmacotherapy (e.g., ARNI, SGLT2 inhibitors) improved persistence and symptom stability. Comorbidity screening: Routine checks for frailty, depression, sleep disturbance, and iron deficiency enabled protocolized nursing actions that enhanced functional capacity and quality of life. EHR-embedded decision support: Red-flag thresholds and standardized rules reduced practice variation and expedited responses.

Conclusion

A five-part, nurse-led bundle72-hour contact, early follow-up, low-tech telemonitoring, protocolized diuretic/escalation pathways, family-centered education offers high clinical yield with modest resources. Optional add-ons (frailty/iron management, sleep support) can be layered to context.

Keywords

Heart failure; Nurse-Led Transitional Care

Community-Based and Responsive Education in Heart Failure: An Operational, Low-Cost Nursing Framework A Narrative Review

Sharareh Zeighami Mohammadi

Assistant-professor, Clinical Cares And Health Promotion Research Center, Karaj Branch, Islamic Azad University, Karaj, Iran , , Karaj,

zeighami20@yahoo.com

Introduction

Heart failure is tightly linked with repeat hospitalizations, family financial burden, and inequitable access. When community-based education is designed to be “responsive” to real needs, culture, and local resources, it can bridge the hospital-to-community gap and reduce symptom burden. To develop a nurse-led, education-centered package that is feasible in low-resource settings and meaningfully reduces exacerbations and 30-day readmissions.

Materials and Methods

A narrative review (2015–2025) of PubMed/CINAHL/Scopus synthesized interventional, implementation, and review studies on community-based education, post-discharge follow-up, and low-cost telemonitoring. Thematic integration emphasized feasibility and equity.

Results

Five linked elements underpin the framework: (1) standardized discharge with early follow-upa nurse call at 48–72 hours plus one home/virtual visit in two weeksto detect medication errors, fluid overload, and coordination gaps; (2) simple monitoring: daily weight, blood pressure, and a dyspnea/edema/fatigue checklist with action thresholds (≥2 kg/3 days or ≥1 kg/day ×2) triggering same-day diuretic titration, salt/fluid counseling, and physician escalation; (3) culturally adapted, tiered education with family teach-back; (4) low-cost community delivery (mini-sessions, SMS/phone) linking social supports; and (5) screening for frailty, depression, sleep disturbance, and iron deficiency. EHR red-flags standardize responses; evaluation includes clinical and social outcomes.

Conclusion

This five-part package early follow-up, weight/symptom monitoring with action thresholds, family-centered culturally adapted education, low-cost community delivery, and targeted screening offers high clinical and social yield and is rapidly localizable.

Keywords

Heart Failure, Community-Based Education

Management of Diabetes in Patients with Heart Failure: Challenges, Strategies, and Nursing Considerations

Ali Karimi Rozveh

Assistant-professor, Medical Surgical Department, Nursing & Midwifery School,, Tehran University Of Medical Sciences, Tehran,

karimirozveh@gmail.com

Introduction

Background and Aim: Type 2 diabetes mellitus frequently coexists with heart failure (HF), and this comorbidity is associated with higher mortality, recurrent hospital admissions, and impaired quality of life. This review synthesizes current understanding of the pathophysiologic links between diabetes and HF and summarizes evidence-based therapeutic and nursing strategies for integrated care.

Materials and Methods

Methods: A narrative review was performed drawing on key guideline documents and scientific statements (including ADA Standards of Care, ESC guidelines, and the HFA scientific statement on SGLT2 inhibitors), together with major randomized controlled trials and systematic reviews published through 2025. Emphasis was placed on agents with demonstrated cardiorenal effects and on practical nursing interventions.

Results

Diabetes worsens heart failure (HF) through oxidative stress, inflammation, fibrosis, and mitochondrial dysfunction, leading to diabetic cardiomyopathy and reduced ventricular function.

Glycemic targets should be individualized: HbA1c ≈7% for healthy patients and 7.5–8% for frail or advanced HF cases to limit hypoglycemia risk.

SGLT2 inhibitors (dapagliflozin, empagliflozin) are cornerstone therapies, lowering HF hospitalizations and cardiovascular mortality in patients with or without diabetes. Metformin is suitable for stable HF with preserved renal function, while saxagliptin and some DPP-4 inhibitors may raise HF risk. GLP-1 receptor agonists reduce atherosclerotic events but not HF outcomes.

During acute illness (vomiting, fasting, dehydration), withhold SGLT2 inhibitors to prevent volume depletion, AKI, and euglycemic DKA.

Nurses play a key role in monitoring, patient education, and early detection of HF or metabolic complications.

Conclusion

Careful patient selection, ongoing monitoring, and education—particularly regarding SGLT2 inhibitor use during acute illness—are essential components of safe and effective management. Nurses occupy a pivotal role in this continuum of care, bridging pharmacologic therapy with real-world vigilance, early symptom detection, and patient empowerment. Through coordinated, multidisciplinary efforts, the integration of optimized glycemic control and heart failure management can significantly improve both quality of life and long-term survival in this high-risk population.

Keywords

Type 2 diabetes, heart failure

Preventing and Managing Chemotherapy-Induced Heart Failure in Oncology Nursing: A Systematic Review

Pardis Doosti, Zahra Shafiei

Doctoral-degree, Department Of Medical Surgical Nursing, 1. PhD Student In Nursing, Students' Scientific Research Center, Department Of Medical-Surgical Nursing, School Of Nursing And Midwifery, Tehran University Of Medical Sciences, Tehran, Iran, Tehran,
Doctoral-degree, Department Of Medical Surgical Nursing, PhD Student In Nursing, Students' Scientific Research Center, Department Of Medical-Surgical Nursing, School Of Nursing And Midwifery, Tehran University Of Medical Sciences, Tehran, Iran, Tehran,

pardisdst@gmail.com

Introduction

Background and Aims: Chemotherapy-induced heart failure is a serious, dose-dependent, and sometimes irreversible complication of cardiotoxic cancer treatments, particularly anthracyclines (e.g., doxorubicin). Chemotherapy-induced heart failure negatively affects cancer treatment continuity, survival rates, and quality of life. Oncology nurses are pivotal in early detection, monitoring, and patient education, which can prevent or mitigate cardiac complications. This systematic review aimes to summarize current evidence on nurse-led interventions and interdisciplinary strategies for preventing and managing Chemotherapy-induced heart failure in oncology practice.

Materials and Methods

Methods: Following the PRISMA guidelines, we conducted a systematic search of studies published until 2025 across PubMed, Scopus, EMBASE, Web of Science, and the Cochrane Library. Search terms included MeSH and free-text keywords such as "Oncology Nursing", "Chemotherapy-Induced Cardiotoxicity", "Heart Failure", "Anthracyclines" and "Nursing Interventions". Eligible studies were peer-reviewed original research focusing on nurse-led prevention, monitoring, or management of chemotherapy-induced heart failure in adult cancer patients. Exclusion criteria comprised duplicate records, non-English publications, pediatric-only studies, case reports, and articles without full text. Two independent reviewers screened titles and abstracts, assessed full texts for eligibility, and extracted data on study design, target population, intervention characteristics, outcomes, and key findings. The methodological quality of included studies was appraised using the Joanna Briggs Institute (JBI) Critical Appraisal Tools.

Results

Results: Out of 312 identified articles, 14 met the inclusion criteria. Evidence emphasized the crucial role of oncology nurses in early cardiac risk assessment. Nurse-coordinated cardiac

surveillance, including serial echocardiography and biomarkers (BNP and NT-proBNP), enabled early detection of subclinical cardiac dysfunction in many patients before significant ejection fraction decline. Educational interventions using the teach-back method improved medication adherence and increased early symptom reporting. Nurse-led lifestyle modification programs promoting exercise, sodium restriction, and smoking cessation reduced the HF-related hospitalizations and enhanced quality of life. Additionally, nurse-initiated referral protocols to cardio-oncology units within 72 hours of biomarker elevation reduced diagnostic delays and improved coordination between oncology and cardiology teams.

Conclusion

Conclusion:

Oncology nurses play a transformative role in reducing the impact of chemotherapy-induced heart failure through structured surveillance, patient education, and interdisciplinary care coordination. Implementing standardized nurse-led cardio-oncology protocols, including biomarker-guided monitoring, lifestyle counseling, and early multidisciplinary collaboration, can enhance patient safety and optimize treatment outcomes. Future research should explore digital health integration, standardized nurse training, and cost-effectiveness of nurse-driven cardio-oncology models to ensure sustainable implementation across diverse healthcare settings.

Keywords

Keywords: Oncology Nursing, Heart Failure

Impact of Nursing Education Interventions on Self-care Behaviors in Patients with Chronic Heart Failure: A Systematic Review

Mahsa Khedmatizare, Zahra Kafshgar, Arghavan Namdari

, , , ,
Masters-degree, Department Of Medical-Surgical Nursing, Tehran University Of Medical Sciences, Tehran,

mahsa.khzare@gmail.com

Introduction

Chronic heart failure (CHF) represents one of the most prevalent and severe health challenges globally, imposing considerable healthcare, economic, and social burdens on affected populations. Effective self-care behaviors including adherence to prescribed medications, dietary management, engagement in regular physical activity, and vigilant symptom monitoring are critical for controlling disease progression and preventing associated complications. Nursing education has emerged as a pivotal intervention with the potential to enhance these self-care practices. This systematic review aimed to evaluate the effects of nursing education interventions on self-care behaviors among patients with chronic heart failure.

Materials and Methods

We conducted a systematic search of studies published between 2015 and 2025 across multiple databases, including PubMed, Scopus, EMBASE, Web of Science, Google Scholar, and the Cochrane Library. Keywords such as "heart failure," "self-care," and "nursing education" were employed. Studies meeting predefined inclusion and exclusion criteria were selected, with a particular focus on interventions related to nursing education aimed at improving self-care behaviors in patients with chronic heart failure. We included studies that detailed the type, frequency, intensity, and outcomes of these educational interventions, as well as their short-term and long-term effects on physical, psychological, and social health outcomes. Duplicate records, irrelevant studies, non-English publications, and articles without full texts were excluded. Two independent reviewers screened the remaining articles, assessed their abstracts, and excluded studies with low quality or limited relevance. The risk of bias was evaluated using the Joanna Briggs Institute (JBI) tool, which assesses methodological rigor. The final selected studies were critically appraised, and relevant data were extracted in adherence to the PRISMA guidelines.

Results

Out of 238 identified articles, 10 studies met the inclusion criteria and were included in the final analysis. Overall, nursing education interventions significantly improved self-care behaviors among patients with chronic heart failure. The most consistently reported improvements were observed in medication adherence, dietary management, symptom

monitoring, and engagement in physical activity. Several studies also reported enhanced patients' knowledge, self-efficacy, and psychological well-being following educational interventions. The duration, frequency, and method of education varied widely across studies; however, interventions with repeated follow-ups and interactive components demonstrated the greatest positive impact on both short- and long-term outcomes. Small samples, short follow-ups, and varied intervention designs limited generalizability.

Conclusion

Nursing education interventions have a demonstrable positive impact on self-care behaviors among patients with chronic heart failure, contributing to improved disease management, symptom control, and overall quality of life. Programs that are structured, interactive, and include ongoing follow-up are particularly effective. These findings underscore the critical role of nursing education in chronic heart failure management and highlight the need for integrating tailored, patient-centered educational interventions into routine clinical practice. Future research should focus on standardizing intervention protocols and evaluating long-term outcomes in larger, more diverse patient populations.

Keywords

Heart failure, Self-care, Nursing education.

The Effects of Nurse-Led Spiritual Care on Psychological Well-Being Among Patients With Heart Failure in Iran: A Systematic Review

Ali Akbari, Pegah Matourypour, Masoumeh Zakerimoghadam

Assistant-professor, Medical Surgical Nursing Department, Nursing And Midwifery Faculty, Tehran University Of Medical Sciences, Tehran,
Professor, Medical Surgical Nursing Department, Nursing And Midwifery Faculty, Tehran University Of Medical Sciences, Tehran,

aliakbari.1379110@gmail.com

Introduction

Heart failure is a chronic condition that significantly affects patients' physical, emotional, and spiritual health. While holistic care emphasizes the need to address spiritual well-being, the impact of nurse-led spiritual care in heart failure management remains insufficiently studied. This review aimed to assess the effects of such interventions on anxiety reduction and quality of life improvement in these patients.

Materials and Methods

This study was conducted based on Cochrane systematic review principles and PRISMA guidelines. A comprehensive search was performed using English and Persian keywords related to "spiritual care," "nurse-led intervention," "psychological well-being," "anxiety," "quality of life," and "heart failure" across PubMed, Scopus, EMBASE, CINAHL, Web of Science, Cochrane Library, as well as SID and Magiran. Grey literature was also examined through Google Scholar. Inclusion criteria consisted of randomized controlled trials and quasi-experimental studies evaluating the effects of nurse-led spiritual or psychological interventions on psychological well-being, anxiety, or quality of life in patients with heart failure. Duplicates, systematic reviews, case reports, opinion papers, and studies lacking primary data were excluded. Screening and data extraction were independently conducted by two researchers, with discrepancies resolved by a third researcher. Study quality was assessed using ROB 2 and ROBINS-I tools, and extracted data were systematically organized and entered into summary tables.

Results

A total of 1,372 records were identified through database searching. After removing duplicates and applying eligibility criteria, 14 studies comprising 1,048 participants met the inclusion criteria. These studies investigated a range of nurse-led spiritual interventions, including emotion-centered models, communication with a higher power, acceptance-based approaches, and relational or meaning-oriented care. Overall, the findings indicated that spiritual care interventions were associated with decreased levels of anxiety, depression, pain,

and stress, as well as improved quality of life, spiritual well-being, and, in some cases, life expectancy among patients with heart failure.

Conclusion

Incorporating spiritual care into the routine management of patients with heart failure appears to be an effective strategy for promoting holistic well-being. The evidence from this review suggests that nurse-led spiritual interventions can play a significant role in alleviating negative emotional states and enhancing overall quality of life in this population.

Keywords

Heart_failure; Nurse-led_care; Spiritual_care; Psychological_well-being; Quality_of_life

Aldosterone Receptor Antagonists

Maryam Esmaeili

Professor, Critical Care, TUMS, Tehran,

esmaeiliem@yahoo.com

Introduction

Despite evidence from clinical trials demonstrating a morbidity and mortality advantage for selected patients treated with aldosterone receptor antagonists, these drugs are underused in clinical practice. The Randomized Aldactone Evaluation Study (RALES) and Eplerenone Post-Acute Myocardial Infarction Heart Failure Efficacy and Survival Study (EPHESUS) established that spironolactone and eplerenone, respectively, increased survival in patients with severe CHF symptoms from LV systolic dysfunction occurring with minimal exertion or at rest (New York Heart Association [NYHA] class III or IV) or CHF after an acute myocardial infarction.1–3 As a result of these studies, aldosterone receptor antagonists were given an American Heart Association/American College of Cardiology class I recommendation for use, yet only 32% of eligible patients are routinely prescribed these drugs

Materials and Methods

This is a review presentation

Results

Current guidelines suggest that patients with a clinical indication for an aldosterone receptor antagonist initiate therapy only if they have a baseline serum K 5.0 mEq/L and a serum creatinine 2.5 mg/dL for men or 2.0 mg/dL for women

Conclusion

Evidence to support aldosterone receptor antagonist use in symptomatic CHF patients with preserved LV systolic function (ie, impaired diastolic relaxation) is derived primarily from small

patient cohorts

Keywords

Heart Failure, Aldestron, Receptor, Patients

The Role of Tele-Nursing Interventions in Enhancing Self-Care Behaviors among Patients with Heart Failure: A Narrative Review of Recent Evidence (2019–2025)

Mahsa Ovliaei Bidgoli

Masters-degree, Department Of Nursing, Islamic Azad University, Kashan,

mahsaoliyai@gmail.com

Introduction

HF is a significant global burden characterised by frequent hospitalisations and poor adherence to self-care among patients with the disease. Improvements in outcomes through self-care maintenance, monitoring, and management are recommended. Recently, tele-nursing has emerged as a promising strategy to improve HF self-care through the introduction of nurse-led remote monitoring and support.

Objective: The goal of this narrative review is to synthesize current evidence from 2019 to 2025 related to the role of tele-nursing interventions in promoting self-care behaviors among patients with heart failure.

Materials and Methods

A narrative literature search via PubMed, Scopus, Web of Science and CINAHL was conducted for peer-reviewed English-language studies published between 2019 and 2025 examining nurse-led remote interventions - by telephone, mobile app, or telemonitoring - that targeted self-care in HF. The key outcomes were related to self-care maintenance, self-care management, self-care confidence, and related readmissions or hospitalization rates.

Results

A 2025 meta-analysis of 27 studies (n = 2,176 participants) showed that interventions which included transitional or home-based care together with phone calls or digital components resulted in modest improvements in self-care maintenance (MD 7.26, 95 % CI 5.20-9.33) and self-care management (MD 5.02, 95 % CI 1.34-8.69). A 2024 review reported significant improvement in quality of life in HF patients following tele-nursing interventions. Despite promising results, studies have demonstrated heterogeneity of designs, inconsistent definitions of the nurse role, variable patient adherence, and few long-term follow-ups. As an example, a 2023 feasibility nurse-led telemonitoring model, n = 26, identified improvements in self-care among app-users but noted recruitment challenges.

Conclusion

Tele-nursing seems to be a valid adjunct to standard HF care in improving the self-care behavior of patients. For optimum integration, standardised nurse-protocols, digital literacy support, sustained follow-up, and role clarity are important. Future research should aim for

more randomised, nurse-led tele-care studies with longitudinal outcomes, especially in resource-poor environments.

Keywords

tele-nursing heart failure self-care

Palliative Care in Heart Transplant Candidates: A Comprehensive Review of Challenges and Barriers

Mahsa Khedmatizare, Maryam Aghabarary, Nastaran Saeedi

Assistant-professor, Social Determinants Of Health Research Center, Alborz University Of Medical Sciences, Karaj, other, Department of medicine, TeMS.C., Islamic Azad University, Tehran,

mahsa.khzare@gmail.com

Introduction

Heart transplantation represents one of the most sophisticated and life-saving therapeutic interventions available for individuals with advanced heart failure. Heart transplant candidates experience high symptom burden, complex decision-making, prolonged uncertainty while listed, and substantial caregiver strain. Palliative care is a holistic approach to care that includes symptom management and goal setting to improve patients' quality of life. However, integrating palliative care into the clinical trajectory of heart transplant candidates remains fraught with numerous barriers. The aim of this comprehensive review is to examine the challenges and obstacles associated with the implementation of palliative care in heart transplant candidates.

Materials and Methods

A comprehensive literature search was conducted to identify studies published between 2011 and 2025 that examined the provision, challenges, and barriers of palliative care in heart transplant candidates. The search was performed across multiple electronic databases, including PubMed, Scopus, EMBASE, Web of Science, Google Scholar, and the Cochrane Library. The search strategy utilized a combination of keywords and Medical Subject Headings (MeSH) such as "palliative care," "heart transplantation," "advanced heart failure," and "barriers." Studies were included if they discussed palliative care interventions, integration strategies, or identified obstacles to implementing palliative care among patients awaiting heart transplantation. Duplicate entries, irrelevant studies, non-English publications, and articles lacking full text were excluded. Three researchers independently reviewed the remaining articles, assessing their abstracts and excluding studies of low quality or relevance. A risk of bias assessment was performed using the Joanna Briggs Institute (JBI) tool, which evaluates methodological rigor. The final selected studies were critically appraised, and relevant data were extracted in adherence to the PRISMA guidelines.

Results

Of the 267 studies initially identified, 10 articles were selected for review and analyzed in alignment with the objectives and focus of the present study. The findings of this literature review demonstrate that palliative care for heart transplant patients is impeded by a range of structural, cultural, and organizational barriers. Key challenges include healthcare providers' misconceptions of palliative care as being exclusively end-of-life care, prognostic uncertainty

in heart failure, poor coordination between cardiology and palliative teams. Additionally, financial limitations and workforce shortages represent significant obstacles that contribute to delays in service delivery. However, early palliative care before transplantation can improve patients' mental well-being, treatment adherence, quality of life, and reduce family stress.

Conclusion

The integration of palliative care into the management pathway of heart transplant patients is imperative and necessitates a transformation in clinical attitudes, the formulation of evidence-based guidelines, and the advancement of multidisciplinary team training. Effective collaboration between transplant and palliative care teams has the potential to enhance both clinical outcomes and the overall quality of patient-centered care. Future research should prioritize the development and evaluation of structured models for incorporating palliative care at various stages of the heart transplantation process.

Keywords

Palliative care, Heart Transplant, Challenges.

Application of Artificial Intelligence and Analysis of Electrocardiogram (ECG) Data Using Smartwatches for Early Detection of Heart Diseases: A Systematic Review

Zahra Darabi, Ali Darabi, fatemeh Karami, Babak Babaei

masters-degree, Faculty of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran ,
masters-degree, Medical Genetics, Shiraz University of Medical Sciences, Shiraz,

zahradarabi4670@gmail.com

Introduction

Introduction: With mobile technology and artificial intelligence (AI) holding greater importance in modern healthcare, automated cardiac diagnostic systems have become strategically relevant. This review seeks to summarize existing literature on the utilization of AI to interpret ECG signals recorded on wearable devices (smartwatches specifically) and examines the potential to facilitate clinical use.

Materials and Methods

The study was independently conducted by two researchers based on the PICO criteria, aligned with the research objectives, using PubMed, CINAHL, Medline, Web of Science, SID databases, and the Google Scholar search engine with Boolean operators. The time frame was limited to the years 2020 to 2025, employing the MeSH keywords “Artificial Intelligence,” “Electrocardiogram, ” ” Heart Diseases” and “Smartwatches.” After applying inclusion and exclusion criteria and performing a critical appraisal of the quality of the selected articles, a total of eight studies were included in the final analysis.

Results

The studies presented in this paper have shown that artificial intelligence can analyze ECG data obtained from a wearable device, especially smartwatches, to help identify a number of cardiovascular diseases, including arrhythmias, acute coronary syndrome, and structural heart disease. AI algorithms have shown high levels of accuracy and agreement with standard 12-lead ECGs in identifying diminished ejection fraction and previously undiagnosed abnormalities (AUC 0.855-0.991). These findings demonstrate the promise of AI based wearable ECG data analysis to facilitate early detection, screening on a population basis, and timely intervention of cardiac conditions. However, further validation in real-world settings that vary widely, incorporation in clinical workflows, and updates to continue refining algorithms will be necessary to achieve maximum clinical utility.

Conclusion

The integration of artificial intelligence with wearable ECG monitoring is a phenomenal innovation in early identification of heart disease. Wearable technologies based upon ECG measurement have proven to be rapid, precise, and reliable in detecting rhythm disturbances

and structural diseases of the heart, providing real-time, noninvasive, scalable patient management systems. As we await further clinical validation, the advent of AI-enabled wearables represents a promising innovation for early diagnosis and event outcomes in cardiovascular medicine.

Keywords

Artificial Intelligence Electrocardiogram Smartwatches detection

Effectiveness of Mobile Application-Based Interventions for Heart Failure Patients: A Systematic Review of Randomized Controlled Trials

Mahsa Khedmatizare, Maryam Aghabarary, Nastaran Saeedi

Assistant-professor, Social Determinants Of Health Research Center, Alborz University Of Medical Sciences, Karaj, other, Department of medicine, TeMS.C., Islamic Azad University, Tehran,

mahsa.khzare@gmail.com

Introduction

Heart failure is one of the most common causes of hospitalization and mortality worldwide, requiring continuous monitoring and self-management. In recent years, the use of mobile applications as an innovative tool for enhancing care in heart failure patients has attracted significant attention. The aim of this systematic review is to examine the existing evidence regarding the effectiveness of mobile application–based interventions in improving outcomes for patients with heart failure.

Materials and Methods

A systematic review was conducted in accordance with PRISMA guidelines. Comprehensive searches were performed in the PubMed, Scopus, EMBASE, Web of Science, Google Scholar, and Cochrane Library databases for studies published between 2011 and 2025. The search targeted articles using the keywords "Heart failure," "Mobile application," "Mobile health," "mHealth," "Smartphone app," "Mobile technology," and "Digital health intervention." Studies were included if they: (1) involved patients with heart failure, (2) utilized mobile applications for monitoring or self-management, and (3) reported outcomes such as rehospitalization, quality of life, self-management, or treatment adherence. Exclusion criteria encompassed non-randomized designs, review articles, case reports, and non-English studies. Three researchers independently screened the remaining articles, evaluated their abstracts, and excluded studies of low quality or relevance. Risk of bias was assessed using the Joanna Briggs Institute (JBI) tool, which evaluates methodological rigor. The final selected studies were critically appraised.

Results

Of the 317 records retrieved, 12 randomized controlled trials met the eligibility criteria and were included in the analysis. The studies demonstrated that the use of mobile applications in patients with heart failure led to a reduction in rehospitalization rates. Additionally, patients' quality of life particularly in the psychological and social dimensions improved, largely due to rapid access to information and remote support. The applications enhanced patients' self-management capabilities by providing medication reminders, individualized education, and regular symptom monitoring. Furthermore, application use increased adherence to pharmacological treatments and lifestyle recommendations, especially when combined with

immediate feedback and interaction with the healthcare team. However, limitations such as short follow-up periods, small sample sizes, and heterogeneity in application design affected the interpretation of the results.

Conclusion

Mobile applications are effective tools for managing patients with heart failure and can facilitate reductions in rehospitalization, improvements in quality of life, enhancement of self-management capabilities, and increased treatment adherence. These digital interventions play a crucial role in supporting patients and boosting satisfaction by providing medication reminders, individualized education, symptom monitoring, and interaction with the healthcare team. However, to achieve definitive and generalizable results, there is a need for randomized studies with larger sample sizes, longer follow-up periods, and standardized application designs. Mobile applications can complement traditional care and offer significant opportunities for digital transformation in the management of heart failure.

Keywords

Heart failure, Mobile application, mHealth.

The Role of Artificial Intelligence in the Management of Heart Failure: A Comprehensive Review of Applications

Mahsa Khedmatizare, Maryam Aghabarary

masters-degree, Department of Medical-Surgical Nursing, Tehran University Of Medical Sciences, Tehran,
Assistant-professor, Social Determinants Of Health Research Center, Alborz University Of Medical Sciences, Karaj,

mahsa.khzare@gmail.com

Introduction

Heart failure is one of the chronic and debilitating cardiovascular diseases, the effective management of which requires timely diagnosis, targeted treatment, and continuous patient follow-up. In recent years, artificial intelligence (AI) has emerged as a promising tool for enhancing diagnostic accuracy, personalizing treatment plans, and improving patient outcomes in the care and management of heart failure. The aim of this review is to provide a comprehensive examination of the role and applications of artificial intelligence in improving the diagnosis, management, and education of patients with heart failure.

Materials and Methods

A comprehensive search was conducted across the PubMed, Scopus, Web of Science, Google Scholar, and Cochrane Library databases for articles published between 2015 and 2025, following the PRISMA guidelines. The keywords “heart failure,” “artificial intelligence,” “management,” and “applications,” were used both individually and in combination. Studies primarily focusing on the applications of artificial intelligence in the diagnosis, management, and education of patients with heart failure, as well as key studies highlighting the role of artificial intelligence in improving clinical outcomes and reducing hospital readmissions, were included. Duplicate entries, irrelevant studies, non-English publications, and articles without full text were excluded. Two independent researchers reviewed the remaining articles, assessed their abstracts, and excluded studies deemed to be of low quality or limited relevance. Ultimately, 15 articles that aligned with the objectives and focus of the present study were analyzed.

Results

Reviews have indicated that, in the domain of diagnosis, machine learning algorithms analyzing electrocardiogram (ECG) data, echocardiographic findings, and laboratory results have enhanced the diagnostic accuracy of heart failure compared to traditional methods. In the prediction of clinical outcomes, AI-based predictive models have successfully estimated the occurrence of cardiovascular events, mortality, and hospital readmissions. In the area of patient management and monitoring, the integration of AI with telemedicine platforms, wearable devices, and smart sensors has improved treatment adherence, facilitated the early detection of warning signs, and reduced unnecessary hospital visits. Furthermore, in patient

education, the use of AI-powered chatbots and interactive systems has increased patients' awareness of their condition and promoted healthier lifestyle behaviors.

Conclusion

Artificial intelligence (AI) has emerged as a promising instrument in the comprehensive management of heart failure. Through its capacity to enhance diagnostic precision, optimize therapeutic decision-making, and support patient empowerment in self-management, AI offers the potential to alleviate the clinical and economic burden associated with heart failure while improving patients' quality of life. The integration of AI-driven systems into clinical practice has demonstrated substantial promise in improving patient outcomes and reducing hospital readmission rates. Nonetheless, realizing the full potential of this technology requires the implementation of rigorously designed clinical trials, along with the development and standardization of frameworks for the effective and ethical incorporation of AI into healthcare delivery systems.

Keywords

Heart failure, Artificial intelligence, Management.

Recurrent myocarditis in a young man

Sepideh Jafari Naeini

Assistant-professor, Cardiovascular Research Center, Shahid Beheshti University Of Medical Sciences,تهران ,

sdnaeini@yahoo.com

Introduction

Eosinophilic myocarditis can arise from various causes, including drug reactions, hypereosinophilic syndrome, and rheumatologic disorders. Recurrent myocarditis may also occur due to different underlying factors, such as viral infections, genetic cardiomyopathy, rheumatologic conditions, or without a clearly identified cause.

Materials and Methods

A 37-year-old man with a history of ulcerative colitis and hypothyroidism was admitted to our facility due to new-onset dyspnea that had begun the previous week. He had a COVID-19 infection approximately 40 days prior. Although he was a cigarette smoker, he denied any substance abuse and was only taking sulfasalazine and levothyroxine.

During his initial admission, an echocardiogram revealed a left ventricular ejection fraction (LVEF) of 10%. Cardiac magnetic resonance imaging (CMR) suggested acute myocarditis, and an endomyocardial biopsy(EMB) confirmed positive cytomegalovirus (CMV) PCR and eosinophilic myocarditis. He was treated with intravenous methylprednisolone and ganciclovir and discharged with an improved LVEF of 40%.

He experienced two additional hospitalizations, one three months later and another one year later. The first episode involved dyspnea, which was diagnosed as a pulmonary embolism, while the second hospitalization was due to systemic CMV infection accompanied by another episode of myocarditis.

Results

Although recurrent myocarditis is uncommon, it can be fatal if a precise diagnosis is not made.

Conclusion

In this patient, several potential causes for recurrent myocarditis can be considered, including inflammatory bowel disease, the use of mesalazine, or an undetected underlying rheumatologic disorder which can accompany by eosinophilic infiltration.

Keywords

Cytomegalovirus ulcerative colitis eosinophilic myocarditis

Advancing Personalized and Sustainable Exercise Approaches in Patients with Heart Failure: A Systematic Review

Farkhonde Mohemmi, Nasrin Bagheri

other, Students' Scientific Research Center, Tehran University Of Medical Science, Tehran,
masters-degree, Students' Scientific Research Center, Tehran University Of Medical Science, Tehran,

mohemmif1998@gmail.com

Introduction

Heart failure represents the terminal stage of several cardiovascular disorders and is characterized by the presence of multiple comorbidities, extensive medication regimens, and limited patient self-care abilities. Globally, it is estimated that around 64.3 million people are affected by heart failure, highlighting the urgent need for effective management strategies. Physical activity and exercise are recognized as key and effective interventions for patients with heart failure, and evidence shows that such interventions can improve their quality of life. Physical activity plays a beneficial role in cardiovascular health, and functional assessments help guide the design of safe exercise interventions. Evaluating a patient's cardiac function before initiating an exercise program is essential to ensure both safety and effectiveness. Therefore, the aim of this study is to explore personalized and sustainable exercise strategies for patients with heart failure.

Materials and Methods

A review was performed independently based on the PICO criteria and aligned to the research objective and based on the PRISMA checklist and using PubMed, CINAHL, Medline, Web of Science, SID databases Google Scholar search engine, and Boolean operators. The time limit between 2020 and 2025 was determined using the MESH keywords "heart failure", "Personalized", "individualized" and "Exercise". After checking the entry and exit criteria and critically evaluating the quality of the selected articles, a total of 14 articles were included in the study.

Results

Exercise interventions demonstrate meaningful improvements in exercise capacity, cardiac function, and quality of life among patients with heart failure. These outcomes underscore the importance of developing personalized and sustainable exercise strategies tailored to individual patient profiles.

Conclusion

Different types of physical exercise can enhance cardiac performance, exercise capacity, and overall quality of life in individuals with heart failure. Personalized exercise programs are recognized as an evidence-based complementary therapy for these patients, and tailoring exercise strategies to individual needs is essential. However, promoting long-term adherence

and engaging vulnerable patient groups remain major challenges for implementing personalized and sustainable exercise strategies in heart failure care.

Keywords

heart failure, Personalized, individualized, Exercise

The Role of Digital Interventions in Home-Based Palliative and Supportive Care in Heart Failure Patients: A Systematic review

Farkhonde Mohemmi, Nasrin Bagheri

other, Students' Scientific Research Center, Tehran University Of Medical Science, Tehran,
masters-degree, Students' Scientific Research Center, Tehran University Of Medical Science, Tehran,

mohemmif1998@gmail.com

Introduction

Heart failure (HF) describes a clinical syndrome in which the heart cannot adequately supply the necessary cardiac output (CO) to support metabolic requirements and manage the returning venous blood. Heart failure currently impacts more than 26 million people worldwide, with prevalence rising due to population growth, aging, and improved survival from advances in therapy. Despite progress in diagnosis and treatment, patients with heart failure frequently face a high symptom burden, reduced quality of life, and repeated hospitalizations. The growing prevalence of multimorbidity and escalating healthcare costs underscore the need for comprehensive, multifaceted strategies in heart failure management. Digital interventions have emerged as promising tools to support home-based care and improve outcomes in this population. Therefore, this study aimed to determine the role of digital intervention in home-based palliative and supportive care in heart failure patients.

Materials and Methods

A review was performed independently based on the PICO criteria and aligned to the research objective and based on the PRISMA checklist and using PubMed, CINAHL, Medline, Web of Science, SID databases Google Scholar search engine, and Boolean operators. The time limit between 2020 and 2025 was determined using the MESH keywords "digital interventions", "care" and "heart failure". After checking the entry and exit criteria and critically evaluating the quality of the selected articles, a total of 12 articles were included in the study.

Results

Digital interventions improved pain and symptom management, enhanced quality of life, and were well accepted by patients. The review findings also showed that digital technologies, including telemedicine, mobile health applications, and wearable devices, contributed to better symptom control and patient satisfaction among individuals with heart failure receiving home-based palliative care. These tools helped reduce hospital readmissions and caregiver burden by supporting remote monitoring and improving patient–clinician communication. Despite these benefits, challenges such as limited digital literacy, privacy concerns, and the need for integration within existing care systems were frequently reported.

Conclusion

Integrating digital technologies into home-based palliative and supportive care for patients with heart failure can substantially transform traditional healthcare practices. These innovations enhance patient–clinician communication, improve the efficiency and continuity of home care, and facilitate the prediction of health outcomes to optimize palliative management. Such progress highlights a shift toward patient-centered, data-driven, and more accessible models of care.

Keywords

Digital Interventions, care, Heart Failure

The Effectiveness of Telehealth-Based Teach-Back Interventions on Self-Care and Readmission in Heart Failure Patients: A Systematic Review

Farkhonde Mohemmi, Nasrin Bagheri

other, Students' Scientific Research Center, Tehran University Of Medical Science, Tehran,
masters-degree, Students' Scientific Research Center, Tehran University Of Medical Science, Tehran,

mohemmif1998@gmail.com

Introduction

Heart failure (HF) is a multifaceted clinical syndrome associated with significant levels of morbidity and mortality. Teach-back is a communication technique where patients repeat health information in their own words to confirm understanding. This method helps identify and correct misunderstandings and has been shown to improve knowledge and self-care among patients with chronic diseases. Hospital readmissions impose a financial burden on healthcare systems and contribute to emotional distress among patients and their families.

Telehealth has been increasingly used to reduce hospital readmissions among patients with chronic conditions such as heart failure. Integrating the teach-back method into telehealth programs enhances understanding, promotes self-care, and improves clinical outcomes. Therefore, this study proposed to determine the effectiveness of telehealth based teach-back interventions on self-care and readmission in heart failure patient.

Materials and Methods

A review was performed independently based on the PICO criteria and aligned to the research objective and based on the PRISMA checklist and using PubMed, CINAHL, Medline, Web of Science, SID databases Google Scholar search engine, and Boolean operators. The time limit between 2020 and 2025 was determined using the MESH keywords "telehealth", "teach-back interventions" and "heart failure". After checking the entry and exit criteria and critically evaluating the quality of the selected articles, a total of 11 articles were included in the study.

Results

Post-discharge care interventions, including telehealth-based teach-back programs and support for treatment adherence, can enhance self-care and reduce hospital readmissions in high-risk heart failure patients. Early identification of complications and social support further contribute to improving patient outcomes.

Conclusion

Post-discharge care interventions, including telehealth programs that incorporate the teach-back method, patient education, support for treatment adherence, early identification of complications, and social support, can enhance self-care and reduce readmissions in high-risk heart failure patients.

Keywords

Telehealth, Teach-Back Interventions, Heart Failure

The effect of nursing interventions on medication adherence in heart failure patients; a narrative review

Maedeh Nasirifar

Masters-degree, Faculty Of Nursing And Midwifery, Tehran University Of Medical Sciences, Tehran,

maedeh73nasiri@gmail.com

Introduction

Heart failure is one of the most common and most serious cardiovascular diseases that contributes to increased mortality and readmissions to the hospital. Adherence to medication is an important aspect of heart failure management. According to literature, when patients do not adhere to their medication regimens it leads to higher readmissions to the hospital, worsening of symptoms and mortality making additional ways to intervene in heart failure medication adherence warranted. Nurses, as part of a large team of healthcare professionals can provide education, support, and other technology-enabled interventions that can improve adherence to medication for heart failure patients. This narrative review looks at the existing literature on nursing interventions that can assist with medication adherence in adults diagnosed with heart failure.

Materials and Methods

The narrative review was done through studies published in databases such as, but not limited to, PubMed, ScienceDirect, SID, Wiley Online Library and Google Scholar, that were published between 2015-2025. The terms heart failure, nursing intervention, and medication adherence were used and combined with the Boolean operator AND. The inclusion criteria included full text studies, studies in either English or Persian, or studies which were considered review studies. The exclusion criteria included studies which were non-English or Persian, duplicate studies, studies which had insufficient quality, case studies, editorial, or theses.

Results

The evidence suggests that nursing interventions play a significant role in improving medication adherence in patients with heart failure. In particular, nurse-led interventions, particularly face-to-face education, significantly improved adherence. Moreover, educational, counseling, and follow-up interventions improved adherence and quality of life, decreased anxiety, and improved symptom control; however, adherence effects were mixed in some studies. There was a strong positive association between trust in the relationship between patients and nurses, and medication adherence. Additionally, when health technologies were used to support the patient's self-care, medication adherence was often improved. Furthermore, when patients transitioned from hospital to home, there were significantly reduced emergency department visits while medication adherence improved. Additionally,

both personalized education and motivational interviewing improved self-care and medication adherence.

Conclusion

This review suggests that nursing interventions greatly enhance medication adherence in patients with heart failure. The interventions have the greatest effect when they are multicomponent, personalized interventions with ongoing nurse-patient communication. Nurses must have resources for education, structured nurse-led intervention models, and healthcare technologies for nursing care.

Keywords

Heart failure, medication adherence, nursing

Non-Pharmacological Interventions for Improving Sleep Quality in Patients with Heart Failure: A Systematic Review

Maedeh Nasirifar

Masters-degree, Faculty Of Nursing And Midwifery, Tehran University Of Medical Sciences, Tehran,

maedeh73nasiri@gmail.com

Introduction

A large proportion of individuals suffering from heart failure (HF), estimated between 50% to 75%, encounter problems with sleep. These disturbances negatively impact their quality of life and result in heightened daytime tiredness, as well as an increase in hospital readmissions. This review aims to evaluate the influence of non-drug interventions on sleep quality for those impacted by HF.

Materials and Methods

An overview of systematic reviews was conducted following the PRISMA checklist. Searches were performed in PubMed, Scopus, Web of Science, and Google Scholar using combinations of the keywords “heart failure,” “sleep quality,” “non-pharmacological,” and “nursing intervention” with Boolean operators AND/OR. Inclusion criteria were systematic reviews or meta-analyses published between 2018 and 2025, in English, and focused on HF patients. Quality assessment was performed using AMSTAR-2.

Results

The main interventions included cognitive behavioral therapy for insomnia (CBT-I), physical exercise, relaxation techniques, massage, and music therapy. CBT-I demonstrated the strongest effect (6–8-point reduction in ISI; $p < 0.001$). Exercise and relaxation improved sleep quality by 25–35% (PSQI; SMD = −0.65 to −0.75). Massage and music therapy yielded 20–25% and 15–20% improvements, respectively. Seven reviews were rated high quality and three moderate.

Conclusion

Non-pharmacological interventions, particularly CBT-I and regular physical exercise, are safe and effective in improving sleep quality in HF patients and should be integrated into self-care programs.

Keywords

heart failure, sleep, non-pharmacological interventions

Early onset Anthracycline-induced cardiotoxicity in a 58 year-old woman with breast cancer

Raheleh Sadat Sadjadi Nia, Azin Alizadehasl

Doctoral-degree, Shahid Rajaie Cardiovascular Institute, -, Tehran,
Professor, Shahid Rajaie Cardiovascular Institute, -, Tehran,

rahelehsajadinia@yahoo.com

Introduction

The development of left ventricle (LV) dysfunction (CTRCD) which is reported by several chemotherapeutic agents (eg. anthracyclines) is associated with poor prognosis and contributes to long-term cardiovascular morbidity and mortality. Among measures of myocardial function, echocardiography-measured peak systolic global longitudinal strain (GLS) is the most extensively studied marker and provides an easy, inexpensive, and quantitative assessment of global long-axis systolic function.

Materials and Methods

A 58 year-old woman with breast cancer on anthracycline without any cardiac symptoms was referred to our cardio-oncology clinic due to a decline in LV GLS from -21 (before anthracycline initiation) to -16 (after 3 months of recieving anthracycline)

Results

thus the guideline directed medical treatment was initiated. Patient demonstrated LV GLS improvement 6 months later and LV GLS recovered to -20.

Conclusion

The recognition of CTRCD is important since early detection and treatment with heart failure treatment provide a good function recovery and long-term prognosis.

Keywords

Anthracycline, GLS, Ejection Fraction

Conventional Drug Therapy and New Treatments for Hypertension

Golnar Ghane, Sahar Eeghbali

Assistant-professor, Medical Surgical Department, School Of Nursing And Midwifery, Tehran University Of Medical Sciences, Tehran,
Masters-degree, Haft Tir Hospital, Iran University Of Medical Sciences, Tehran,,

golnarghane@gmail.com

Introduction

Hypertension is a major modifiable risk factor for cardiovascular disease morbidity and mortality, closely linked to the development and progression of heart failure (HF) that, affecting nearly one-third of the global adult population. While conventional antihypertensive therapies—such as diuretics, beta-blockers, ACE inhibitors, ARBs, and calcium channel blockers—have long served as the foundation of treatment, the emergence of novel pharmacologic, device-based, and digital interventions is reshaping blood pressure (BP) management. This systematic review compares the efficacy, safety, HF risk, and clinical outcomes of conventional and new BP-lowering approaches.

Materials and Methods

This systematic review was conducted across PubMed, Scopus, Embase, and Cochrane Library, Web of Science, CINAHL, SID, Magiran for studies published between 2010 and 2025. Eligible articles included randomized controlled trials, Quasi-experimental studies, and Case-control and cohort assessing both established and novel interventions for adult hypertension. Data were synthesized using a population–intervention–comparison–outcome (PICO) framework. Primary endpoints were BP reduction , incidence of heart failure and cardiovascular event rates; secondary endpoints included adherence, tolerability, and cost-effectiveness. Exclusion criteria were non-English/non-Persian articles, low-quality studies, and papers lacking ethical code. Of 225 initially retrieved articles, 65 remained after removing duplicates, and 160 met the eligibility criteria. After reviewing the abstracts, 64 articles were included in the study.

Results

Analysis of 64 studies revealed that conventional therapies remain highly effective for initial BP control, particularly when used in combination regimens such as ACEI/CCB or ARB/thiazide. New pharmacologic agents—notably angiotensin receptor–neprilysin inhibitors (ARNIs), SGLT2 inhibitors, and nonsteroidal mineralocorticoid receptor antagonists (finerenone)—demonstrated added benefits in reducing heart failure events and

renal progression. Device-based treatments (renal denervation, baroreceptor activation) provided durable BP lowering in resistant hypertension, while digital health technologies , incorporating AI-guided telemonitoring and mobile adherence tools, significantly improved treatment adherence and individualized care. Overall, combination strategies produced the most consistent and durable BP control. However, newer options often involve higher costs and limited accessibility.

Conclusion

Integrating conventional drugs with innovative therapies and digital tools represents a promising multimodal strategy. Selection should consider patient comorbidities, affordability, and long-term safety. Conventional antihypertensive agents remain the cornerstone of therapy, yet new treatments offer complementary benefits. A personalized, evidence-based approach combining both paradigms may yield optimal outcomes in modern hypertension management. The new hypertension guidelines advocate earlier intervention, combination therapy, and integration of digital health to improve cardiovascular protection. Adoption of these principles promises to enhance global hypertension control and reduce premature mortality.

Keywords

Conventional Drug, New Treatments, Hypertension

The Role of Therapeutic Yoga in Heart Failure Management: A Systematic Review

Nasrin Bagheri, Farkhonde Mohemmi, Fatemeh Etemadi Nia

other, Students' Scientific Research Center, Tehran University Of Medical Science, Tehran,
masters-degree, Students' Scientific Research Center, Birjand University Of Medical Science, Birjand,

nasrinbgh.79@gmail.com

Introduction

Heart failure (HF) is a chronic, progressive condition marked by fatigue and breathlessness, which severely limit physical activity. This often leads to a sedentary lifestyle, functional decline, and reduced quality of life. While pharmacological and device therapies are foundational, there is growing interest in complementary approaches like yoga to address persistent symptoms, exercise intolerance, and psychological distress.

Yoga is an ancient mind-body practice from India that Being a combination of exercise, controlled breathing, and relaxation, it is commonly thought to also improve biological cardiovascular disease risk factors. This study proposed to determined The Role of Therapeutic Yoga in Heart Failure Management.

Materials and Methods

A review was performed independently based on the PICO criteria and aligned to the research objective and based on the PRISMA checklist and using PubMed, CINAHL, Medline, Web of Science, SID databases Google Scholar search engine, and Boolean operators. The time limit between 2020 and 2025 was determined using the MESH keywords "Heart Failure", "Cardiac Disease", "Yoga", "Meditation", "Complementary Therapies" and " Cardiac Rehabilitation". After checking the entry and exit criteria and critically evaluating the quality of the selected articles, a total of 18 articles were included in the study.

Results

The yoga interventions varied in style and duration but typically included physical postures, breathing exercises, and meditation. The available data showed that yoga significantly improved exercise capacity. Yoga also demonstrated a significant, clinically meaningful improvement heart failure quality of life scores compared to usual care control groups. Furthermore, improvements in hear rate variability parameters indicative of enhanced autonomic function, and reductions in measures of anxiety and depression.

Conclusion

Yoga appears to be a safe and effective complementary therapy for patients with heart failure. The current evidence revealed clinically important effects of yoga on blood pressure, heart rate, respiratory rate, abdominal obesity, blood lipid levels, and measures of insulin resistance. While these effects were not clearly distinguishable from bias, based on the

apparent safety and effectiveness of yoga, it can be considered as an ancillary intervention for healthy participants and for patients with increased risk of cardiovascular.

Keywords

HeartFailure, CardiacDisease, Yoga, ComplementaryTherapies, CardiacRehabilitation

The Role of Generative Artificial Intelligence (GenAI) Tools in Cardiac Nursing

Zhila Saneipour

Bachelores-degree, Khatam Al-Anbiya Hospita, SBMU, Tehran,

nami1352@gmail.com

Introduction

GenAI is a type of artificial intelligence technology that can generate new content such as text, images, audio, and video based on the data it is trained on. In 2022, the “ChatGPT” software was produced as a revolutionary data-driven GenAI tool that summarized data in text for rapid information gathering, performing faster than internet search engines like Google and content databases [1].

After the introduction of ChatGPT, other companies released similar solutions, such as Microsoft Bing (before Microsoft’s acquisition of OpenAI) and Google’s BardAI (now called Gemini), to enable users to access information at their fingertips. Artificial intelligence technology like this, once invisible to humans, is now accessible in multiple industries, including healthcare [4].

Materials and Methods

The method of this research is a systematic review study. To conduct this research, the required information was collected using a library method.

Articles published between 2019 and 2025 were reviewed and a total of records were identified through searches based on the keywords "generative artificial intelligence", "critical care nursing", "artificial intelligence" and "nursing" in the Scopus and IEEE Xplore databases.

A total of 144 articles were identified, of which 23 were included in this review. Most of the included studies were published in 2024 (n = 19/23), were mainly conducted in the United States (n = 8/23), and were mainly (n = 14/22) quantitative descriptive studies.

The most commonly used tool was ChatGPT, appearing in 95.7% of the studies (n = 22/23). The articles addressed various areas of nursing, including nursing education (n = 12/23), operations (n= 10/23), and research (n = 1/23). Both benefits and concerns associated with this technology were identified.

Results

Some of the potential and future benefits and applications of GenAI for nurses include:

- Enhanced clinical decision support: GenAI data quickly analyzes clinical data, providing nurses with timely insights and recommendations for clinical decision-making in patient care.

- Improved reporting and administrative efficiency: GenAI can convert spoken notes into written documents, significantly reducing the time nurses spend on administrative tasks.

- Personalized patient care: GenAI has the potential to provide personalized health and treatment recommendations based on patient data, especially for chronic conditions [5].

- Advanced learning and teaching: GenAI can recreate simulated learning scenarios to help nursing students.

Conclusion

GenAI differs from traditional AI because it can generate content such as text summaries and answers to questions, rather than simply analyzing existing data. The technology analyzes food images and food content to provide personalized dietary recommendations tailored to each patient's condition. Additionally, using GenAI for image generation enhances the visual quality of educational materials for both patients and professionals, allowing healthcare providers to create customized visual aids in real-time.

The main challenges of GenAI in the field of critical care nursing include issues such as lack of dialect understanding and lack of accurate nursing reporting, lack of fairness due to unwanted priority assignment of certain groups/variables over others, and legal and ethical issues related to privacy protection, which will be examined in future research.

Keywords

Generative Artificial Intelligence, Nursing, CCU.

Psychological Flexibility and Spiritual Health as Protective Factors Against Death Anxiety in Chronic Heart Failure: A Systematic Review

Sajede Zare, Fateme Zarezade Mehrizi, Adel Eftekhari

Masters-degree, Department Of Psychiatric Nursing, Shahid Sadoughi University Of Medical Sciences, Yazd,
Assistant-professor, Department Of Psychiatric Nursing, Shahid Sadoughi University Of Medical Sciences, Yazd,

nr.sajedezare@gmail.com

Introduction

Chronic heart failure (CHF) is one of the most challenging chronic conditions, imposing not only substantial physical burden but also significant psychological distress on affected individuals. Death anxiety is frequently reported as a prominent concern among these patients and may negatively influence treatment engagement, self-care behaviors, and overall quality of life. In recent years, growing attention has been directed toward the role of psychological constructs such as psychological flexibility and spiritual health in patients' adaptation to chronic illnesses. However, the association of these factors with death anxiety in individuals with heart failure has not been systematically examined. This review aims to synthesize existing evidence to inform the development of more effective nursing and psychosocial interventions.

Materials and Methods

This systematic review was conducted in 2025. A comprehensive search was performed across PubMed, Scopus, Web of Science, Google Scholar, and SID using the keywords "heart failure," "death anxiety," "psychological flexibility," "spiritual health," and their equivalents. Among 85 articles published between 2016 and 2024, 22 studies met the eligibility criteria after screening titles, abstracts, and full texts. The included studies comprised descriptive, analytical, and interventional designs addressing the variables of interest. Data were extracted and analyzed using a thematic and comparative synthesis approach.

Results

Findings indicated that patients with heart failure consistently reported high levels of death anxiety, especially those with advanced functional class, activity limitations, and recurrent hospitalizations. Psychological flexibility was inversely associated with death anxiety, reducing experiential avoidance, improving emotional regulation, and moderating threat-focused appraisals. Components of spiritual health, including meaning, hope, and spiritual connectedness, were linked to lower existential anxiety. Interventions based on Acceptance and Commitment Therapy (ACT) and spirituality-oriented programs significantly reduced death anxiety, highlighting both psychological flexibility and spiritual health as key protective factors.

Conclusion

This review underscores the significant role of psychological flexibility and spiritual health in mitigating death anxiety among patients with chronic heart failure. Integrating these dimensions into patient care may enhance the quality of nursing interventions and supports the development of targeted psychosocial strategies for this vulnerable population.

Keywords

ChronicHeartFailure, DeathAnxiety, PsychologicalFlexibility, SpiritualHealth, NursingCare

Study of the Effects of Telepsychology on the Self-Efficacy of Heart Failure Patients After Discharge: A Systematic Review

Fatemeh Zarezadeh Mehrizi, Sajede Zare, Adel Eftekhari

Masters-degree, Department Of Psychiatric Nursing, Shahid Sadoughi University Of Medical Sciences, Yazd,
Assistant-professor, Department Of Psychiatric Nursing, Shahid Sadoughi University Of Medical Sciences, Yazd,

zarezadeh2014@gmail.com

Introduction

Heart failure is a leading cause of mortality and a significant factor contributing to declines in quality of life worldwide. It results in high healthcare costs and increases patient dependency and stress. Nurses, as skilled healthcare providers, deliver comprehensive care to patients during their psychological rehabilitation following hospitalization. Enhancing self-efficacy is one effective way to reduce psychological stress. With the rise of digital technologies and limitations on face-to-face education, mobile applications are emerging as innovative tools for psychological assessment of patients. Therefore, this study investigates the impact of telepsychology on the self-efficacy of heart failure patients after discharge.

Materials and Methods

This study was conducted in 2024 using a systematic review approach. Internet searches were performed in both Persian and English databases, including SID, Magiran, Google Scholar, PubMed, Web of Science, and Scopus, utilizing keywords such as “psychological follow-up,” “self-efficacy,” and “heart failure.” From the 70 articles identified between 2015 and 2024, 20 relevant studies were selected for analysis after screening and excluding unrelated research.

Results

The results indicate that heart failure patients frequently experience psychological distress due to life changes. This distress is an emotional response to stressors that can harm mental health and affect social functioning, often linked to anxiety and depression. Self-efficacy helps individuals maintain independence, prevent complications, enhance performance, build confidence, increase life satisfaction, and reintegrate into society. Telemedicine allows for cost-effective healthcare delivery and improved accessibility for patients. By facilitating communication between patients and nurses regardless of time and location, telemedicine enhances patient care. Programs that focus on self-efficacy and psychological follow-up via mobile phones can empower patients by providing crucial psychological support.

Conclusion

Psychological follow-up through mobile-based self-efficacy programs is increasingly recognized as a valuable approach in nursing, particularly for reducing psychological stress among individuals with chronic heart failure. Given the positive influence of psychological

well-being on the quality of care provided, it is recommended to focus on enhancing nurses' moral awareness and competencies in using new technologies. Further research, along with the development of educational programs and case analyses, is also suggested to establish best practices in nursing education and practice.

Keywords

psychological follow-up-self-efficacy-heart failure.

The effect of Orem's self-care model-based education on self-management behavior among Hospitalized Heart Failure Patients

Zahar Azizi

Masters-degree, School Of Nursing, Fasa University Of Medical Sciences, Fasa,

aziziatoosa79@gmail.com

Introduction

Heart failure is a chronic, progressive condition that places a considerable physical, emotional, and economic burden on patients, families, and healthcare systems. Insufficient self-management is a major contributor to major challenges, increased healthcare costs, and diminished quality of life. Guided by Orem’s Self-Care Deficit Nursing Theory, the present study aimed to investigate the effect of Orem's self-care model-based education on self-management behavior among hospitalized heart failure patients.

Materials and Methods

This randomized controlled trial enrolled 60 heart failure patients at Fasa University of Medical Sciences in southeast Iran during 2025. Participants were recruited through convenience sampling and randomly assigned to either intervention or control groups. The intervention group received a structured, theory-based self-care education program delivered in four sessions (10–60 minutes each) during hospitalization, whereas the control group received routine education. Self-management was evaluated using the Self-management scale administered at baseline, immediately post-intervention, and at three-month follow-up. Statistical analyses were performed using IBM SPSS version 26, with significance established at $P < 0.05$.

Results

Baseline assessment revealed comparable self-management scores between groups ($P = 0.56$). Significant differences emerged both immediately following the intervention and at the three-month assessment point ($P < 0.001$ for both time points). At three-month follow-up, the intervention group maintained higher self-management scores (56.22 ± 2.46) compared to the control group (48.12 ± 2.95), with all subscales similarly favoring the intervention group ($P < 0.001$).

Conclusion

Orem’s self-care model–based education produced meaningful and sustained improvements in self-management behaviors among hospitalized heart failure patients. These findings highlight an opportunity for healthcare professionals, particularly nurses who play a central role in patient education, to incorporate these approaches into standard care protocols, which enhance self-management competencies in these patients.

Keywords

Orem, self-care, self-management, Heart Failure

Pharmaceutic perspectives on microbiome-derived metabolites as cardioprotective agents: mechanistic targeting, delivery considerations, and implications for heart failure therapy

Alireza Maboudi

Doctoral-degree, Department Of Pharmaceutics, Zanjan University Of Medical Science, Zanjan,

alirezamaboudi@sina.zums.ac.ir

Introduction

Heart failure (HF) pathophysiology is driven by a convergence of TGF-β/SMAD3-mediated fibrosis, NLRP3 inflammasome activation, endothelial-to-mesenchymal transition, nitric oxide depletion, and profound mitochondrial metabolic inflexibility across both HFrEF and HFpEF phenotypes. Emerging evidence indicates that microbiome-derived metabolites—including short-chain fatty acids (SCFAs), bioactive peptides, and exopolysaccharides (EPS)—modulate these pathways through G-protein–coupled receptor activation, histone deacetylase inhibition, and reprogramming of mitochondrial energetics. However, their clinical translation remains limited due to intrinsic instability, rapid systemic clearance, and suboptimal targeting to cardiovascular tissues.

Materials and Methods

A narrative synthesis of studies published between 2018–2025 was performed using PubMed and Scopus. Eligible studies included in vivo HF models (e.g., TAC, MI, AngII infusion), ex vivo cardiac assays, and human observational cohorts evaluating metabolite–cardiac interactions. Articles focusing exclusively on whole-cell probiotics were excluded to maintain a metabolite-centered pharmaceutic perspective.

Results

SCFAs consistently attenuated myocardial fibrosis, suppressed NLRP3-driven inflammation, and improved endothelial NO signaling. Peptide-based postbiotics exerted more pronounced effects on mitochondrial respiration, oxidative stress resolution, and metabolic remodeling. EPS modulated immune–fibrotic pathways and reduced collagen deposition, suggesting a complementary mechanistic profile. Across all metabolite classes, rapid elimination, enzymatic degradation, and poor myocardial bioavailability were persistent translational barriers. Encapsulation platforms—including polymeric nanoparticles, microencapsulation, and microbiome-responsive hydrogels—demonstrated improved stability, controlled release, and enhanced cardiac tissue uptake in preclinical models.

Conclusion

Microbiome-derived metabolites represent promising adjunctive candidates for HF management by targeting pathophysiologic domains not adequately modulated by current therapies. Yet, clinical evidence remains sparse. Advancing pharmaceutically optimized

formulations and conducting rigorously designed early-phase clinical trials will be essential to define safety, dosing, and therapeutic relevance in human HF populations.

Keywords

Microbiome SCFAs Postbiotics Cardioprotection Pharmaceutics

Alexithymia and Emotion Regulation in Chronic Heart Failure: A Hidden Obstacle to Clinical Improvement

Fatemeh Zarezadeh Mehrizi, Sajede Zare, Adel Eftekhari

Masters-degree, Department Of Psychiatric Nursing, Shahid Sadoughi University Of Medical Sciences, Yazd,
Assistant-professor, Department Of Psychiatric Nursing, Shahid Sadoughi University Of Medical Sciences, Yazd,

zarezadeh2014@gmail.com

Introduction

Introduction:

Chronic heart failure (CHF) is associated not only with physiological consequences but also with prevalent psychiatric disorders that adversely affect patients' prognosis and quality of life. Alexithymia, characterized by difficulties in identifying, describing, and processing emotions, is linked to ineffective emotion regulation strategies. This can exacerbate symptoms and complications while reducing adherence to self-care behaviors. Despite its clinical significance, alexithymia has received insufficient attention in both care practices and research studies.

Objective:

This systematic review aims to examine the existing evidence on alexithymia in heart failure patients, its relationship with emotion regulation strategies, and its impact on psychological and clinical outcomes.

Materials and Methods

A systematic search was conducted in the PubMed, Scopus, and Web of Science databases for articles published between 2015 and 2025. The keywords used included "alexithymia," "emotion regulation," and "chronic illness dysfunction." Studies that quantitatively and qualitatively explored the association between alexithymia, emotion regulation processes, psychological distress, and clinical outcomes in CHF patients were selected. The data were qualitatively abstracted and analyzed to highlight mechanistic pathways and clinical implications.

Results

Evidence indicates that CHF patients with alexithymia exhibit dysfunctional emotion regulation skills. They are more likely to employ avoidance and emotion suppression strategies rather than adaptive techniques such as cognitive reappraisal. These impairments correlate with higher levels of psychological distress, lower adherence to self-care behaviors, poorer functional status, and an increased risk of readmission. Interdisciplinary interventions

that enhance emotion recognition skills and adaptive strategies have demonstrated positive effects on mood improvement and reduction of adverse clinical outcomes.

Conclusion

Alexithymia is a significant yet often overlooked barrier in the management of chronic heart failure patients. Regular psychological assessments and targeted interventions aimed at improving emotion regulation skills can enhance both clinical and psychological outcomes. Incorporating psychological profiling into routine CHF care offers a pathway to achieving interdisciplinary and patient-centered management.

Keywords

Alexithymia, emotion regulation, heart failure.

Heart Failure Readmissions: A narrative literature review about Predictors and Evidence-Based Strategies

Mohammad Mostaghar, Javad Shaabanzadeh, Fatemeh Jafaraghaee

Masters-degree, School Of Nursing And Midwifery, Hamadan University Of Medical Sciences, Hamadan,
Professor, School Of Nursing And Midwifery, Guilan University Of Medical Sciences, Rasht,

mohammadmostaghar@gmail.com

Introduction

Heart failure (HF) is a progressive clinical syndrome and a major global contributor to mortality, morbidity, and healthcare utilization. Despite advancements in treatment, rehospitalization rates remain high, with nearly one-fifth of patients readmitted within 30 days and almost half within one year of discharge. This narrative review aimed to summarize predictors of HF readmission and examine non-pharmacological interventions that help reduce rehospitalization. Continued text in the main file

Materials and Methods

A narrative review was carried out. The searches were conducted using PubMed and Web of science databases, using various combinations of the following keywords: “Heart Failure OR Cardiac Failure” AND “Patient Readmission OR Rehospitalization”. The search was conducted in November 2025. To be included in the review, articles had to meet the following criteria which formed the review protocol:

1. written in English;

2. published between 2000-2025;

3. Studies that include predictors of readmission and non-pharmacological interventions (especially nursing-centered interventions) to reduce it;

4. articles should not be a conference or animal

Titles and abstracts were viewed: the appropriate articles reviewed, and the inappropriate were discarded. Ultimately, with rigorous screening, 24 studies were analyzed.

Results

Evidence shows that reducing HF readmissions requires a multidimensional strategy. Effective interventions include patient education through multimedia tools, phone-based support, nurse-led self-care programs, and the Teach-Back method. Technology-based approaches—particularly telemonitoring and artificial intelligence-supported risk prediction—demonstrate significant potential in reducing rehospitalization and mortality. Additionally, integrating palliative care offers holistic symptom management, improves quality of life, and lowers hospital utilization. Continuous nursing interventions further

enhance patient adherence, self-management, and overall outcomes. Continued text in the main file

Conclusion

Heart failure remains one of the leading causes of rehospitalization. Reducing readmissions requires a multidimensional approach: patient education and empowerment, remote monitoring and new technologies, continuous nursing support, and integration of palliative care. Coordinated implementation of these strategies can improve patients' quality of life and reduce the economic and social burden of heart failure. Future studies should focus on the optimal use of technology—particularly artificial intelligence—by both healthcare professionals and patients, and on multidisciplinary collaboration to improve heart failure management and overcome existing challenges.

Keywords

Heart failure, Patient Readmission, Rehospitalization

AI-Enabled Wearable Vital Signs Monitoring for Nursing Practice: A Systematic Review

fatemeh Karami, Zahra Darabi, Babak Babaei

bachelores-degree, Student Research Committee, Ilam University Of Medical Sciences, Ilam ,
masters-degree, Medical Genetics, Shiraz University of Medical Sciences, Shiraz,

karami-f@medilam.ac.ir

Introduction

Vital signs monitoring is the most fundamental indicators for health and performance of vital systems. Traditionally manual periodic measuring of heart rate, blood pressure, respiratory rate, temperature and o2 saturation has its limitation and may delay detecting of dangers changes. Wearable devices and internet of things have provided continuous non-invasive monitoring capability. Artificial-intelligence (AI) especially machine learning and deep learning can process the complicated data of wearable devices and predict abnormal changes.

The goal of this systematic review is to assess scientific evidences regarding AI-based wearables for monitoring vital signs, algorithms, performance and their clinical applications for nursing practice.

Materials and Methods

The study was independently conducted by two researchers based on the PICO criteria analysis to ensure accuracy and consistency during study selection. Searching in published studies in PubMed, Web of Science and Scopus databases with: “vital sign”, “deep learning”, “nurse”, “AI-related wearables” and “internet of things” MESH keywords and search phrases during 2015 till November of 2025 were searched. Related studies were selected.

Results

Among the 125 initial articles, after removing repetitive ones and apply entry criteria, 20 final study were analyzed. Most of the studies used deep learning and neural network algorithms on wearable data. Vital signs were included heart rate (HR), blood pressure (BP), respiratory rate (RR), temperature (T) and oxygen saturation (SPO2). The accuracy of performance was reported between” 85%” and “95%.” The application was for ICU, CCU, general and emergency wards of hospitals.

Conclusion

AI-enabled wearables are effective and non-invasive tools continuous vital sign monitoring that can support early diagnose of vital sign variations and clinical decision making. Considering increasing use of this technologies, integrating them into nursing workflows and teaching users takes on special importance. Nevertheless conducting long-term studies to

ensure accuracy, reliability and real impact of AI-enabled wearables in improving patient outcomes is necessary. Although available evidence are limited because of variability of studies and sample size limitation.

Keywords

Vital Sign, Nurse, AI-Related Wearables

Efficacy and Safety of Dual GLP-1/GIP Receptor Agonists (Primarily Tirzepatide) versus Placebo or GLP-1 Receptor Agonist Monotherapy in Patients with Heart Failure with Preserved Ejection Fraction (HFpEF) and Obesity: A Systematic Review and Meta-Analysis

Aliakbar Bakhshi Mofrad, Mohammad Moein Tootestani

other, Student Research Committee, Department Of Medicine, Student Research Committee, Department Of Medicine, Kashan,
Bachelores-degree, Student Research Committe, Department Of Nursing,, Islamic Azad University,Kashan, Kashan,

aliakbarbakhshi83@gmail.com

Introduction

Heart failure with preserved ejection fraction (HFpEF) and obesity represents a rapidly growing phenotype with no proven outcome-reducing therapy until recently. The emergence of dual GLP-1/GIP receptor agonists, particularly tirzepatide, has transformed this field: the 2025 SUMMIT trial and related studies demonstrated the first significant reductions in cardiovascular death and HF events in HFpEF, alongside major symptomatic benefits. No systematic review has yet compared dual-incretin agonists versus placebo or GLP-1 monotherapy in this population. We conducted the first comprehensive meta-analysis to establish their efficacy and safety in obese patients with HFpEF.

Materials and Methods

We systematically searched PubMed, Embase, Cochrane Library, and ClinicalTrials.gov up to 18 November 2025. Randomized controlled trials evaluating tirzepatide or other dual-incretin agonists in adults with HFpEF (LVEF ≥50%) and obesity (BMI ≥30 kg/m² or ≥27 kg/m² in Asians) were included. Primary outcomes were hierarchical composite (win ratio) or time-to-first cardiovascular death/heart failure hospitalization. Secondary outcomes included KCCQ-CSS, 6-minute walk distance (6MWD), body weight, and safety. Random-effects meta-analysis was performed using RevMan 5.4.

Results

Seven trials comprising 9,532 patients were included (four tirzepatide arms, five semaglutide/dulaglutide arms). Compared with placebo, dual GLP-1/GIP agonists significantly improved KCCQ-CSS (+7.6 points, 95% CI 6.1–9.2; P<0.00001), reduced body weight (−9.8%, 95% CI −11.1 to −8.5; P<0.00001), and increased 6MWD. Most importantly, dual agonists reduced the composite of CV death or HF events (HR 0.61, 95% CI 0.48–0.78; P<0.0001; I^2=0%), driven mainly by tirzepatide (SUMMIT trial). Head-to-head comparison showed greater weight loss and trend toward superior HF outcomes with dual versus single

GLP-1 agonists. Gastrointestinal adverse events leading to discontinuation were higher (RR 3.8, 95% CI 2.9–5.1) but acceptable.

Conclusion

Dual GLP-1/GIP receptor agonists, led by tirzepatide, represent the first pharmacologic class to demonstrate significant reductions in both symptoms and hard cardiovascular outcomes in patients with HFpEF and obesity, outperforming GLP-1 monotherapy. These findings support their preferential use in this high-risk population.

Keywords

HFpEF, tirzepatide, Dual-incretin

Using algorithms to predict early disease decompensation from single-channel ECG data

Mohammad Moein Tootestani, Mohammad Moein Tootestani, AliAkbar Bakhshi Mofrad Kashani

Bachelores-degree, Student Research Committe, Department Of Nursing,, Islamic Azad University,Kashan, Kashan, other, Student Research Committee, Department Of Medicine, Kashan University Of Medical Science, Kashan, Iran, Department Of Medicine, Kashan University Of Medical Science, Kashan,

m.moein.tootestani@gmail.com

Introduction

The early prediction of disease decompensation in heart failure remains a clinical priority, with single-channel electrocardiogram (ECG) data presenting an accessible and cost-effective avenue for noninvasive risk stratification. Recent advances in artificial intelligence (AI) and machine learning (ML) have propelled the field toward more sensitive and specific diagnostic algorithms, potentially enabling proactive interventions that can improve patient outcomes and resource allocation in cardiology clinics

Materials and Methods

This narrative review employs a systematic search strategy across prominent scientific databases including PubMed, Scopus, Web of Science, and IEEE Xplore, focusing on original articles published from January 2021 to November 2025. The search terms included “AI,” “machine learning,” “ECG,” “single-lead,” “decompensation,” and “heart failure.” Inclusion criteria targeted studies evaluating AI/ML algorithms for early detection of heart failure decompensation using single-channel ECG, with validation on external datasets or prospective cohorts. Key algorithm types analyzed include convolutional neural networks (CNNs), recurrent neural networks (RNNs), and hybrid models. AI models and their performance metrics (sensitivity, specificity, AUC) were extracted, pooled, and discussed. Reference databases, such as MIT-BIH and PhysioNet, were emphasized for benchmarking and reproducibility.

Results

CNN and hybrid deep learning models are among the most promising approaches for single-lead ECG analysis. These algorithms accurately predict reduced ejection fraction (LVEF ≤ 40%), major cardiovascular events (MACE), and mortality, especially in large-scale prospective studies. Meta-analyses show sensitivities and specificities up to 93% and 95%, respectively, for identifying early heart failure decompensation. Some models retain accuracy regardless of age, gender, or concurrent structural heart disease, supporting their clinical utility in diverse patients. External validation using PhysioNet and MIT-BIH datasets demonstrates their generalizability and reduces single-center bias. Recent trials confirm

feasibility and scalability for clinical and remote monitoring, highlighting the real-world potential of single-lead AI-ECG solutions in ambulatory care

Conclusion

Single-channel ECG analysis powered by AI and ML constitutes a transformative development in early heart failure decompensation prediction. With growing evidence from high-quality multicenter studies and meta-analyses, these algorithms demonstrate excellent diagnostic accuracy, scalability, and generalizability. Integration with clinical workflows and external validations—notably on established open-access databases—underscore their real-world applicability. Continuous methodological refinement and extended longitudinal validation remain critical for maximizing clinical impact and regulatory acceptance. The progressive adoption of AI-based ECG analytics may significantly mitigate morbidity, optimize resource allocation, and promote personalized management in heart failure care.

Keywords

Heart failure/AI/Early decompensation/Single-channel ECG/Machine learning

Effect of a Virtual Educational Intervention on Medication Adherence and Quality of Life in Heart Failure Patients Undergoing Cardioverter Defibrillator Implantation: Application of Pender's Health Promotion Model

Niloofar Ahmadi, Mohammad Abbasi, Masood Rezaei, Fatemeh Rashidi

Assistant-professor, Medical-Surgical Nursing, Iran University Of Medical Sciences, Tehran,
masters-degree, Medical-Surgical Nursing, Iran University Of Medical Sciences, Tehran,

frashidi.nursing@gmail.com

Introduction

Cardiovascular diseases remain a leading global health challenge, accounting for the most significant number of deaths worldwide. Patients diagnosed with heart failure (HF) often face a wide range of complications that can lead to medication non-adherence and impaired QoL. Implantable cardioverter-defibrillators (ICDs) are an effective treatment for HF patients by detecting potentially lethal cardiac rhythms and restoring normal sinus rhythm. Despite their clinical benefits, ICDs can negatively affect patients' QoL. Educating HF patients using health promotion theories, such as Pender's Health Promotion Model (HPM), may improve their outcomes. Therefore, this study sought to assess the impact of virtual education grounded in Pender's HPM on medication adherence and QoL in HF patients with ICDs.

Materials and Methods

This two-group randomized controlled trial was conducted at Rajaei Heart Center, Tehran, Iran, from April to October 2024. The study sample included Sixty-six HF patients undergoing ICD implantation who were selected via continuous sampling based on established inclusion criteria, and then randomly allocated to the intervention (n=33) or control (n=33) groups using block randomization. After receiving written informed consent, the intervention group received a one face-to-face preparatory session at the time of discharge and five 30-minute virtual educational sessions via videocall after discharge, based on Pender's HPM, weekly at home. The control group received only the hospital's standard education, delivered by clinical nurses. Data were collected using the Demographic Information Form, the Minnesota Living with Heart Failure Questionnaire (MLHFQ), and the 8-item Morisky Medication Adherence Scale (MMAS-8) before and one month after the intervention. Data analysis was performed using SPSS version 16.0, employing the chi-squared test, Fisher's exact test, independent-samples t-test, and paired-samples t-test, with $P< 0.05$ set as the significance level. The protocol of this study received ethical approval from the Research Ethics Committee of Iran University of Medical Sciences, under the ethics code of IR.IUMS.REC.1403.002, and was registered in the Iranian Registry of Clinical Trials center under identifier IRCT20240309061231N1.

Results

There were no significant differences in baseline data between the two groups; however, one month after the intervention, medication adherence improved significantly in the intervention group compared with the control group (IG: 6.41±0.76 vs. CG: 5.60±1.35, P=0.007, Cohen's d = .739). Additionally, QoL scores in the intervention group increased significantly from 29.26±17.16 at baseline to 19.36±16.36 one month after the intervention (P=0.001, Cohen's d = 0.59), although between-group differences were not statistically significant (P=0.766).

Conclusion

This study highlighted that virtual education based on Pender's HPM effectively enhances medication adherence and improves QoL in HF patients with ICDs. Given the physical limitations and activity intolerance commonly experienced by heart failure patients, the intervention's virtual format offered a practical, accessible, and patient-centered approach that minimized fatigue and enhanced learning continuity. Overall, these findings support integrating theory-driven virtual education into routine cardiac care to improve self-care behaviors and clinical outcomes in this high-risk population.

Keywords

Heartfailure QoL Medicationadherence

Integrating wearable devices with artificial algorithms to predict cardiac decompensation:Systematic Review

Mohammad Moein Tootestani, Mohammad Moein Tootestani, AliAkbar Bakhshi Mofrad Kashani

Bachelores-degree, Student Research Committe, Department Of Nursing,, Islamic Azad University,Kashan, Kashan, other, Student Research Committee, Department Of Medicine, Kashan University Of Medical Science, Kashan, Iran, Department Of Medicine, Kashan University Of Medical Science, Kashan,

m.moein.tootestani@gmail.com

Introduction

Heart failure (HF) is a major cause of morbidity and mortality globally, with acute decompensations leading to over one million hospitalizations yearly in Europe and North America and considerable healthcare expenses, averaging $14,631 per admission in the US. Timely prediction of decompensation—characterized by fluid overload, reduced cardiac output, and worsening symptoms—offers a key opportunity for intervention, potentially preventing hospitalizations and enhancing quality of life. Conventional monitoring, based on periodic clinic visits and self-reported symptoms, often identifies decline too late. The integration of wearable devices and artificial intelligence (AI) enables continuous, noninvasive remote monitoring, using physiological data to predict decompensation with high accuracy. This review aggregates evidence on the clinical utility of such technologies in HF management, synthesizing findings from prospective and systematic studies.

Materials and Methods

A comprehensive literature search was conducted across PubMed, Embase, Web of Science, and Cochrane databases from January 2018 to October 2025, using terms including "wearable devices," "artificial intelligence," "machine learning," "heart failure," "decompensation," and "prediction." Inclusion criteria encompassed peer-reviewed studies (randomized controlled trials, prospective cohorts, and systematic reviews) evaluating AI-integrated wearables for decompensation prediction in adult HF patients (NYHA class II-IV). Exclusion criteria applied to non-English articles, preclinical models, or studies lacking performance metrics (e.g., sensitivity, specificity, AUC). Two independent reviewers screened 1,247 abstracts, yielding 48 full-text articles for data extraction. Quality assessment utilized the QUADAS-2 tool for diagnostic accuracy studies and AMSTAR-2 for reviews. Data were synthesized narratively, with meta-analytic elements for pooled sensitivity/specificity where feasible (e.g., >3 studies per outcome). Heterogeneity was assessed via I^2 statistics, and risk of bias was minimized through GRADE profiling.

Results

Included studies covered wearables—smartwatches (Apple Watch, Fitbit), patches (ZOLL CorVue), and vests (ReDS)—integrated with AI methods like deep and convolutional neural

networks and random forests. Key sensors captured PPG-derived HRV, accelerometry, ECG, thoracic impedance, and SCG. The LINK-HF study (n=100) showed a personalized AI platform predicted HF hospitalization with 76% sensitivity and 85% specificity, 14 days in advance. MultiSENSE (n=900) validated HeartLogic with 70% sensitivity (95% CI: 55.4–82.1%) and 34-day median alert. The 2025 MUSIC cohort (n=543) reported an ML model predicting acute events with 63% sensitivity and 92% specificity; a deep-learning ECG algorithm achieved 98.4% accuracy. Meta-analysis of 12 arrhythmia studies showed pooled AUC 0.981 for DNNs vs. 0.961 for traditional ML, confirming better pattern recognition. Challenges included artifacts in 20–30% of PPG readings and limited demographic diversity (15% non-White)

Conclusion

AI-augmented wearables enable proactive HF management by detecting subclinical decompensation through multimodal physiological insights, reducing readmissions by up to 87% in pilot interventions like ReDS-guided therapy. While promising, prospective validation in large, diverse populations and regulatory standardization (e.g., FDA-cleared algorithms) are essential to mitigate biases and ensure equity. Future directions include hybrid edge-cloud computing for real-time alerts and integration with electronic health records for personalized digital twins. These advancements position AI-wearable ecosystems as transformative tools in HF congresses, fostering precision cardiology and averting the projected 90% rise in global CVD burden by 2050.

Keywords

Heart failure/wearable technology/AI/decompensation prediction/remote monitoring

Investigating the effectiveness of palliative care in patients with heart failure

Zahra Karvandi, Beheshteh Tabarsi, Bahar Seifi

Assistant-professor, Department Of Nursing, TeMS.C., Islamic Azad University, Tehran, Iran, Islamic Azad University , Tehran Medical Branch, Tehran,
Assistant-professor, Department Of Nursing, TeMS.C., Islamic Azad University, Tehran, Iran, Islamic Azad University , Tehran Medical Branch, Tehran,

zahraacer807600@gmail.com

Introduction

Heart failure (HF) is a chronic and progressive syndrome with increasing prevalence, associated with debilitating symptoms, high mortality rates, and a significant reduction in patients' quality of life. Current medical treatments, while essential, are often insufficient in addressing the holistic needs of these patients. Palliative care is recognized as a proactive, comprehensive, and holistic approach focused on improving the quality of life for patients and their families, while alleviating their suffering and pain. It is increasingly acknowledged as a critical component of HF management and can be utilized throughout the entire course of a disease like HF, extending beyond end-of-life care. This study aimed to determine the impact of palliative care on patients with heart failure.

Materials and Methods

This experimental study was conducted in 2025 at a hospital in Tehran, Iran, following ethical approval.

Fifty-six eligible patients with NYHA Class II or III heart failure (HF), aged 18-70, were selected via random sampling and randomly divided into two groups: intervention (n=28) and control (n=28). Inclusion criteria included a confirmed HF diagnosis, alertness, and no participation in a self-care program within the preceding six months. Exclusion criteria covered unexpected incidents (e.g., death), lack of cooperation, withdrawal, or incomplete data.

The intervention group received a structured palliative care program tailored to their needs, based on the principles of Oxford Palliative Care and the Palliative Care Education Toolkit. The program consisted of seven sessions delivered remotely via WhatsApp, commencing at hospital discharge and lasting until the one-month post-discharge follow-up. Sessions focused on:

Palliative care principles and goals.

Symptom management (e.g., dyspnea, fatigue, pain, edema).

Proper nutrition and physical activity.

Self-care principles (e.g., daily weighing, fluid consumption).

Managing psycho-social-emotional-spiritual aspects.

Shared decision-making.

A 15-minute dialogue was allocated at the end of each session, and the researcher maintained 24/7 availability via phone/WhatsApp to address patient concerns.

The control group received only routine care.

Data were collected using the Palliative Care Outcome Scale (POS) questionnaire at pre-test and post-test time points. The instrument showed acceptable reliability (0.719).

Statistical analysis was performed using SPSS software (version 27). Descriptive analysis, independent and paired t-tests, Kolmogorov-Smirnov/Shapiro-Wilk tests (for normality), Levene's test (for homogeneity of variances), and Chi-square tests (for demographic data comparison) were employed. The level of significance was set at $P < 0.05$.

Results

The main demographic findings, broken down by frequency of number and percentage in the study, in the intervention and control groups, respectively, included: 1- Gender: Female, 34 (60.7%) and 40 (71.4%). 2- Age: 57 to 70 years, 28 (50%) and 30 (53.6%). 3- Education: Relatively similar but mostly uneducated and below a high school diploma, uneducated: 19 (33.9%) and 14 (25%) / below a high school diploma, 15 (26.8%) and 22 (39.3%). 4. Occupation: Housewife/retired, 35 (62.5%) and 43 (76.8%).Baseline demographic characteristics and pre-test scores of POS were homogeneous between the intervention and control groups ($P > 0.05$), ensuring comparability. In the control group, non-significant changes were observed for POS scores ($P > 0.05$), indicating that routine care and the passage of time did not lead to improvement. Furthermore, the test results indicated that palliative care led to a significant improvement in the intervention group for palliative care outcomes $P=0.004$).)

Conclusion

The palliative care program significantly increased the score of palliative care outcome and it was promising and improving. The findings emphasize the critical role of structured, nurse-led palliative care interventions in managing the multifaceted needs of heart failure patients, beyond conventional medical approaches. The integration of such programs into standard cardiovascular nursing care protocols is recommended to enhance the quality of life and self-management skills of these patient.

Keywords

Palliative care, heart failure ,POS

The study of nutritional status and related factors in patients with coronary artery disease: a cross-sectional study

Fatemeh Moaddab, Arsalan Salari, Fatemeh Zaersabet

Professor, Department Of Cardiology, Guilan University Of Medical Sciences, Rasht,
Masters-degree, Department Of Nursing, Guilan University Of Medical Sciences, Rasht,

f.moaddab89@gmail.com

Introduction

Given the wide range of factors influencing the prevalence of coronary artery disease, emphasizing proper nutritional patterns and educating patients about them is essential for improving their quality of life. Therefore, this study aimed to examine the nutritional status of patients with coronary artery disease and the factors associated with it.

Materials and Methods

This analytical cross-sectional study was conducted on 125 patients with acute coronary syndrome who were referred to specialized heart clinic of Dr. Heshmat hospital in Rasht (Guilan province, North of Iran). Convenience sampling was done using a valid two-part questionnaire including demographic information and nutritional KAP (Knowledge, Attitudes, and Practices). Data were analyzed by descriptive and analytical statistics in SPSS-V.26 software. The significance level was considered $p \leq 0.05$.

Results

The mean score of nutritional knowledge was 9.74±2.63 (from 35), attitude 12.87±4.63 (from 32), and performance 21.20±31.34 (from 30). There was a correlation between mean score of nutritional knowledge and marital status, family history of heart disease and history of nutritional education; nutritional attitude and history of nutritional education; and nutritional performance and age, marital status, and history of hyperlipidemia ($p<0.05$). Non-married people had higher knowledge and performance; individuals without family history of heart disease had higher knowledge; individuals with history of hyperlipidemia had higher performance and individuals with history of nutritional education had higher knowledge and attitude.

Conclusion

Considering the findings and the importance of the issue, it is recommended that those involved in educational and therapeutic settings in hospitals implement strategies to enhance patients' knowledge and promote positive attitudes and behaviors regarding nutritional status and its related factors, in order to reduce the substantial gap between awareness and practice.

Keywords

Nutrition, Knowledge, Attitude, Performance, Acute_Coronary_Syndrome

National and sub-national trends of heart failure burden and underlying causes in Iran from 1990 to 2021, with projection up to 2040: findings from the Global Burden of Disease Study 2021

Mahin Nomali, Hossein Navid, Reza Taherian, Maryam Karimi Ghahfarokhi, Fahimeh Valizadeh Shiran, Shiva Armani Moghadam, Keyvan Salehi

Doctoral-degree, Heart Failure Research Center, Cardiovascular Research Institute, Isfahan University Of Medical Sciences, Tehran,
Doctoral-degree, School Of Medicine, Shahid Beheshti University Of Medical Sciences, Tehran,

mahin.nomali@yahoo.com

Introduction

Heart failure (HF) remains a major public health problem worldwide affecting countries such as Iran. This study aimed to estimate the trends of HF burden at both national and sub-national levels from 1990 to 2021 and future projection until 2040.

Materials and Methods

Using data from the Global Burden of Disease (GBD) 2021 study, we analyzed the national and sub-national burden of HF through prevalent cases, years lived with disability (YLDs), and age-standardized prevalence (ASPR) and YLD (ASYR) rates per 100,000 population. Temporal trends were assessed using estimated annual percentage change (EAPC) and joinpoint regression analysis. Future projections were forecasted using Bayesian age-period-cohort (BAPC) models. Where appropriate, analyses were stratified by 31 provinces, five national regions (Northern, Central & Southwest, Northwest, West, and the East), 20 age groups, and sex.

Results

National trend of HF prevalence and YLD burden increased from 1990 to 2021, with the ASPR rising from 774.5 to 809.5 (EAPC 0.141) and the ASYR increasing from 72.21 to 75.52 (EAPC 0.142) per 100,000 population. The burden was consistently greater in men than women, with both prevalence and YLD rates escalating sharply after age 60. Ischemic heart disease (IHD) and hypertensive heart disease (HHD) were the major leading causes of HF burden, accounting for 70% of prevalent cases and YLDs in adults aged 30 years and older of both sexes in Iran. According to BAPC models, the ASPR of HF is predicted to increase from 807.19 cases per 100,000 people in 2024 to 812.92 in 2030, and 826.09 in 2040.

Conclusion

The national and sub-national burden of HF showed a slight increase from 1990 to 2021, likely due to Iran`s relatively younger population. With the aging and a projected sharper

increase in prevalent cases from 2030 to 2040, it is crucial to prioritize health planning, particularly in regions experiencing the highest burden.

Keywords

Heart Failure, GBD, Iran

Investigating the effect of Baduanjin exercise on the clinical outcomes of patients with heart failure

Poria Heshmati Nasab, Imane Bagheri, Elahe Zare

Assistant-professor, Department Of Nursing, Shahid Sadoughi University Of Medical Sciences, Yazd,
Assistant-professor, Department Of Cardiology, Shahid Sadoughi University Of Medical Sciences, Yazd,

heshmatiporia@gmail.com

Introduction

Heart failure is a major global health issue, with prevalence projected to rise significantly by 2035. Beyond physical limitations, it imposes psychological and social burdens that reduce patient engagement and adherence. Cardiac rehabilitation, especially Baduanjin-based programs emphasizing mind-body integration, may improve clinical outcomes. This systematic review evaluated the effects of Baduanjin on patients with heart failure.

Materials and Methods

A systematic search of Scopus, Cochrane Library, PubMed, and Web of Science up to November 2025 identified 119 articles. Clinical trials on Baduanjin in heart failure patients with full-text availability were included; reviews, abstracts, and non-English studies were excluded. After screening and quality assessment via CASP, 18 studies were included.

Results

In 18 studies (n = 1011, NYHA II–III), Baduanjin improved exercise capacity, 6MWD, oxygen uptake, ventilatory efficiency, muscle strength, anaerobic threshold, quality of life, sleep, adherence, and reduced fatigue. Positive effects were also observed on stroke volume, ejection fraction, blood pressure, NT-proBNP, and sST2.

Conclusion

Baduanjin is a safe, feasible, and effective rehabilitation for heart failure, though some studies showed no change in maximal oxygen consumption. Long-term, larger studies are needed.

Keywords

Baduanjin, Qigong, heart failure

Application of Artificial Intelligence to Enhance the Quality of Cardiopulmonary Resuscitation (CPR); Systematic review

Zahra Darabi, fatemeh Karami, Babak Babaei, Ali Darabi

masters-degree, Medical Genetics, Shiraz University of Medical Sciences, Shiraz,
Bachelores-degree, Faculty Of Nursing And Midwifery, Shahid Beheshti University Of Medical Sciences, Tehran, Iran, Tehran,

zahradarabi4670@gmail.com

Introduction

Artificial intelligence (AI) has been a major breakthrough in the enhancement of quality and effectiveness of cardiopulmonary resuscitation. The application of AI tech gets updated feedback of the most important parameters of the CPR such as compression depth, rate, and chest recoil, etc. to the rescuers, who in turn, can perform at their best. Also, AI through rhythm analysis incorporated in an automated external defibrillator and individualized resuscitation strategies using patient-specific data can help in decision-making at the clinical level. In spite of problems concerning data privacy, system integration, and ethical issues, AI still has the capability to improve not only the chances of survival but also the neurological outcome of the patients who suffer from cardiac arrest.

Materials and Methods

The study was independently conducted by two researchers based on the PICO criteria, aligned with the research objectives, using PubMed, CINAHL, Medline, Web of Science, SID databases, and the Google Scholar search engine with Boolean operators. The time frame was limited to the years 2022 to 2025, employing the MeSH keywords “Artificial Intelligence,” “Resuscitation,” “Quality,” and “CPR.” After applying inclusion and exclusion criteria and critically appraising the quality of the selected articles, a total of seven studies were included in the final analysis.

Results

The studies reviewed show that there have been major advancements in management and resuscitation techniques for cardiopulmonary arrest through the use of AI. The predictive capabilities of AI improve patient analysis and management before and during cardiac events beyond manual techniques. Machine learning algorithms integrated into patients' electronic medical files assess patients' deteriorating conditions to facilitate prompt cardiopulmonary resuscitation. Chest compression efficiency is further advanced through AI feedback systems and wearable technology to reduce inter-responder differences. Sophisticated automated defibrillators accurately analyze rhythms to reduce delays before shocking patients. Other AI advancements include VR training and AED drones to further improve resuscitation techniques and timing for better post-resuscitation outcomes.

Conclusion

Artificial Intelligence (AI) could make Cardiopulmonary Resuscitation (CPR) more effective by, for example, helping identify the cardiac arrest situation earlier, making sure the compressions are performed correctly, and thus, allowing the medical team to decide the next step more quickly. The novel devices like an AI-supported defibrillator or a wearable sensor seem to bring some advantages; however, the proof is considerably restricted by only a few small-sized studies, data collected from the simulation, and difficulties in the actual setting. To be able to implement these devices safely and effectively in everyday clinical practice, more extensive, large-scale, prospective research is still required.

Keywords

Artificial Intelligence Resuscitation CPR Quality

Pharmacological and non-pharmacological approaches for managing fatigue in heart failure patients: A systematic review

Fatemeh Rashidi, Mohammad Abbasi, Niloofar Ahmadi, Faezeh Rashidi, fatemeh Karami

Bachelores-degree, Student Research Committee, Ilam University Of Medical Sciences, Ilam,
masters-degree, Faculty of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran,

frashidi.nursing@gmail.com

Introduction

Fatigue is one of the most prevalent and debilitating symptoms of heart failure, with a direct impact on patients' daily functioning and quality of life. This symptom is often caused by a combination of reduced cardiac output, impaired muscle perfusion, anemia, systemic inflammation, and sleep disorders, and persists in many patients. Given the multifactorial nature of fatigue, identifying and classifying effective strategies for its management is essential. Therefore, this systematic review aimed to examine the available evidence on pharmacological and non-pharmacological interventions in reducing fatigue in patients with heart failure.

Materials and Methods

This systematic review was conducted in accordance with PRISMA guidelines. The research question was structured using the PICO framework to define the target population (adult patients with heart failure), the intervention (fatigue-related interventions), the comparison group (routine care or no intervention), and the primary outcome (change in fatigue level). An extensive search was conducted between 2010 and 2025, using current articles in databases such as PubMed, CINAHL, Scopus, EMBASE, Web of Science, Cochrane Library, SID, and Magiran. The search terms, including “heart failure”, “fatigue”, “fatigue management”, “non-pharmacological interventions”, and “pharmacological interventions”, and their Persian equivalents, were used to identify Persian- and English language articles that met the inclusion criteria. Among the 108 identified articles, after removing duplicates and screening titles and abstracts, 14 were ultimately included in the systematic analysis. The Joanna Briggs Institute tool was used to assess the study quality and risk of bias.

Results

The review of studies showed that the most effective strategies for managing fatigue in patients with heart failure are primarily non-pharmacological interventions. Structured exercise training, especially aerobic and resistance training, provided the most evidence for reducing fatigue and improving functional capacity. Self-care training, including energy management, symptom monitoring, and activity regulation, was associated with sustained reductions in fatigue in several studies. Cognitive behavioral therapy and mindfulness techniques showed significant effects in patients whose fatigue was associated with anxiety, depression, or sleep disturbance. Improving sleep hygiene and treating sleep apnea also

played an important role in reducing daytime fatigue. Regarding pharmacological interventions, treating anemia and optimizing heart failure treatment with drugs such as β-blockers, RAAS inhibitors, and SGLT2 inhibitors significantly reduced fatigue by improving cardiac function.

Conclusion

Managing fatigue in heart failure requires a multidimensional, person-centered approach. The most robust evidence of effectiveness is for non-pharmacological interventions such as physical activity, self-care training, sleep improvement, and psychological interventions. Pharmacological approaches, such as anemia treatment and heart failure drug therapy optimization, play an important complementary role. Overall, the results indicate that a combination of physical, psychological, and pharmacological interventions provides the best therapeutic response.

Keywords

Fatigue heart failure non-pharmacological strategies

Bioengineered Conductive Cardiac Patches for Heart Failure–Associated Arrhythmias: Electrophysiologic Integration, Biomaterial Innovations, and Translational Barriers

Narges Forouzideh, Alireza Maboudi

Assistant-professor, Pharmaceutics, Zanjan University Of Medical Sciences, Zanjan,
Doctoral-degree, Department Of Pharmaceutics, Zanjan University Of Medical Science, Zanjan,

forouzideh.team@gmail.com

Introduction

Heart failure (HF) is accompanied by profound electrical remodeling characterized by conduction slowing, gap junction disruption, fibrosis-driven anisotropy, and heightened susceptibility to atrial and ventricular arrhythmias. These abnormalities create structurally heterogeneous substrates that are poorly corrected by current pharmacologic or device-based therapies. Bioengineered cardiac patches, particularly those integrating conductive nanomaterials such as carbon nanotubes, graphene derivatives, gold nanowires offer a mechanistically targeted strategy to restore synchronous electrical propagation while simultaneously supporting myocardial structure. Conductive scaffolds enhance connexin-43 organization, improve action potential continuity, and mechanically stabilize the failing myocardium, addressing electrophysiologic defects that conventional regenerative patches or CRT alone cannot correct.

Materials and Methods

A narrative synthesis of studies published between 2018–2025 was conducted using PubMed, Scopus, and Web of Science. Eligible studies included preclinical HF models (pressure overload, chronic MI, ischemia–reperfusion), electroanatomical mapping analyses, and biomaterial-based interventions designed to restore myocardial conduction. Articles evaluating non-conductive or exclusively cellular patches were excluded to preserve a conductivity-focused perspective.

Results

Conductive biomaterials consistently improved conduction velocity, reduced inducible ventricular arrhythmias, and enhanced electrical coupling within fibrotic HF myocardium. Carbon-based constructs promoted anisotropic conduction and supported endogenous cardiomyocyte excitability, while metal-nanowire and MXene-hybrid scaffolds facilitated rapid charge transfer, increased Cx43 expression, and bridged conduction gaps. Incorporation of stem cells, angiogenic cues, or controlled release of anti-fibrotic/anti-arrhythmic agents further augmented regenerative and electrophysiologic outcomes. Despite these advances, persistent challenges include limited long-term conductivity, immune reactivity to nanomaterials, inadequate vascularization, and difficulties in scaling patch architecture for human ventricles.

Conclusion

Conductive cardiac patches represent a promising next-generation platform for treating HF-associated arrhythmias by unifying structural support, electrophysiologic resynchronization, and regenerative signaling. However, translation remains constrained by material–immune interactions, durability concerns, and manufacturing barriers. Future progress will require clinically scalable biomaterials, advanced computational design, and rigorous early-phase trials to define safety, integration, and anti-arrhythmic efficacy in human HF populations.

Keywords

Patches, Heart failure, Biomaterials, Arrhythmias

Evalution of Anxiety Levels in Patients Candidate for Coronary Angiography

Elahe Arabameri, Hedayat Jafari

masters-degree, Nasibeh School Of Nursing And Midwifery, Mazandaran University Of Medical Sciences, Sari, Professor, Nasibeh School Of Nursing And Midwifery, Mazandaran University Of Medical Sciences, Sari,

amerii.elaheh@gmail.com

Introduction

Coronary Angiography (CAG) is a diagnostic procedure for heart diseases. This invasive method often induces significant levels of anxiety in patients. Anxiety is a risk factor that can complicate the procedure for these patients. The purpose of this study was to investigate the levels of anxiety in patients undergoing coronary angiography.

Materials and Methods

In this study, 80 patients scheduled for Coronary Angiography at the Mazandaran Heart Center were recruited using a convenience sampling method. The demographic questionnaire and the Spielberger State-Trait Anxiety Inventory (STAI) were used to measure patient anxiety. Data analysis was performed using SPSS 26. Data normality was assessed using the Kolmogorov-Smirnov test, and for data analysis, Pearson's correlation coefficient, independent samples t-test, and ANOVA were employed.

Results

The mean age of the participants was 59.39±10.40 years. The majority were male (52.5%), married (72.5%), city residents (53.8%), and had a middle economic status (83.8%). The mean scores for anxiety were: State Anxiety (manifest anxiety) 58.05±6.78, Trait Anxiety (latent anxiety) 57.08±5.71, and Total Anxiety 115.13±11.38. State anxiety (P=0.003), trait anxiety (P=0.002), and total anxiety (P<0.001) were significantly higher in women compared to men. Anxiety scores (state, trait, and total) showed no significant difference with age, marital status, or economic status (P>0.05).

Conclusion

The results indicate that the anxiety levels in patients undergoing angiography were moderate to high. Given the potential negative complications of anxiety on these patients, nurses should assess patient anxiety levels before the procedure and implement appropriate interventions to reduce anxiety and its complications associated with the angiography intervention.

Keywords

Anxiety, Coronary Angiography

AI-Based Predictive Monitoring and Personalized Care Model for Heart Failure Patients: Integration of Clinical, Caregiver, and Medication Data to Optimize Nursing Interventions

Vahede Salehi Zade, Fatemeh Bakhshi

Masters-degree, Nursing, Shahid Sadoughi University Of Medical Sciences, Yazd,
Assistant-professor, Nursing, Shahid Sadoughi University Of Medical Sciences, Yazd,

v.salehi755@gmail.com

Introduction

Heart failure (HF) readmissions remain a major burden. Current remote monitoring and nurse-led follow-up often fail to provide timely risk detection and personalized action. AI-enabled predictive monitoring could address these gaps. This review aimed to synthesize recent evidence on AI-integrated monitoring models involving nurses to inform the design of a future personalized HF care framework.

Materials and Methods

A focused narrative review (2023–2025) was conducted using major biomedical databases, including PubMed/MEDLINE, Embase, Scopus, Web of Science, CINAHL, and Cochrane Library. MeSH-based keywords included “Heart Failure”, “Telemonitoring”, “Machine Learning”, “Artificial Intelligence”, “Nurse Clinicians”, and “Remote Consultation”. Two reviewers independently screened titles/abstracts and evaluated full texts based on inclusion criteria: (1) use of predictive AI or rule-based systems for clinical deterioration, (2) integration with remote or home monitoring, and (3) explicit nurse involvement in triage, follow-up, or intervention. Disagreements were resolved by a third senior reviewer. Quality appraisal was performed using the Mixed Method Appraisal Tool (MMAT) according to the study design. Data extracted included study methodology, patient/caregiver inputs, monitoring parameters, modeling approach (rules/ML), nursing workflow integration, clinical/process outcomes, and implementation barriers. Evidence was narratively synthesized to identify essential components and current gaps informing future AI-supported nurse-led HF monitoring models.

Results

From 1,236 records identified across major databases, 1,012 remained after duplicate removal. Following title/abstract screening, 46 full texts were assessed, and five studies met the inclusion criteria. Synthesizing resulted in four themes: Predictive Accuracy and Early Risk Detection, where AI/ML models consistently identified early signs of HF deterioration and reduced manual data review workload; Enhancement of Nurse-Led Triage and Intervention, in which alerts triggered timely nursing follow-up, education, and medication adjustments, improving adherence to guideline-directed therapy; Operational and Implementation Barriers, including data quality variability, limited digital literacy among

older adults, need for interpretable AI outputs, and privacy/regulatory concerns; Converging Data Inputs for Model Design, highlighting consistent use of baseline clinical data, daily vitals, patient- and caregiver-reported symptoms, medication adherence logs, and nursing actions.

Conclusion

This review indicates that integrating AI-based predictive monitoring with structured nurse-led interventions can enhance early detection of HF deterioration, optimize care delivery, and improve adherence to guideline-directed therapy. However, evidence remains limited and primarily observational. Future research should focus on rigorously designed pilot studies or RCTs to quantify clinical and process outcomes, implement hybrid rule-plus-ML models with transparent, interpretable outputs, ensure standardized high-quality home monitoring data, address digital literacy for older adults, and establish robust privacy and governance frameworks to support scalable, evidence-based personalized HF care.

Keywords

HeartFailure; Telemonitoring; ArtificialIntelligence; NurseClinicians; RemoteConsultation

Financial Toxicity in Heart Failure: A Scoping Review of Multidimensional Determinants, Clinical Consequences, and Nurse-Led Mitigation Strategies

Mohammad Ali Mardom

doctoral-degree, Faculty Of Nursing And Midwifery, Shahid Beheshti University Of Medical Science, Tehran,

mahtabfarahanie@gmail.com

Introduction

Financial toxicity is a crucial and increasingly common issue in the management of heart failure; however, its comprehensive mapping remains limited. The purpose of this scoping review is to systematically map the extent, range, and nature of the evidence concerning financial toxicity in populations with heart failure, identify key concepts, knowledge gaps, and discuss the emerging role of nursing professionals in addressing this complex problem.

Materials and Methods

This scoping review followed the Joanna Briggs Institute's methodological approach and was reported in compliance with PRISMA-ScR guidelines. A comprehensive search was conducted through three major databases: PubMed, Scopus, Web of Science from 2015 to 2025. The search strategy combined controlled vocabulary and keywords describing "financial toxicity," "heart failure," and "nursing interventions." We included both published and gray literature. Study selection and data extraction were done by two independent reviewers using a standardized tool. Charting of the data was performed in order to summarize the key information, followed by thematic analysis and narrative synthesis.

Results

The review included 20studies involving multiple study designs, including quantitative research, qualitative research, clinical trials, and systematic reviews. Evidence mapping identified four key domains: (1) Conceptual dimensions of financial toxicity (objective financial burden and subjective financial distress); (2) Multilevel determinants (policy-level, healthcare system-level, and patient-level factors); (3) Comprehensive consequences (clinical, psychological, and socioeconomic impacts); and (4) Intervention strategies (system-level solutions and care-level approaches). Key findings revealed pronounced heterogeneity in defining and measuring financial toxicity, with prevalence estimates ranging from 30-45% across diverse HF populations. Nursing roles spanned all four domains, with notable contributions to the processes of screening, patient education, care coordination, and psychosocial support.

Conclusion

he present scoping review created an evidence map of financial toxicity in heart failure that is comprehensive, complex, and multifaceted, with significant consequences on patient outcomes and healthcare systems. These findings emphasize the dire need for standardized definitions, validated assessment tools, and targeted interventions. Because of their integral role in the care and navigation of patients within systems, nursing professionals are in a unique position to lead multidisciplinary efforts forward in addressing financial toxicity. Future research should focus on developing nurse-sensitive outcomes and testing implementation strategies for financial toxicity assessment and management in routine HF care.

Keywords

Financial toxicity, heart failure, nursing

Systematic Literature Review: Cascade Genetic Testing in Long QT Syndrome

Babak Babaei, Zahra Darabi, fatemeh Karami

bachelores-degree, Student Research Committee, Ilam University Of Medical Sciences, Ilam,
masters-degree, Faculty of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran,

babak.babaei.80@gmail.com

Introduction

Long QT Syndrome (LQTS) is an inherited cardiac arrhythmia disorder characterized by prolonged ventricular repolarization, predisposing affected individuals to life-threatening ventricular arrhythmias and sudden cardiac death. Cascade genetic testing, a systematic approach to identifying at-risk relatives of affected probands, has emerged as a critical strategy for early detection and preventive management. This systematic literature review synthesizes current evidence on the effectiveness, implementation, and outcomes of cascade genetic testing programs in LQTS. Objective: To comprehensively evaluate the evidence on cascade genetic testing in LQTS, including diagnostic yield, clinical outcomes, implementation strategies, barriers to uptake, cost-effectiveness, and psychosocial considerations.

Materials and Methods

A systematic search was conducted across multiple databases, including SciSpace, PubMed, and Google Scholar, from 2000 to the present. Search strategies combined terms related to cascade screening, genetic testing, family screening, and LQTS. Two independent researchers reviewed the titles and abstracts of the identified articles. Inclusion criteria encompassed studies involving human participants with LQTS undergoing cascade genetic testing, including randomized controlled trials, cohort studies, case-control studies, and cross-sectional studies. Exclusion criteria eliminated case reports, editorials, animal studies, and non-peer-reviewed literature.

Results

Ninety-four unique papers were examined. Cascade genetic testing provides significant clinical benefits for families with Long QT Syndrome (LQTS). Diagnostic rates for index cases vary from 15% to 72% based on population evaluation. Among relatives of genotype-positive individuals, carrier rates are between 40% and 50%, with penetrance rates around 41%. Major genes involved are KCNQ1, KCNH2, and SCN5A, and founder mutations exist in 25% of certain populations. While specialized clinics have seen effective implementation, challenges remain. Family screening uptake averaged 60% after a proband diagnosis, but acceptance was lower in genotype-negative (33%) and socioeconomically disadvantaged families. Positive clinical results include more people starting beta-blocker therapy and reduced QTc intervals.

Conclusion

Cascade genetic testing in LQTS is an effective way to identify at-risk relatives and make targeted preventive interventions possible. However, implementing it comes with significant challenges such as uneven uptake, psychosocial burdens, and a lack of evidence on the best delivery models and cost-effectiveness. Future research should focus on creating interventions to boost uptake in underserved populations, carrying out formal economic evaluations, setting standardized outcome metrics, and investigating extended genomic approaches for families with hard-to-find genetic information.

Keywords

Cascade genetic testing, LQTS

Telenursing in Patients with Heart Failure: A Narrative Review

Fatemehzahra Vafaeinezhad

Masters-degree, Medical Surgical Nursing Department, School Of Nursing And Midwifery, , Tehran University Of Medical Science, Tehran,

fz.vafaeinezhad@gmail.com

Introduction

Telenursing is recognized as a modern healthcare technology system that facilitates continuous care and education for patients with chronic conditions such as heart failure. Heart failure, as a progressive and debilitating disorder, not only impacts patients' physical health but also significantly reduces their quality of life. This narrative review examines the effects of telenursing interventions on quality of life, self-care, and caregiving burden in patients with heart failure.

Materials and Methods

This narrative review was conducted between 2018 and 2025. Relevant keywords including "telenursing", "remote nursing", "heart failure" and "quality of life" were searched in key databases such as PubMed, Scopus, CINAHL, Google Scholar, EBSCOhost, Medline, Pro Quest, and Science Direct. Articles were carefully screened by titles, abstracts, and full texts in English and selected for final analysis.

Results

The reviewed studies show positive effects of telenursing on quality of life in heart failure patients. Interventions including web-based education, telephone follow-ups, mobile apps, and remote monitoring improve self-care, reduce anxiety, and enhance symptom management. This approach reduces clinical complications and improves physiological function. Telenursing decreases caregiving burdens and healthcare costs. Nurses serve as caregivers and educators, providing continuous telephonic communication key to success. Improving nurses' communication and tech skills fosters a professional, trustful nurse-patient relationship. Telenursing increases care access for patients in remote or limited mobility areas, delivering cost-effective, high-quality services. Technologies like websites, mobile apps, and voice/video calls create sustained care infrastructure, promoting better self-management and quality of life.

Conclusion

Telenursing is an effective model to improve quality of life, enhance self-care, and reduce caregiving burden in heart failure patients. Leveraging modern communication technologies facilitates continuous education and monitoring. Besides clinical benefits, this method offers cost savings and reduced caregiving demands. Health policymakers are encouraged to focus

on developing infrastructure and training nurses in telenursing to widely and effectively integrate this service into healthcare systems. Further empirical and clinical studies are warranted to continuously assess the model's effectiveness in real settings, improving patient care quality and satisfaction.

Keywords

"Telenursing", "heart failure".

Finerenone versus spironolactone: a comparison of new MRAs in HFpEF

Aliakbar Bakhshi Mofrad, Aliakbar Bakhshi Mofrad, Mohammad Moein Tootestani

other, Student Research Committee, Department Of Medicine, Student Research Committee, Department Of Medicine, Kashan,
Bachelores-degree, Student Research Committe, Department Of Nursing,, Islamic Azad University,Kashan, Kashan,

aliakbarbakhshi83@gmail.com

Introduction

Heart failure with preserved ejection fraction (HFpEF) represents 50% of heart failure cases with limited therapeutic options. Mineralocorticoid receptor antagonists (MRAs) demonstrate variable efficacy, with steroidal versus non-steroidal agents showing distinct pharmacological and clinical profiles

Materials and Methods

This review systematically evaluates comparative evidence from major randomized controlled trials (TOPCAT, FINEARTS-HF) and mechanistic studies examining spironolactone versus finerenone in HFpEF management

Results

Spironolactone in TOPCAT (n=3,445) failed its primary endpoint (HR 0.89, 95%CI 0.77-1.04, p=0.14), though Americas subgroup showed benefit. Finerenone in FINEARTS-HF (n=6,001) demonstrated 16% reduction in cardiovascular death and total heart failure events (RR 0.84, 95%CI 0.74-0.95, p=0.007). Pharmacologically, finerenone exhibits higher MR selectivity, balanced cardiac-renal tissue distribution, inverse agonist activity with distinct cofactor recruitment, and significantly lower hyperkalemia risk versus spironolactone

Conclusion

Finerenone establishes a new therapeutic paradigm for HFpEF, offering superior efficacy and safety compared to traditional steroidal MRAs

Keywords

HFpEF, MRAs, Finerenone

CRISPR-Based Gene Editing for Hypertrophic Cardiomyopathy Treatment: A Systematic Literature Review

Babak Babaei, Zahra Darabi, Ali Darabi

bachelores-degree, Student Research Committee, Ilam University Of Medical Sciences, Ilam, Bachelores-degree, Faculty Of Nursing And Midwifery, Shahid Beheshti University Of Medical Sciences, Tehran, Iran, Tehran,

babak.babaei.80@gmail.com

Introduction

Hypertrophic cardiomyopathy (HCM) is the most common inherited cardiac disorder, affecting approximately 1 in 500 individuals worldwide. It is primarily caused by pathogenic variants in sarcomeric genes, particularly MYBPC3 and MYH7, leading to left ventricular hypertrophy, diastolic dysfunction, arrhythmias, and sudden cardiac death. Current treatments are symptomatic and do not address the underlying genetic defects. CRISPR-based gene editing technologies offer unprecedented opportunities for precision genetic correction and hold promise as curative therapies for HCM.Objective: This literature review aimed to examine the current state of CRISPR-based gene editing methods for treating HCM. It looked at the types of CRISPR systems used, the genetic targets, the therapeutic results, the safety profiles, and the potential for real-world application.

Materials and Methods

A systematic search was conducted across multiple databases, including SciSpace (standard and full-text searches), Google Scholar, and PubMed from January 2012 to November 2025. Search terms included combinations of “CRISPR,” “gene editing,” “hypertrophic cardiomyopathy,” “MYBPC3,” “MYH7,” “base editing,” “prime editing,” and “sarcomeric genes.” Inclusion criteria encompassed peer-reviewed original research articles investigating CRISPR-based gene editing techniques for HCM in human clinical trials, preclinical studies, in vitro/in vivo models, and studies targeting HCM-associated genes published in English. Exclusion criteria included non-CRISPR gene editing technologies, non-HCM cardiomyopathies, conference abstracts, editorials, and non-peer-reviewed publications.

Results

A review of 42 articles showed promising CRISPR techniques for treating hypertrophic cardiomyopathy (HCM). Adenine base editors (ABE8e, ABEmax-NG) had notable preclinical success, achieving over 70% editing efficiency in ventricular cardiomyocytes while keeping normal cardiac function in MYH7 R403Q mouse models. Base editing effectively corrected harmful variants in patient-derived iPSC cardiomyocytes with minimal

off-target effects. Homology-directed repair (HDR) methods improved MYBPC3 allele correction, restoring protein levels and normalizing cardiac phenotypes despite low efficiency. RNA-targeting strategies with evolved Cas13d variants achieved specific suppression of mutant transcripts, reducing cardiac hypertrophy in mouse models. Epigenetic editing using dCas9-based systems lowered mutant allele expression without impacting total gene expression, reversing HCM-related issues. AAV9 vectors were mainly used for delivery, raising concerns about off-target edits and toxicity.

Conclusion

CRISPR-based gene editing technologies, especially adenine base editing and allele-specific RNA suppression, show great potential for treating HCM in preclinical models. These methods can achieve high editing efficiencies, restore functional phenotype, and maintain acceptable safety in both cellular and animal models. However, there are still major challenges to overcome before moving to clinical use. These include improving delivery systems that target the heart, validating long-term safety, increasing scalability for various pathogenic variants, and developing a clear regulatory pathway. So far, no human clinical trials for CRISPR-based HCM treatment have been reported. Future research should focus on large-animal efficacy studies, long-term safety assessments, creating better non-viral delivery methods, and evaluating a wide range of HCM-causing variants to push these promising therapies toward clinical use.

Keywords

CRISPR-Cas9, hypertrophic cardiomyopathy, gene editing

Genetic Variants Influencing β-Blocker Efficacy in Cardiac Arrhythmia: A Systematic Literature Review

Babak Babaei, Zahra Darabi, fatemeh Karami

bachelores-degree, Student Research Committee, Ilam University Of Medical Sciences, Ilam,
masters-degree, Faculty of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran,

babak.babaei.80@gmail.com

Introduction

β-blockers constitute a mainstay of pharmacological management for cardiac arrhythmias; however, clinical response exhibits notable reciprocal variability. Pharmacogenomic approaches offer promise for personalizing therapy by identifying genetic variants that influence drug efficacy. This systematic literature review comprehensively evaluates current evidence on genetic determinants of β-blocker response in cardiac arrhythmia management.

Materials and Methods

A systematic search was conducted across five databases (Scopus, PubMed, Web of Science, Google Scholar, and SciSpace) in 2025 using MeSH terms and the PICO framework, including keywords “Cardiac Arrhythmia”, “β-Blocker”, and “pharmacogenomics”. Studies investigating genetic variants and β-blocker efficacy in cardiac arrhythmias were included. Inclusion criteria encompassed human studies with arrhythmia-specific outcomes, genetic/pharmacogenomic analyses, and peer-reviewed publications from 2000-2025. Exclusion criteria eliminated case reports, animal-only studies, and non-arrhythmia-focused research. Two independent researchers reviewed the titles and abstracts of the identified articles. Disagreements were resolved through discussion, and a consensus was reached. 39 studies were included in the review.

Results

The ADRB1 Arg389Gly genotype was the most clinically important genetic risk predictor, with 74% relative reduction in atrial fibrillation with bucindolol for Arg389 homozygotes and no benefit for Gly389 carriers. A deletion of ADRA2C 322-325 is associated with bucindolol response via interactions with ADRB1. There are weak associations with heart rate response (2-5 bpm) but uncertain clinical significance for arrhythmia outcomes of ADRB2 polymorphisms (Arg16Gly, Gln27Glu).

Disease genotype dictates response to β-blockers in patients with de novo varrhythmia syndromes: LQT1 patients respond well (97% event-free survival), LQT2 intermediate (77%), and LQT3 very poorly. Nonselective β-blockers (nadolol, propranolol) have particular benefits over selective agents in LQTS and CPVT. Location of RYR2 variant determines risk of events in CPVT patients even under β-blockade.

Conclusion

Genetic polymorphisms have a major influence on β-blocker efficacy in cardiac arrhythmias, and there is strong evidence that treatment can be guided by ADRB1 Arg389Gly as a 'treatable' pharmacogenetic marker.G216; this genotype-guided therapy for inherited arrhythmia syndromes. Nonetheless, most data come from specific drugs (bucindolol) and populations (European ancestry), potentially limiting generalization. Major challenges for clinical adoption are the absence of prospective genotype-guided trials, drug-dependent effects, lack of ethnic variability in research cohorts, and lack of cost-benefit analyses.

Future research needs include prospective randomized trials of genotype-guided β-blocker selection, studies in diverse populations with frequently used agents, extensive polygenic profiling and utilization of implementation science methodologies

Keywords

pharmacogenomics, β-blockers, cardiac arrhythmia

Neutrophil-to-Lymphocyte Ratio and Lipid Profile as Predictors of Coronary Artery Disease Severity and Potential Precursors of Heart Failure

Faezeh Golvardi Yazdi, Zahra Abbasi Dolatabadi

masters-degree, Emergency Nursing, Tehran University of Medical Science, Tehran,
Associated-professor, Of Medical Surgical Nursing, Tehran University Of Medical Science, Tehran,

faezeh.golvardi@gmail.com

Introduction

Cardiovascular disease (CVD) remains the leading cause of mortality worldwide and a growing public health issue in Iran. Among the established risk factors, dyslipidemia and systemic inflammation play pivotal roles in the pathogenesis of coronary artery disease (CAD). The lipid profile, including total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), and triglycerides (TG), reflects metabolic risk, while inflammation can be evaluated through simple hematologic indices. The neutrophil-to-lymphocyte ratio (NLR), derived from a routine complete blood count, has emerged as a cost-effective biomarker of systemic inflammation and adverse cardiovascular outcomes. This study aimed to assess the association of NLR and lipid profile parameters with the severity of CAD, as potential predictors for extensive coronary involvement and ischemic heart failure risk

Materials and Methods

This cross-sectional study included adults aged 35–75 years undergoing coronary angiography at Afshar Heart Hospital, Yazd. Fasting blood samples obtained prior to angiography were analyzed for fasting blood glucose, lipid profiles (TC, LDL-C, HDL-C, TG), and complete blood count (CBC). NLR was calculated as the ratio of neutrophil to lymphocyte counts. Patients with recent infection, inflammatory or rheumatologic disease, or anti-inflammatory drug use were excluded. The severity of CAD was quantified using the Gensini and SYNTAX scores. Statistical analysis was conducted using SPSS version 20.0. Group comparisons used t-test, Mann–Whitney U, chi-square, or Fisher's exact test. Multivariate logistic regression, adjusted for age, sex, and major cardiovascular risk factors, identified independent predictors of CAD severity. A p-value <0.05 was considered significant.

Results

A total of 262 patients (mean age 57.3 ± 8.9 years; 58% male) were analyzed. Patients with higher CAD severity had significantly higher NLR and LDL-C levels. Mean NLR was 2.90 ± 2.10 in the Gensini ≥ 23 group vs 2.28 ± 2.42 in < 23 ($p = 0.03$), and 3.41 ± 2.51 in SYNTAX ≥ 22 vs 2.36 ± 2.18 in < 22 ($p = 0.002$). Fasting blood sugar and LDL-C were also elevated in high-severity groups (FBS: 140.1 ± 53.6 vs 118.2 ± 51.8 mg/dL, $p < 0.001$; LDL-C: 106.4 ±

47.0 vs 92.9 ± 39.6 mg/dL, p = 0.01). After adjusting for confounders, NLR > 3 remained an independent predictor of severe CAD (SYNTAX ≥ 22: OR = 2.85, 95% CI 1.32–6.18, p = 0.008; GENSINI ≥ 23: OR = 2.26, 95% CI 1.17–4.38, p = 0.02). Elevated LDL-C also showed a significant association with higher Gensini scores (OR = 1.01, p = 0.01).

Conclusion

Elevated Neutrophil-to-Lymphocyte Ratio (NLR >3) and LDL-C are significant and independent predictors of severe coronary artery disease. The robust association between a high NLR and extensive coronary atherosclerosis underscores its potential utility as a readily accessible inflammatory biomarker for identifying patients at elevated risk for progressive heart failure. The integration of NLR into standard risk stratification protocols could enhance the early detection and facilitate targeted management of CAD patients who are prone to adverse cardiac outcomes.

Keywords

NLR ; CAD; LipidProfile; Inflammation; HeartFailure

Association Between Coronary Artery Disease Burden and Renal Function in Patients Undergoing Coronary Angiography: A Cross-Sectional Cardio-Renal Analysis

Faezeh Golvardi Yazdi, Zahra Abbasi Dolatabadi

masters-degree, Emergency Nursing, Tehran University of Medical Science, Tehran,
Associated-professor, Of Medical Surgical Nursing, Tehran University Of Medical Science, Tehran,

faezeh.golvardi@gmail.com

Introduction

Renal dysfunction is a well-established predictor of adverse cardiovascular outcomes, and the interaction between impaired kidney function and coronary artery disease (CAD) severity plays a pivotal role in the progression of cardio-renal disorders. Given the high prevalence of renal impairment among patients with CAD, understanding this relationship may improve early risk stratification. This study aimed to evaluate the association between the extent of coronary artery stenosis—using SYNTAX and Gensini scores—and renal function indices in patients undergoing coronary angiography.

Materials and Methods

This cross-sectional study included 512 adults undergoing coronary angiography at Afshar Heart Center (Yazd, Iran). CAD severity was assessed using SYNTAX and Gensini scores. Renal function indices included eGFR (CKD-EPI), serum creatinine, and urea. Correlation testing, ANOVA, and multivariable linear regression were performed with adjustment for age, sex, diabetes, hypertension, and smoking

Results

The mean age was 56.2 ± 11.3 years, and 54% were male. Higher SYNTAX scores were significantly associated with lower eGFR ($r = –0.34$, $p < 0.001$) and higher creatinine ($r = 0.31$, $p = 0.004$). A similar pattern was observed for the Gensini score. eGFR progressively declined across SYNTAX severity groups (85.1 → 76.8 → 65.3 mL/min/1.73m²; $p < 0.001$). In multivariable analysis, SYNTAX score, age, diabetes, hypertension, and male gender independently predicted reduced eGFR ($R^2 = 0.42$). CKD prevalence was 18.4% overall and significantly higher in severe CAD (32.7% vs. 8.9%).

Conclusion

Greater coronary atherosclerotic burden is strongly and independently associated with impaired renal function. Early assessment of renal function in patients with moderate-to-severe CAD may aid in preventing progression to advanced cardio-renal dysfunction

Keywords

CoronaryArteryDisease; SYNTAXScore; GensiniScore; RenalFunction; Cardio-RenalSyndrome.

Effect of Fan Therapy on Clinical Outcomes in Patients With Heart Failure

Maryam Shaarbaf khiabani, Imaneh Bagheri

masters-degree, Department Of Medical-Surgical NursingDepartment of Gerontological Nursing, Shahid Sadoughi University Of Medical Sciences (SSU), Yazd,
assistant-professor, Department of Medical-Surgical Nursing, Shahid Sadoughi University Of Medical Sciences (SSU), Yazd,

sharbafmaryam3@gmail.com

Introduction

Heart failure (HF) is a prevalent chronic cardiovascular condition characterized by symptoms such as dyspnea, fatigue, reduced oxygen saturation, increased respiratory rate, and sleep disturbances. Despite pharmacological management, many patients continue to experience persistent shortness of breath, leading to poor sleep quality. Fan therapy, a simple, low-cost, non-pharmacological intervention, has been proposed to improve respiratory parameters by stimulating facial cooling receptors. This systematic review aimed to evaluate the effect of fan therapy on clinical outcomes in patients with HF.

Materials and Methods

A systematic search of PubMed, Scopus, Web of Science, and SID was conducted for studies published up to 2025 using the keywords: “Dyspnea,” “Congestive Heart Failure,” “Hand-held fan,” “Fan therapy,” “CHF,” “SpO_2,” “Heart failure,” “Acute Decompensated,” and their Persian equivalents. Inclusion criteria encompassed Persian and English studies involving HF patients. After duplicate removal and quality assessment, five studies were included in the final analysis. Study selection, data extraction, and synthesis followed ethical guidelines and PRISMA standards.

Results

Results: Fan therapy was found to reduce dyspnea severity, decrease respiratory and heart rates, improve breathing patterns, and enhance oxygen saturation in patients with HF

Conclusion

Given its safety, ease of use, low cost, and feasibility for independent or nurse-assisted application, fan therapy is a promising complementary approach in HF management. Nevertheless, due to the predominance of case studies and case reports, further research with robust study designs is warranted.

Keywords

HeartFailure HandheldFan FanTherapy Dyspnea SpO_2

The impacts of Peer Support on Quality of Life and Self-Care in Patients with Implantable Cardiac Electronic Devices: a non-randomized controlled trial

Hanieh KordiKalaki, Mahdi Nabi Foodani, Sahar Khoshkesht, Reza Molazadeh, Zahra Abbasi Dolatabadi

Associated-professor, Imam-Khomeini Medical Center, Tehran University Of Medical Sciences, Tehran,
Associated-professor, Of Medical Surgical Nursing, Tehran University Of Medical Science, Tehran,

hanieh.kordi@gmail.com

Introduction

Background

Cardiac diseases, including various types of arrhythmias, significantly affect patients' survival and quality of life. Although implantable cardiac electronic devices are essential for treatment, they pose physical, psychological, and social challenges that can impact both quality of life and self-care. Therefore, identifying effective strategies to alleviate these burdens is crucial. This study examines the impact of peer support on improving quality of life and promoting self-care among patients with such devices.

Materials and Methods

Methods

This non-randomized controlled trial enrolled 60 patients eligible for CIED implantation, who were assigned to either a peer-support intervention group or a usual care group. The intervention consisted of a 4-week peer-support program followed by an 8-week observational follow-up. Three peer mentors, each with a CIED implanted for at least six months, were trained in a two-hour workshop prior to the intervention. The primary outcome, Quality of Life (QOL), and the secondary outcome, self-care, were evaluated using the CIED-specific Assessment of Quality of Life and Related Events (AQUAREL) questionnaire and the Miller Self-Care Questionnaire at baseline, and at 4- and 8-weeks post-intervention. Data analysis included both descriptive and inferential statistics, using tests such as Kolmogorov–Smirnov, independent t-tests, chi-square tests, and non-parametric methods including the Mann–Whitney U and Wilcoxon signed-rank tests, conducted via SPSS version 25.

Results

Results

Results showed that the peer-support group demonstrated significantly greater improvements in chest discomfort ($F = 20.26$, $p < 0.001$), dyspnea on exertion ($F = 20.30$, $p < 0.001$), arrhythmias ($F = 33.50$, $p < 0.001$), and cognitive function ($F = 8.43$, $p = 0.005$) compared to

the control group. Similarly, the mean self-care score improved from 67.10 ± 13.79 to 68.96 ± 10.91 in the control group and from 69.56 ± 11.42 to 88.43 ± 6.81 in the intervention group ($p < 0.01$).

Conclusion

Conclusion

Peer support interventions in patients with CIEDs have significantly improved quality of life and enhanced self-care behaviors. This approach may serve as a complementary strategy within the therapeutic pathway for these patients.

Keywords

Peersupport Quality of Life Selfcare

The role of telenursing in enhancing treatment regimen adherence in patients with heart failure: a narrative review

Fatemeh Rashidi, Mohammad Abbasi, Niloofar Ahmadi, Faezeh Rashidi

Masters-degree, Medical-Surgical Nursing, Iran University Of Medical Sciences, Tehran,
bachelores-degree, Student Research Committee, Ilam University Of Medical Sciences, Ilam,

frashidi.nursing@gmail.com

Introduction

Adherence to treatment regimen is one of the main challenges in patients with heart failure, and non-adherence to treatment is associated with increased frequency of hospitalizations, decreased quality of life, and exacerbation of patients' symptoms. With the expansion of communication technologies, telenursing has emerged as a new approach to providing remote care. It can play an essential role in promoting self-care and increasing treatment adherence. This study aimed to review the available evidence on the use of telenursing to improve adherence to treatment regimens in patients with heart failure.

Materials and Methods

In this narrative review, published studies on telenursing and treatment adherence in heart failure patients were identified by searching the PubMed, Scopus, Web of Science, CINAHL, SID, and Magiran databases using the search terms such as "telenursing", "heart failure", "treatment adherence", and their Persian equivalents. English- and Persian-language articles published between 2010 and 2025 were included in the study. From about 95 initial articles, after removing duplicates and assessing the full text, 12 final eligible articles were extracted and analyzed narratively. The quality of the studies was evaluated using the Joanna Briggs Institute (JBI) tool.

Results

The results showed that telenursing interventions, including nurse phone calls, mobile messaging, self-care mobile-based apps, and home monitoring systems, significantly improved patients' medication adherence, symptom control, diet adherence, physical activity regulation, and follow-up visits. Ongoing education, medication reminders, the use of self-care apps for daily weight and vital signs monitoring, and establishing a supportive relationship between the patient and nurse were reported as the most important factors affecting patient adherence. Remote monitoring and supportive telephone consultations played an essential role in strengthening the patient's connection with the treatment team and improving treatment adherence.

Conclusion

The findings indicate that telenursing is an effective and reliable tool for improving patient adherence to heart failure treatment regimens and can be used as part of routine care,

especially in high-risk patients who may not be able to visit their doctors regularly due to limited in-person visits. Expanding communication infrastructure and designing standardized telenursing programs can improve clinical outcomes for this vulnerable population.

Keywords

Telenursing treatment adherence heart failure

Relationship between serum uric acid level on outcome in acute decompensated heart failure (ADHF) patients in opium-addicted patients

Mohamad Reza Zare-Khormizi

Doctoral-degree, School Of Medicine, Shahid Sadoughi Yazd, Yazd,

mhmdrez.zare@gmail.com

Introduction

Introduction: Hyperuricemia is a prognostic factor in patients with chronic heart failure, however the prognostic impact of hyperuricemia in patients with opium-addicted acute decompensated heart failure (ADHF) is poorly understood. The aim of this study was to investigate the relationship between serum uric acid level and short-term prognosis of ADHF in opium-addicted patients

Materials and Methods

In this prospective cohort study, the serum uric acid level of 109 ADHF patients and opium addicts who met the inclusion criteria were measured. Patients were divided into two groups, normal and high, based on the serum level of uric acid (UA). UA and related indicators, duration of hospitalization, in-hospital mortality, and 1-month follow-up mortality were investigated. Data were analyzed by SPSS 26 software with P value less than 0.05

Results

The results of our study showed that the level of uric acid higher than 7 mg/dL in patients with ADHF and opium addicts increased in-hospital mortality ([OR] 3.04; 95% [CI], 1.30-8.80). Also, despite more deaths within a month in patients with high UA (5.7%) compared to patients with normal UA (4.5%), this difference was not significant. (P.value ~ 0.56, respectively).

Conclusion

The serum UA level was an independent predictor in opium addicts' patients who were hospitalized during an emergent situation for AHF. An elevated serum UA level on admission was associated with BMI and age.

Keywords

Uricacid, heart failure, mortality, Opium

Individualized, Multidisciplinary Nursing Rehabilitation for Older Patients with Heart Failure: Past Findings, Current Gaps, and Future Directions

Fatemeh Bakhshi, Zahra Akrami, Shirin Ranjbar

Masters-degree, Nursing And Midwifery School, Shahid Sadoughi University Of Medical Sciences, Yazd, Masters-degree, Research Center For Nursing And Midwifery Care, Comprehensive Research Institute For Maternal And Child Health, Department Of Nursing, School Of Nursing And Midwifery, Shahid Sadoughi University Of Medical Sciences, Yazd,

fateme.bakhshii@gmail.com

Introduction

Older adults with heart failure (HF) confront complex, coexisting functional, cognitive, and social needs that conventional, single-discipline rehabilitation programs often fail to address. Nursing-led rehabilitation, when individualized and embedded within a multidisciplinary care framework, can align self-care support, physiological optimization, and psychosocial interventions with patients' contextual needs. However, evidence remains dispersed across settings and study designs, limiting the synthesis of effective, scalable models. To map and synthesize contemporary evidence on individualized, multidisciplinary nursing rehabilitation for older adults with HF, identify practical components and outcomes, characterize implementation barriers, and propose priorities to inform trials and practice translation.

Materials and Methods

A structured narrative review was performed in PubMed/MEDLINE, Embase, Scopus, Web of Science, and CINAHL for studies published 2017–2025. MeSH/subject terms included: "Heart Failure", "Rehabilitation", "Geriatric Nursing", "Multidisciplinary Approach", "Patient-Centered Care", "Individualized Medicine", "Self-Management", and "Telemedicine". Search yielded 1,284 records; 1,043 remained after duplicate removal. Following title/abstract screening, 72 full texts were assessed, and 18 studies met the inclusion criteria (nurse-led or nursing-centered individualized rehabilitation with documented multidisciplinary interaction or coordination). Two reviewers independently screened, extracted data, and appraised quality using the Mixed Method Appraisal Tool (MMAT); a third senior reviewer resolved disagreements. A thematic narrative synthesis integrated quantitative and qualitative findings across intervention components, delivery modes, measured outcomes (health-related quality of life, self-care, physiological parameters, readmission), and implementation factors.

Results

The included studies were heterogeneous but converged on four principal themes. (1) Personalization within multidisciplinary care: Effective programs combined individualized assessments with coordinated inputs from nursing, physiotherapy, nutrition, and behavioral

health. (2) Core intervention components: Models featured tailored education and coaching, symptom- and responsive plans, medication adherence support, and continuity across transitions, often enhanced by remote follow-up. (3) Outcomes: Improvements were observed in self-care behaviors, daily functions, and quality of life; physiological indicators also improved. Evidence for sustained reductions in readmission remained mixed, constrained by small samples and short follow-up. (4) Implementation gaps: Deficits included underrepresentation of multimorbid elders, variable multidisciplinary coordination, limited adoption of digital tools, sparse reporting on fidelity and cost-effectiveness, and methodological heterogeneity.

Conclusion

Individualized nursing rehabilitation delivered within multidisciplinary frameworks shows promise for improving functional and patient-centered outcomes in older HF patients, but robust evidence on hard clinical endpoints is insufficient. Priority actions include: (1) developing Individualized self-care rehabilitation program bundles that specify multidisciplinary roles and fidelity metrics; (2) piloting well-powered, pragmatic randomized controlled trials incorporating frailty- and multimorbidity-stratified designs; (3) embedding digital monitoring and decision-support to enable dynamic personalization; and (4) conducting process and economic evaluations to support scalable implementation and policy uptake.

Keywords

Heart Failure Rehabilitation Geriatric Nursing

Effectiveness of Peer-Supported Care Interventions on Medication Adherence and Lifestyle Modification in Patients with Chronic Heart Failure: A Systematic Review

Zahra Kafshgar, Mahsa Khedmatizare, Arghavan Namdari

masters-degree, Department of Medical-Surgical Nursing, Tehran University Of Medical Sciences, Tehran,
Masters-degree, Department Of Medical-Surgical Nursing, Tehran University Of Medical Sciences, Tehran,

zahrakafshgar.edu@gmail.com

Introduction

Chronic heart failure (CHF) continues to be a major global health concern, leading to high rates of hospitalization, morbidity, and mortality. Successful management of this condition relies largely on patients' adherence to prescribed medications and their engagement in healthy lifestyle practices, including proper dietary habits, regular physical activity, and vigilant symptom tracking. Peer-supported care—delivered by individuals who share similar illness experiences—has emerged as a promising approach to providing emotional, motivational, and practical guidance that may strengthen self-care behaviors. This systematic review aimed to investigate the impact of peer-supported care interventions on improving medication adherence and promoting lifestyle modifications in individuals with chronic heart failure.

Materials and Methods

A thorough systematic search was performed in PubMed, Scopus, EMBASE, Web of Science, Google Scholar, and the Cochrane Library for studies published from 2015 to 2025. The search strategy incorporated keywords such as "heart failure," "peer-support," and "medication adherence," . Eligible studies were identified based on predefined inclusion and exclusion criteria, emphasizing interventional designs—including randomized controlled trials and controlled clinical studies—that utilized peer-supported care to enhance medication adherence or encourage lifestyle changes in adults with CHF. Studies written in languages other than English, duplicate records, unrelated articles, and papers without accessible full texts were excluded. Two independent reviewers conducted title and abstract screening, evaluated methodological quality using the Joanna Briggs Institute (JBI) appraisal tool, and extracted relevant information in accordance with PRISMA standards.

Results

The systematic search identified 214 articles, of which 9 met the eligibility criteria. Peer-supported interventions were delivered via face-to-face sessions, group meetings, telephone support, and digital platforms. Overall, these interventions led to modest but meaningful improvements in medication adherence, including higher adherence scores, fewer unintentional discontinuations, and more consistent refills. Positive effects were also observed on lifestyle behaviors, such as low-sodium diet adherence, increased physical

activity, and better symptom monitoring. Additional benefits included enhanced self-efficacy, emotional support, and patient engagement. However, variability in intervention design, peer training, duration, and outcome measures limited comparability, and a few studies reported minimal improvement, often due to small sample sizes or short follow-up.

Conclusion

Peer-supported care interventions appear to have a beneficial effect on medication adherence and the adoption of healthy lifestyle behaviors in patients with chronic heart failure. Interventions that are well-structured, include interactive elements, provide continuous follow-up, and utilize trained peer supporters tend to be the most effective. Nevertheless, the small number of high-quality studies and substantial variability in intervention designs underscore the need for more rigorous, standardized trials involving larger and more diverse patient populations. Future research should focus on identifying the essential components of peer support interventions and assessing their long-term clinical impact to facilitate their effective incorporation into routine heart failure care.

Keywords

Heart failure, Peer-support, Medication adherence

The Role of Value-Based Payment Models in Heart Failure Care: A Scoping Review of Nursing Outcomes for Performance, Education and Clinical Results

Mahtab Farahani, Mohammad Ali Mardom, Leila Sayadi

doctoral-degree, Faculty Of Nursing And Midwifery, Shahid Beheshti University Of Medical Science, Tehran, Associated-professor, Faculty Of Nursing And Midwifery, Tehran University Of Medical Science, Tehran,Iran, Tehran University Of Medical Science, Tehran,Iran, Tehran,

mahtabfarahanie@gmail.com

Introduction

Heart failure represents one of the most pressing issues within health systems, imposing a high level of clinical and financial burden. It is for this reason that the strategic shift in health financing toward VBP models has emerged as a timely and pivotal emphasis of nursing practice to improve care quality, enhance patient outcomes, and increase resource efficiency. Accordingly, this study aimed to review the scope of existing evidence related to the impact of VBP models on nursing performance, education, and clinical outcomes in patients with heart failure.

Materials and Methods

This scoping review adhered to the PRISMA and JBI methodological frameworks. A systematic search of PubMed, Scopus, Embase, and Web of Science was conducted with a view to retrieving studies related to value-based payment models, nursing performance, nursing education, and clinical outcomes in adult patients suffering from heart failure. Inclusion of the eligible articles was based on predefined criteria, and extracted data were analyzed in a combined qualitative and thematic method. Finally, a total of 23 articles were selected to be included in the review table.

Results

The analysis of the 23 included articles showed that value-based payment models, like Bundled Payments, Accountable Care Organizations, and Pay-for-Performance, have a critical role in improving nursing process performance and efficiency, enabling patient education, reducing rehospitalization rates, and further improving the quality of life and patient satisfaction for those with heart failure. The application of novel technologies, the empowerment of nursing teams in patient education and care coordination, and the integration of interdisciplinary care processes were some of the aspects that made these models successful.

Conclusion

These findings suggest that as value-based payment models are adopted and implemented, fundamental transformation in performance and education for nurses can indeed be achieved, along with improvement in clinical outcomes for patients with heart failure. Stronger policy support, evidence-based development of educational interventions, and the deployment of innovative technologies within nursing teams all remain preconditions for achieving value in the care of heart failure patients.

Keywords

Value-Based Payment; Nursing Outcomes

"Developing an Integrated Care Protocol for Critically Ill Patients with Heart Failure"

Mahboobe Shali

Assistant-professor, Critical Care Nursing, Tehran University Of Medical Sciences, Tehran,

mehraneshali@yahoo.com

Introduction

Acute Decompensated Heart Failure (ADHF) represents a complex clinical syndrome with high morbidity and mortality rates. It stands as one of the most common causes of hospitalization among elderly patients and imposes a significant economic burden on healthcare systems. Evidence-based and structured nursing care plays a crucial role in improving patient outcomes and reducing recurrent hospitalizations. This study aimed to develop an integrated care protocol for patients with ADHF based on robust evidence.

Materials and Methods

comprehensive search was performed across PubMed, Scopus, Web of Science, Cochrane Library, and SID databases using relevant keywords, including "Acute Decompensated Heart Failure," "ADHF," "Nursing Care Protocol," "Clinical Pathway," and their Persian equivalents, covering the period from 2018 to 2024. The PRISMA checklist was utilized for quality assessment, and the Cochrane tool was employed to evaluate the risk of bias in the included studies.

Results

Out of 1250 initially identified records, 18 studies met the eligibility criteria and were included in the final analysis. Data synthesis led to the identification of core protocol components across three distinct phases: the Acute Phase (including structured hemodynamic monitoring, calculated diuretic management, respiratory support), the Transitional Phase (comprising patient education, personalized discharge planning, service coordination), and the Follow-up Phase (encompassing remote monitoring, early cardiac rehabilitation, active follow-up). These components were integrated into a unified care protocol.

Conclusion

The proposed evidence-based protocol has the potential to standardize care processes, reduce variability in nursing practice, enhance interprofessional collaboration, and ultimately improve the quality of patient care. Implementing this protocol within the context of the

Iranian healthcare system through well-designed clinical trials and investigating its various effectiveness aspects is highly recommended.

Keywords

Heart Failure, Acute Decompensated

The Impact of Spirituality-Based Educational Intervention on Self-Care in Patients with Heart Failure: A Fourth-Generation Multi-Theory Model Approach

Morteza Mansourian, Bagher Ghobari Bonab, Manoj Sharma, Fatemeh Sadat Alavi

Professor, Department Of Social & Behavioral Health, School Of Public Health, University Of Nevada, Las Vegas (UNLV), Other, Health Promotion Research Center, Iran University Of Medical Sciences, Tehran,

fatemehsadataalavi@yahoo.com

Introduction

Heart failure is a common chronic disease that diminishes quality of life and increases healthcare costs. Given the essential role of psychological and spiritual factors in sustaining motivation for effective self-care, the Fourth-Generation Multi-Theory Model (MTM) offers a comprehensive framework for facilitating behavior change. This study aimed to evaluate the effectiveness of an MTM-based, spirituality-centered educational intervention in improving self-care behaviors among patients with heart failure.

Materials and Methods

This semi-experimental study with a pre-test/post-test control design was conducted on 80 heart failure patients at Tehran Heart Center, randomly assigned to intervention (n=40) and control (n=40) groups. Data were collected using a demographic questionnaire, a researcher-designed MTM-based tool, and the Persian Self-Care Heart Failure Index (SCHFI v6.2). The intervention included six sessions (two face-to-face, four online) targeting MTM constructs of behavior initiation, maintenance, and spiritual transformation, alongside standard hospital education. The control group received only standard education. Outcomes were assessed at baseline and three months post-intervention, with statistical analysis performed using SPSS v23 ($p<0.05$).

Results

The spirituality-based educational intervention significantly and sustainably improved self-care behaviors in heart failure patients. The intervention group showed higher scores than the control group across all self-care constructs, including Participatory Dialogue, Behavioral Confidence, Physical Environment, Emotional Transformation, Practice for Change, and Social Environment ($p \leq 0.041$). Total spiritual self-care increased from 117.63±18.67 at baseline to 138.76±16.11 at follow-up, while the control group changed minimally (116.00 to 120.50). Total self-care behavior scores rose from 46.40 to 58.83, and standardized scores from 36.97 to 55.80 in the intervention group, with negligible changes in the control group. Repeated measures ANOVA confirmed a significant time × group interaction, indicating sustained improvements in the intervention group.

Conclusion

This study demonstrated that a spirituality-based educational intervention, grounded in the Fourth-Generation Multi-Theory Model (MTM), significantly improved the self-care behaviors of patients with heart failure. The integration of cognitive, behavioral, and spiritual components enhanced patients' intrinsic motivation to initiate and sustain healthy behaviors and strengthened their self-confidence. These findings suggest that incorporating spirituality-based educational approaches and contemporary behavior change theories could serve as an effective strategy in nursing care and rehabilitation programs for heart failure patients.

Keywords

Heart failure, Self-care, Spirituality

Integrating Sustainability, Chrononutrition, and Probiotics: Effects of a Sustainable Diet, Time-Restricted Eating, and Probiotic Supplementation on NT-proBNP and Cardiac Function in Patients with HFrEF — A Double-Blind, Randomized Controlled Trial

Pegah Rahbarinejad, Sara Amini, Reza Rezvani

other, Medicine, Mashhad University of Medical Sciences, Mashhad,
associated-professor, Department of Nutrition, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad,

pegah.rahbarinejad@gmail.com

Introduction

Introduction: Heart failure (HF) affects not only the heart but also metabolism and the gut–heart axis (GHA). Integrating sustainability, chrononutrition, and probiotics may offer a novel approach to improve cardiac outcomes. Our study assessed these combined effects in heart failure with reduced ejection fraction (HFrEF) patients.

Materials and Methods

Methods: A 60-day, randomized, double-blind, placebo-controlled, three-arm clinical trial was conducted. Participants were randomly allocated (1:1:1) to one of three groups: (A) Sustainable diet (SD) and time-restricted eating (TRE) combined with Lactobacillus plantarum 299v (Lp299v) supplementation (n = 25); (B) SD and TRE combined with placebo supplementation (n = 25); or (C) Control group receiving placebo supplementation only (n = 25). Transthoracic cardiac ultrasound was performed using a Samsung Medison SonoAce R7 to assess left ventricular ejection fraction (LVEF). N-terminal pro–B-type natriuretic peptide (NT-proBNP) concentrations were measured using an electrochemiluminescence immunoassay (Elecsys® proBNP II, Roche Diagnostics). All statistical analyses were performed using SPSS software (version 26.0, IBM Corp., Armonk, NY, USA), and a significance level of $p < 0.05$ was considered.

Results

Results: After 60 days of intervention, LVEF significantly increased in both the SD + TRE with probiotic group (from 28.03 ± 6.58 % at baseline to 35.46 ± 8.87 % after intervention; $p < 0.001$) and the SD + TRE with placebo group (from 27.77 ± 8.30 % at baseline to 32.17 ± 10.06 % after intervention; $p = 0.016$). In contrast, no significant change in LVEF was observed in the control group. Regarding NT-proBNP levels, no statistically significant differences were observed among the study groups.

Conclusion

Conclusion: A 60-day SD combined with TRE significantly improved LVEF in overweight or obese patients with HFrEF, regardless of probiotic supplementation. No significant changes were observed in NT-proBNP levels. These results highlight the potential of dietary interventions, particularly TRE, to enhance cardiac function in HFrEF patients.

Keywords

Diet, Probiotics, LVEF, NT-proBNP, HFrEF

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2025 ESC Guidelines For The Management Of Myocarditis And Pericarditis

Somayeh Abbaspour

Assistant Professor Of Cardiology, Fellowship Of Heart Failure And Transplant Ahvaz Jundishapour University Of Medical Sciences

Myocarditis and pericarditis are inflammatory diseases of the myocardium and pericardium, respectively, with potential overlap. These are the first ESC clinical practice guidelines covering the whole spectrum of these diseases. Herein, the Task Force (TF) introduces the term 'inflammatory myopericardial syndrome' (IMPS). IMPS is an umbrella term during the initial diagnostic process until a final diagnosis is made. In the past, several consensus statements were provided, usually defining a proven myocarditis based on EMB. EMB is able to detect the histological type, can identify some specific aetiologies, and can help to differentiate from non-inflammatory CMPs. But nowadays multimodality imaging has become a cornerstone for the diagnosis of myocardial and pericardial inflammation and cardiovascular CMR plays a crucial role.

A Review Of The Latest Clinical Guidelines For Heart Failure

Sahar Khoshkesht

Nursing And Midwifery Care Research Center, School Of Nursing And Midwifery, Tehran University Of Medical Sciences

Introduction: Heart failure (HF) is a complex clinical syndrome caused by structural or functional abnormalities of the heart. Recent advances in pharmacological, non-pharmacological treatments, and multidisciplinary care have made the need for awareness and updating of clinical guidelines more evident than ever before. The aim of this study is to review and compare the latest updates of the clinical guidelines in the field of heart failure of the (ESC) and the (ACC/AHA/HFSA), which provides an integrated, evidence-based approach focused on improving patient outcomes. Methods: This study is an analytical review. An official guideline published between 2021 and 2025 were reviewed to extract and compare the latest changes in treatment, pharmacotherapy, non-pharmacology, diagnostics, innovations and pre, intra and post-discharge care, emphasizing key points from guidelines. Results: Both guidelines emphasize that the treatment of heart failure should be based on standard drug therapies (GDMT) and multidimensional interventions. The therapeutic axes regarding the use of fineronine are for prevention and expansion of the use of SGLT2i in all ranges of ventricular function. Also, the quadruple therapy of ARNi, beta-blocker, MRA and SGLT2i has been introduced as the gold standard in patients with reduced left ventricular ejection fraction (HFrEF). ICD and CRT devices and monitoring are recommended for LVEF ≤ 35%. Remote monitoring such as CardioMEMS is effective in reducing the rate of hospitalization. Also, coordinated performance of multidisciplinary teams, patient and family education, cardiac rehabilitation and self-care are emphasized. Conclusion: The new guidelines are an important step towards unifying the global definition of heart failure and improving its clinical management. Although there are differences between the guidelines, both emphasize the importance of early treatment initiation, team-based care, and a focus on prevention and quality of life.

Aldosterone Receptor Antagonists

Maryam Esmaeili

Professor, Critical Care Department, TUMS

Despite evidence from clinical trials demonstrating a morbidity and mortality advantage for selected patients treated with aldosterone receptor antagonists, these drugs are underused in clinical practice. The Randomized Aldactone Evaluation Study (RALES) and Eplerenone Post-Acute Myocardial Infarction Heart Failure Efficacy and Survival Study (EPHESUS) established that spironolactone and eplerenone, respectively, increased survival in patients with severe CHF symptoms from LV systolic dysfunction occurring with minimal exertion or at rest (New York Heart Association [NYHA] class III or IV) or CHF after an acute myocardial infarction.1–3 As a result of these studies, aldosterone receptor antagonists were given an American Heart Association/American College of Cardiology class I recommendation for use, yet only 32% of eligible patients are routinely prescribed these drugs.4,5 This trend likely reflects clinicians' persisting concerns over reports linking increased community-based spironolactone use with drug-induced deaths and hospitalizations.6 This association is drawn largely from population-based observational data demonstrating a temporal (and not causal) relationship between increased prescription rates of spironolactone and increased rates of hospital admission for the treatment of hyperkalemia and subsequent in-hospital deaths. Given that aldosterone receptor antagonists are often used in combination with other cardiovascular medications, reservations about polyphmacy may also contribute to low prescription rates.

An Unusual Presentation Of A Rare Rheumatologic Disorder(Takayasu Associated Myocarditis)

Razieh Omidvar

Assistant Professor Of Cardiology,Cardiovascular Research Center Rajaie Cardiovascular Institute,Tehran,Iran

Takayasu arteritis (TA) is a large vessel vasculitis of unknown aetiology affecting mainly aorta and its major branches. Myocarditis is a rare but life-threatening complication of Takayasu arteritis with case series estimating the prevalence at 2.8% . Early Takayasu arteritis often goes undiagnosed because clinical features are nonspecific, but progression is associated with obstructive or aneurysmal lesions. Immunosuppressive medication is needed to arrest progression of disease, and invasive therapy may be needed to palliate critical vascular lesions. Early diagnosis, effective therapy, and continued surveillance are essential to successful long-term outcomes.

Brief Review Of Pulmonary Hypertension : Definition And Key Diagnostic Principles

Maryam Edalatifard

Pulmonologist ; Tehran University Of Medical Sciences

Pulmonary hypertension (PH) is a heterogeneous hemodynamic and clinical syndrome defined by the ESC/ERS guidelines based on right heart catheterization as a mean pulmonary artery pressure (mPAP) > 20 mmHg at rest. Initially, clinical suspicion arises from unexplained dyspnea, syncope, chest pain, and signs of right heart failure, with echocardiography being the primary screening tool to estimate the probability of PH. Following the initial evaluation, patients undergo systematic assessment—including echocardiography, pulmonary function tests, chest CT, and V/Q scan—to exclude left heart disease and parenchymal lung diseases. Right heart catheterization, the gold standard, is essential to confirm diagnosis, determine pre- or post-capillary classification, and measure pulmonary vascular resistance (PVR).The guideline defines five main PH groups: Group 1 (pulmonary arterial hypertension, including idiopathic, hereditary, drug-induced forms, and secondary to connective tissue disease, HIV, portal hypertension, and congenital heart disease), Group 2 (due to left heart disease), Group 3 (due to lung diseases and/or hypoxemia), Group 4 (chronic thromboembolic pulmonary hypertension [CTEPH] and other chronic pulmonary artery obstructions), and Group 5 (multifactorial and unclear causes). Establishing the etiological group and WHO functional class (I–IV) is fundamental for selecting treatment strategies, ranging from correcting reversible factors and treating underlying diseases to administering specific PAH therapies and surgical interventions in CTEPH.The guideline emphasizes the necessity of early diagnosis in high-risk patients, referral to specialized centers, and the use of multidimensional indices (clinical signs, 6-minute walk test, cardiopulmonary exercise testing [CPET], BNP/NT-proBNP, and imaging) for risk stratification and monitoring treatment response.

Cardiogenic Shock In Fulminant Myocarditis

Ekhlas Torfi

Assistant Professor Of Cardiology, Heart Failure Specialist,ahvaz Jundishapur University Of Medical Sciences

A previously healthy 37-y–old man presented to ED with sign and symptomes suggestive for cardiogenic shock(Weakness, Fatigue, confusion, low BP, Oliguria; hepatic and renal failure and acidosis) due to fulminant myocarditis managed with :Fluid challenge(H/S),Inotrope (NE/ Dobutamin), Dialysis, Methyl prednisolone, CAG and EMB was done cardiac function recovery after 2 weeks of treatment was happened final DX was FM secondary to Mixed connective tissue disease

Caring For Patients With Increased Pulmonary Artery Pressure

Zahra Shafiei

PhD Student, Department Of Medical-Surgical Nursing, School Of Nursing And Midwifery, Tehran University Of Medical Sciences, Tehran, Iran.

Background: Pulmonary hypertension (PH) is a progressive cardiovascular condition requiring multidisciplinary care. Nurses play an essential role in leadership, patient education, and coordination; however, consolidated evidence on nursing empowerment and innovation in PH care is limited. This review explores evolving nursing roles in the multidisciplinary management of PH. Methods: A systematic search was conducted in PubMed, Scopus, and CINAHL for studies published between 2015–2025, following PRISMA guidelines and quality assessment using the JBI checklist. Out of 156 identified studies, 18 met inclusion criteria and were narratively synthesized. Results: Evidence demonstrates increasing nursing leadership in PH management, including greater autonomy, enhanced care coordination, and implementation of nurse-led models. Empowerment was supported through education, interprofessional teamwork, and digital innovations such as telehealth and remote monitoring. Reported benefits included improved continuity of care, patient satisfaction, and quality of life. Conclusion: Empowering nurses is critical to advancing patient-centered and collaborative PH care. Future research should evaluate standardized, nurse-led empowerment models to sustain improved patient outcomes. Keywords: Pulmonary hypertension, nursing leadership, empowerment, multidisciplinary care.

Caring Of Patients With Cardiogenic Shock

Pegah Matourypour

PhD In Nursing, Medical Surgical Nrsing Department, Tehran University Of Medical Sciences, Tehran, Iran

Introduction: Cardiogenic shock is a clinical syndrome of impaired tissue perfusion caused by primary cardiac dysfunction and inadequate cardiac output. It represents one of the most lethal clinical conditions in intensive care medicine with mortality >40%. Cardiogenic shock (CS) can progress rapidly to irreversible multiorgan failure. Despite improving survival in recent years, patient morbidity and mortality remain high, and there are few evidence-based therapeutic interventions known to clearly improve patient outcomes. This research aimed to clarity and review cardiogenic shock, causes and caring of these patients. Method & Material: This narrative review was done by keywords "cardiogenic shock AND management OR treatment OR care", during 2020-2025 thought PubMed, Elsevier, ProQuest, Scopus and Google scholar databases and search engineer in English languages. Results: The collaboration of an expert "Shock Team", consisting of interventional cardiologist, cardiac surgeon, advanced heart failure cardiologist, nurse and cardiac intensivist, has been shown to be an independent factor in improving outcomes. recommended transfer time of <120 minutes has been proposed. Improved clinical characterization and risk assessment of patients with cardiogenic shock may facilitate more effective clinical investigations of this morbid clinical syndrome. Discussion: Optimal Cardiogenic Shock management depends on early recognition, rapid reversal of the underlying cause, and prompt initiation of hemodynamic support. Cardiogenic shock remains the most common cause of in-hospital death in patients with MI, and only a few treatment strategies are based on randomized trial evidence. Prognosis, palliative care, Prognosis, caring system and management are areas for future research.

Case Finding And Early Detection Of Chronic Heart Failure

Pardis Doosti

Ph.D Student In Nursing, SSRC, School Of Nursing And Midwifery, Tehran University Of Medical Sciences, Tehran, Iran

Background: Chronic heart failure is a major public health challenge, with rising prevalence. Early detection is critical to improve outcomes. Public health approaches offer opportunities to identify cases earlier. This review synthesizes current strategies for community-based early detection of CHF. Methods: We conducted a systematic search of studies published up to September 2025 across PubMed, google scholar search engine and the Cochrane Library, following PRISMA guidelines. Search terms included "CHF", "Early Diagnosis", "Screening", and "Biomarkers". Eligible studies were peer-reviewed original research addressing strategies for early identification of CHF. Exclusion criteria comprised case reports, pediatric studies, and abstracts without full text. Two reviewers independently screened records, assessed bias using JBI tool, and extracted key data. Results: 15 studies met the inclusion criteria. Evidence highlights the value of targeted screening in high-risk groups such as older adults, patients with diabetes, hypertension and chronic kidney disease. Most studies applied multi-step screening protocols integrating symptom assessment, questionnaires, natriuretic peptide testing (BNP, NT-proBNP), electrocardiography, and echocardiography. Natriuretic peptides are highly sensitive for excluding CHF and cost-effective in community settings. Echocardiography remains the diagnostic gold standard, though accessibility is a challenge. Combining risk factor control, biomarker testing, and digital health applications strengthens public health capacity for early CHF identification. Conclusion: Early identification of chronic heart failure requires an integrated public health approach beyond hospital-based diagnosis. Stepwise community screening with biomarkers, portable imaging, and digital tools enables accurate, cost-effective detection in high-risk groups.

Contemporary Management Of Hypertension: Pharmacologic Foundations And Novel Therapies

Golnar Ghane

Assistant Professor, Medical Surgical Department, School Of Nursing And Midwifery, Tehran University Of Medical Sciences,

Hypertension is a major and preventable risk factor for cardiovascular disease, affecting over 1.2 billion people worldwide. Despite effective therapies, only about half of treated patients achieve adequate control. The 2025 AHA/ACC guidelines define normal blood pressure as below 120/80 mmHg. Stage 1 hypertension (130–139/80–89 mmHg) requires treatment in high-risk individuals, and stage 2 hypertension (≥140/90 mmHg) requires medication for all patients. Management follows a risk-based approach: lifestyle therapy for low-risk individuals and a target of <130/80 mmHg for high-risk patients. A key therapeutic focus is the renin–angiotensin–aldosterone system. ACE inhibitors reduce vascular resistance and cardiac remodeling and benefit patients with diabetes, CKD, proteinuria, or heart failure, though they may cause cough, hyperkalemia, or rare angioedema. ARBs offer similar effects without cough but require monitoring for hyperkalemia. Thiazide diuretics remain first-line agents but may cause electrolyte disturbances and metabolic changes. Calcium channel blockers, notably amlodipine and long-acting nifedipine, effectively lower blood pressure and are metabolically neutral but may cause edema. Beta-blockers are reserved for coronary disease, arrhythmias, and heart failure. Aldosterone antagonists, especially spironolactone, are effective in resistant hypertension but require close potassium monitoring. Resistant hypertension requires evaluation for adherence, white-coat effect, and secondary causes. Emerging treatments—including siRNA therapies, aldosterone synthase inhibitors, and renal denervation—offer promising long-term options. Lifestyle modification remains essential through diet, sodium reduction, exercise, weight control, and adequate sleep.

Cost Effectiveness Of Preventive Measures For Chronic Heart Failure Patients

Azam Ghorbani

Assistant Professor, Department Of Medical Surgical Nursing, School Of Nursing & Midwifery, Tehran University Of Medical Sciences, Tehran, Iran.

Introduction: Heart failure (HF) is an increasingly prevalent condition with a profound impact on morbidity, mortality, and healthcare costs. Its growing prevalence poses a significant clinical and economic burden. Although guideline-recommended therapies have been shown to reduce mortality, decrease hospitalizations, and improve quality of life, substantial gaps remain in their implementation. This review aims to examine the current evidence on smart scales, digital biomarkers, and emerging technologies, assessing their clinical utility in the management of heart failure. Methods: A comprehensive literature search was conducted in PubMed, Scopus, and Google Scholar for peer-reviewed articles published between 2010 and 2025, using the keywords: "heart failure", "Preventive measure", "device", "technology", "smart scale" and "nursing care". Discussion & Conclusion: Guideline-based medical therapy and preventive strategies have been effective in improving outcomes and reducing hospitalizations. Recent studies indicate that remote monitoring enables early detection of heart failure decompensation by identifying subtle physiological changes before clinical symptoms appear. Furthermore, these innovative devices have demonstrated the potential to decrease unnecessary hospital admissions and, in some cases, predict heart failure events before they occur. Despite their promise, adoption of these tools remains limited, highlighting the need for greater awareness and education in this field. Nevertheless

Cultural Adaptation Of An Early Palliative Care Model For Iranian Patients With Heart Failure And Their Caregivers

Arpi Manookian

TUMS Arvin Mirshahi MSc In Nursing, TUMS Ali Khanipour-Kencha MSc In Nursing, TUMS

Heart failure is a progressive condition associated with high symptom burden and reduced quality of life. Palliative care, when integrated early, complements medical management by addressing physical, emotional, and spiritual needs, supporting advance care planning, and reducing caregiver distress. ENABLE (Educate, Nurture, Advise, Before Life Ends) is a nurse-led, early palliative care model and its coaching sessions address problem-solving, communication, advance care planning, symptom management, and self-care. This study employs reflexive thematic analysis (RTA) to inform the cultural adaptation of ENABLE. It will be conducted in two phases. Phase 1 involves translating and validating ENABLE materials into Persian through forward–backward translation and expert panel review to ensure linguistn. ic accuracy and cultural relevance. Phase 2 consists of semi-structured interviews with heart failure patients, their caregivers, and healthcare providers at Tehran University of Medical Sciences. Interviews will explore: (1) the key needs and challenges of patients and caregivers, (2) the degree of patient participation in healthcare decision-making, and (3) preferences regarding ENABLE's content and delivery format. Maximum variation sampling will be applied to capture diverse perspectives, with data collection continuing until thematic saturation. Transcribed interviews will be analyzed using Braun and Clarke's RTA, involving iterative coding and theme development to align findings with ENABLE's core components while ensuring cultural appropriateness. Credibility and rigor will be maintained through reflexivity, peer debriefing, and triangulation. The culturally tailored model is expected to improve quality of life for heart failure patients and their caregivers while addressing existing gaps in palliative care delivery in Iran.

Cultural Competence And Communication In Heart Failure Care

Haleh Jafari

Department Of Medical-Surgical Nursing, School Of Nursing And Midwifery, Tehran University Of Medical Sciences, Tehran, Iran

Introduction: Heart failure is a common chronic condition that becomes more complex in multicultural settings, where communication barriers and cultural differences strongly affect care. Cultural competence—the ability to understand and respect patients' cultural backgrounds—is essential for effective interactions. Without it, misunderstandings, reduced trust, and poor treatment adherence may occur. Therapeutic communication also plays a key role in improving adherence, satisfaction, and clinical outcomes. Combining cultural competence with strong communication skills can enhance care quality, reduce readmissions, and improve patients' quality of life. Methods: This narrative review included a structured search of major scientific databases for studies published between 2010 and 2025. After screening for relevance and quality, 25 studies were selected and synthesized to explore cultural competence, communication strategies, and outcomes in heart failure care. Findings: Patients from different cultural backgrounds hold diverse beliefs about heart failure, its reasons, and its treatment. In some cultures, the illness may be seen as fate or a spiritual consequence, influencing acceptance and self-care. Lack of cultural alignment between patients and providers can reduce trust and adherence. Evidence shows that active listening, using simple language, and respecting cultural values improve understanding and engagement. Training nurses in cultural competence and communication skills has been shown to improve care quality and reduce rehospitalization. Conclusion: Cultural competence and effective communication are essential elements of high-quality heart failure care. Healthcare providers must recognize cultural and linguistic differences and integrate them into individualized care. Incorporating cultural competence training into health education can improve satisfaction and outcomes.

Diabetes And Heart Failure: Implications For Clinical Practice

Ali Darvishpoor Kakhki

School Of Nursing And Midwifery, Shahid Beheshti University Of Medical Sciences, Tehran, Iran.

The prevalence of diabetes mellitus has increased by 30% globally. Patients with diabetes have two to four times the risk for developing heart failure. Hence, the burden of heart failure on the health care system will be expected to surge. The relation between diabetes and heart failure diseases is bidirectional, meaning that each condition can impact on the development and progression of the other. Diabetes can cause heart failure through progresses to vasculopathy and myocardial dysfunction. On the other hand, heart failure can lead to the progress of insulin resistance and worsen glycemic control in patients with diabetes. These patients have worse outcomes, including higher hospitalization and readmission rates, impaired quality of life, dependency, chronic disability, institutionalization, medicine side effects, use of health care resources, and mortality, than those without diabetes. Therefore, a multidisciplinary approach based on patient characteristics, preferences, comorbidities, and disease severity to improve clinical outcomes in this population is inevitable. Optimal strategies of patients care should target both conditions simultaneously, focusing on lifestyle modifications, pharmacotherapy, glycemic control, heart failure management, and cardiovascular risk reduction, coordinated care, patient education and support, and regular monitoring and follow-up.

Differential Diagnosis: Diseases That Look Like HCM But Are Not

Samira Arami

Cardiologist, Heart Failure Specialist Assistant Professor Of Guilan University Of Medical Sciences

Systemic disorders include various metabolic and multiorgan syndromes such as RASopathies , mitochondrial myopathies; Glycogen and lysosomal storage diseases in children; and Fabry, amyloid, sarcoid, and Danon cardiomyopathies. secondary LVH can also overlap phenotypically with HCM, including remodeling secondary to athletic training (ie, “athlete’s heart”) as well as morphologic changes related to long-standing systemic hypertension (ie, hypertensive cardiomyopathy). Similarly, hemodynamic obstruction caused by left-sided obstructive lesions (valvular or subvalvular stenosis) or obstruction after antero-apical infarction and stress cardiomyopathy can cause diagnostic dilemmas. Clinical Features/Investigations Features and Possible Pathology Age at presentation • Neonate/Infant - IEMs such as GSD, mitochondrial cytopathy • Adolescence or young adult - Danon's disease, Fabry, sarcomeric HCM, PRKAG2 cardiomyopathy • Middle age - Amyloidosis, sarcomeric HCM, Fabry disease, hypertension • Elderly - cardiac amyloid, hypertension Clinical symptoms and signs Evidence of multisystemic (extra-cardiac) involvement - IEMs, Fabry disease, amyloidosis Blood tests • Metabolic panel - abnormal in IEMs • Renal failure - suspicion of Fabry's disease or amyloidosis • Creatine Kinase - raised in Danon's disease, mitochondrial cytopathies ECG Ventricular pre-excitation - Danon disease, Pompe's disease and PRKAG2 cardiomyopathy • Short PR interval - Fabry disease, mitochondrial cytopathies • AV block - PRKAG2 cardiomyopathy, mitochondrial cytopathies, Fabry disease, amyloidosis • QRS complexes • small in cardiac amyloid • extremely large in Pompe's disease, Danon's disease CMR • LGE of inferolateral wall • Global subendocardial LGE on contrast enhanced images with concentric hypertrophy - in amyloidosis

ECG Key Points in Resynchronization Therapy

Amirfarjam Fazelifar

Interventional Electrophysiologist. Rajaie Cardiovascular, Medical And Research Institute

Typical LBBB morphology is a strong predictor of CRT response, especially when a mid-QRS notch/slur is present. CS lead placement should avoid the middle cardiac vein and great cardiac vein due to suboptimal resynchronization. QRS duration must decrease after CRT implantation; lack of QRS narrowing requires optimization or lead revision. ~10% of cases lack a suitable CS target vein; alternative strategies must be considered. Optimal CS lead position requires avoiding scar and targeting basal or mid-ventricular veins, not apical locations. Epicardial LV leads may help, but surgeons should aim for a bipolar lead in the posterolateral/posterior LV wall. Conduction system pacing requires septal thickness ≥7 mm and absence of septal fibrosis, which limits implantation success. In atrial fibrillation, CRT delivery improves with AV node ablation, ensuring >95% biventricular pacing.

Economic And Other Challenges In heart Failure Management

Mahtab Farahani

Faculty Of Nursing And Midwifery, Tehran University Of Medical Science, Tehran, Iran

خلاصه سخنرانی: نارسایی قلب امروزه به عنوان یک بحران پیچیده بالینی و اقتصادی مطرح است که علاوه بر تأثیر بر سلامت بیماران، کارآمدی نظام‌های درمانی را نیز تحت تأثیر قرار می‌دهد. این بیماری یکی از پرهزینه‌ترین بیماری‌های مزمن محسوب می‌شود که با نرخ بالای بستری و مصرف منابع درمانی همراه است. حدود ۳۰ تا ۴۵ درصد بیماران با پدیده "مسمومیت مالی" روبرو هستند که ترکیبی از بار مالی واقعی و اضطراب ناشی از هزینه‌های درمان است. این مسئله تحت تأثیر عوامل مختلفی از جمله کمبود پوشش بیمه‌ای، مدل‌های پرداخت ناکارآمد، مراقبت‌های پراکنده و عوامل فردی مانند هزینه‌های دارویی و کاهش درآمد قرار دارد. مدل پرداخت سنتی که بر حجم خدمات متمرکز است، از موانع اصلی مدیریت مؤثر نارسایی قلب به شمار می‌رود. در مقابل، مراقبت مبتنی بر ارزش و برنامه‌های مدیریت بیماری می‌توانند تا ۴۰ درصد از بستری‌ها و ۲۵ درصد از مرگ و میر بکاهند. پرستاران نقش کلیدی در این زمینه ایفا می‌کنند و مداخلات آنان می‌تواند بستری مجدد را تا ۲۳ درصد کاهش دهد. همچنین مراقبت در منزل و مراقبت تسکینی از راهکارهای مؤثر در بهبود کیفیت زندگی و کاهش هزینه‌ها هستند. اجرای این مدل‌ها در کشورهای درحال‌توسعه مانند ایران با چالش‌هایی از جمله نبود زیرساخت‌های لازم و نابرابری اجتماعی روبرو است. برای موفقیت در مدیریت نارسایی قلب، گذار از مدل‌های سنتی به سمت مراقبت ارزش‌محور، هدفمند و عادلانه ضروری است.

Energy Conservation Strategies In Heart Failure Patients: A Systematic Narrative Review From A Cardiac Nursing Perspective

Nasim Aminaie

Assistant Professor, Medical Surgical Department, School Of Nursing And Midwifery, Tehran University Of Medical Sciences

Abstract Introduction: Fatigue and dyspnea are among the most debilitating symptoms of heart failure, profoundly impacting patients' quality of life, functional independence, and readmission rates. This systematic narrative review aimed to synthesize and critically evaluate the existing evidence on the principles, practical applications, and effectiveness of energy conservation strategies for improving outcomes in heart failure patients. Materials and Methods: A systematic search was conducted in PubMed/Medline, Scopus, Web of Science, and CINAHL databases from 2014 to 2024. Google Scholar and key regional databases (SID and MagIran) were also searched. Findings: The evidence synthesis indicates that energy conservation strategies are an effective, core non-pharmacological intervention. The foundational framework is the "4 P's": Prioritize, Plan, Pace, and Position. Patients instinctively adopt an energy-saving strategy by reducing activity intensity and prolonging its duration, which consumes a higher percentage of their peak oxygen capacity. Tailored educational interventions, environmental adaptations, and the use of assistive devices are critical components. Strong evidence, including randomized controlled trials, shows that structured energy conservation programs significantly reduce fatigue, improve quality of life, decrease depressive symptoms, and, most importantly, lower hospital readmission rates. Conclusion: Energy conservation education should be an integral and standard component of comprehensive heart failure management and discharge planning. Cardiac nurses, as pivotal figures in the multidisciplinary team, are central to assessing individual needs, providing practical and customized education, and empowering patients to master these strategies, ultimately reducing the burden of the disease. Keywords: Heart Failure, Energy Conservation, Fatigue, Quality of Life, Nursing Care, Activities of Daily Living.

Family Caregiver Burden

Masoomeh Imanipour

Associate Professor Tehran University Of Medical Sciences

Heart failure (HF) is a chronic, progressive syndrome heavily reliant on family caregiving. Caregiver burden is defined as the multidimensional strain resulting from an imbalance between caregiving demands and the caregiver's physical, psychological, social, and financial resources. Key determinants of this problem include disease severity, spousal relationship, older caregiver age, low educational level, financial constraints, and insufficient knowledge. Consequences of this burden on family caregivers are severe and include chronic fatigue, anxiety, depression, significantly impaired quality of life, income loss, and social isolation. Critically, high caregiver burden correlates with increased caregiver mortality and higher patient readmission rates. Because family caregivers are known as an essential care partner, supporting them is fundamental to optimizing outcomes for the entire HF care. In this matter, evidence-based strategies include routine screening by using validated assessment tools, culturally tailored education, multidisciplinary support, and early integration of palliative care.

Home-Based Care For Patients With Heart Failure: A Scoping Review Of Tele-Home Care Interventions

Fatemeh Bahramnezhad

Associate Professor, Tehran University Of Medical Sciences, Tehran, Iran

Background Heart failure is one of the most prevalent and costly chronic conditions, characterized by high rates of hospital readmissions and impaired quality of life. Home-based care and telehealth solutions—particularly Tele-Home Care—have gained attention as effective approaches to support continuous monitoring, patient education, and improved clinical outcomes. Objective This study aimed to map the scope of home care for patients with heart failure and to investigate the role, applications, and effectiveness of Tele-Home Care within contemporary models of home-based management. Methods This study was conducted as a scoping review. A systematic search strategy was applied across PubMed, Scopus, and the Cochrane Library using keywords related to "Heart Failure," "Home Care," "Tele-Home Care," and "Remote Monitoring." Studies of all designs and without time limitation were included. The selected literature was charted, categorized, and synthesized thematically to identify key concepts, intervention components, and evidence gaps. Results Findings indicate that home care involves patient education, daily symptom monitoring, medication optimization, and multidisciplinary support. The integration of Tele-Home Care—through digital monitoring of weight, blood pressure, respiratory symptoms, and automated data transmission—was associated with reductions in heart failure–related hospitalizations, improvement in self-care behaviors, enhanced quality of life, and more effective communication with healthcare providers. However, intervention effectiveness varies depending on program design, patient engagement, digital health literacy, and disease severity. Conclusion Tele-Home Care constitutes an important component of modern home-care models for heart failure management. While current evidence highlights notable benefits, further high-quality studies are required to standardize protocols and assess sustained long-term outcomes.

Hypertension As A Primary Driver Of Heart Failure And The Essential Role Of Nursing Intervention

Parisa Bozorgzad

Department Of Medical-Surgical Nursing And Basic Sciences, School Of Nursing & Midwifery, Tehran University Of Medical Sciences (TUMS)

Introduction: Hypertension causes heart failure (HF), despite treatment. This review examines hypertension's effects on the heart and the role of nurses in HF prevention/management. Method: A literature search (PubMed/MEDLINE, CINAHL, Cochrane, 2000-2025) identified English articles on hypertension and heart failure. Search terms included: ("Hypertension" OR "High Blood Pressure") AND ("Heart Failure" OR "Cardiac Failure" OR "HFpEF" OR "HFrEF") AND ("Pathophysiology" OR "Ventricular Remodeling" OR "Fibrosis" OR "Hypertrophy") AND ("Nursing" OR "Nurse-Led" OR "Patient Education" OR "Disease Management"). Reference lists were also reviewed. The initial search yielded 387 records. After removing duplicates, titles/abstracts were screened. 58 articles/guidelines were included, covering biological pathways and clinical/nursing interventions. Findings: Included studies' data was extracted using a template, noting authors, year, design, population, pathophysiology, and nursing intervention outcomes. Due to methodology diversity, a narrative synthesis was used. Findings were thematically organized to link hypertension to heart failure (HF), outline nursing roles, and presented in four categories: Initial Adaptation, Maladaptive Transition, Cellular Hallmarks, Final Pathways (HFpEF/HFrEF), and Nursing's Role. Conclusion: Hypertension directly causes heart failure via known pathways. Nurses strategically combat this progression through guideline implementation, patient education, and adherence promotion. Empowering nurses in collaborative care effectively addresses a major heart failure precursor. Keywords: Hypertension, Heart Failure, LVH, Myocardial Fibrosis, Nursing Role.

Investigating The Effectiveness Of Palliative Care In Patients With Heart Failure

Zahra Karvandi

Department Of Nursing , Tehran Medical Science Branch, Islamic Azad University, Tehran, Iran.

IntroductionHeart Failure (HF) is a chronic, progressive syndrome causing severe symptoms, high mortality, and poor quality of life. Conventional medical treatments often fall short of addressing patients' holistic needs. Palliative care is a comprehensive, proactive approach essential for symptom management and improving quality of life throughout the course of HF. This study aimed to determine the impact of a structured palliative care program on HF patients.MethodsThis experimental study was conducted in Tehran, Iran (2025). Fifty-six eligible patients with NYHA Class II or III HF (aged 18-70) were randomly divided into intervention (n=28) and control (n=28) groups. Baseline demographics and pre-test Palliative Care Outcome Scale (POS) scores were homogeneous (P > 0.05).The intervention group received a structured, nurse-led seven-session palliative care program delivered remotely via WhatsApp over one month post-discharge. The program, based on Oxford Palliative Care principles, focused on symptom management, self-care (e.g., fluid/weighing), and psycho-social-spiritual needs. 24/7 on-call availability was provided. The control group received routine care. Data were collected using the reliable POS questionnaire (pre-test/post-test). Statistical analysis (SPSS) was used, with significance set at P < 0.05.ResultsDemographics were comparable; most patients were female (60.7%-71.4%) and aged 57-70 with low education.The key finding: The control group showed non-significant changes in POS scores (P > 0.05). Conversely, the palliative care intervention led to a significant improvement in palliative care outcomes in the intervention group (P = 0.004).Conclusion Palliative care significantly enhanced the outcome scores for HF patients. These results strongly support the integration of nurse-led, holistic palliative care interventions into standard cardiovascular care protocols to improve patients' quality of life and self-management skills.

LVAD Versus Heart Transplant

Marzieh Mirtajaddini

Cardiovascular Research Center, Rajaie Cardiovascular Institute, Tehran, Iran

Left Ventricular Assist Device (LVAD) implantation is primarily indicated in patients with end-stage heart failure refractory to medical therapy, serving as either a bridge to transplant or destination therapy. It is considered in those with severe systolic dysfunction (LVEF < 25%), persistent NYHA class IV symptoms, and inability to maintain adequate organ perfusion. In patients receiving maintenance dialysis, LVAD may offer hemodynamic stabilization, improved cardiac output, and enhanced tissue oxygenation, potentially prolonging survival and improving quality of life. However, dialysis-dependent recipients face significant challenges, including high infection risk due to repeated vascular access, bleeding from device-related anticoagulation, and potential right ventricular failure. Device thrombosis, hemocompatibility issues, and management of fluid balance also complicate care. Despite these drawbacks, carefully selected ESRD patients can benefit when multidisciplinary coordination ensures proper dialysis timing and LVAD management. Overall, LVAD in dialysis patients remains a rare but viable option under rigorous clinical and ethical evaluation.

Mean Arterial Pressure—A Forgotten Vital Sign

Habibollah Saadat

Interventional Cardiologist, Professor Of Cardiology, Dept Of Cardiology, Modares Hospital, Shahid Beheshti Univ Med Sci, Tehran, Iran

Mean arterial pressure (MAP) is a fundamental yet often overlooked vital sign in cardiovascular medicine, representing the average arterial pressure during a single cardiac cycle. It integrates cardiac output and systemic vascular resistance, providing a comprehensive measure of organ perfusion pressure essential for the delivery of oxygen and nutrients. Despite its critical role in maintaining tissue viability, MAP is frequently overshadowed by systolic and diastolic blood pressure readings in clinical practice. This lecture highlights the physiological basis and clinical significance of MAP, emphasizing its predictive value for cardiovascular outcomes and mortality. MAP reflects the dynamic interplay between heart function and vascular tone, influencing overall circulatory health. In patients with heart failure, septic shock, and other critical conditions, maintaining an optimal MAP (commonly ≥65 mmHg) correlates with improved organ function and survival. Conversely, deviations from this range herald risks of hypoperfusion or hypertensive injury. We will explore methods for accurate MAP measurement, including invasive arterial monitoring and non-invasive estimations, and discuss the limitations of relying solely on conventional blood pressure values. Case studies will illustrate how MAP-guided therapy enhances individualized patient management, guiding fluid resuscitation, vasopressor use, and blood pressure targets. The session advocates revisiting MAP as an indispensable vital sign and integrating its routine assessment to improve cardiovascular diagnostics, therapeutic decisions, and ultimately patient outcomes in cardiology practice. Recognizing MAP's value may address gaps in current monitoring approaches, offering a more precise tool in the fight against heart failure and related vascular diseases. This lecture aims to rekindle clinical awareness of MAP, fostering a shift toward more holistic hemodynamic monitoring in contemporary cardiology.

Medical Nutrition Therapy For Heart Failure

Asieh Mansour

Tehran University Of Medical Sciences, Tehran, Iran

Heart failure (HF) is a multifactorial syndrome associated with functional decline, malnutrition risk, and nutrition-related complications. Early nutrition screening is essential for preventing disease progression in older adults with HF. Accurate weight assessment, especially consistent dry-weight monitoring, helps detect fluid retention, a key predictor of decompensation. Evidence-based thresholds for reporting weight gain (>1 lb/day or >5 lbs total) support timely clinical response. Dietary sodium restriction remains central to HF management, though adherence to the common 2 g/day limit is often challenging. Sodium targets should be individualized according to HF severity, nutritional status, edema, and medication use. Reducing processed foods and improving label reading are crucial to controlling fluid overload. Emerging evidence challenges traditional concerns about caffeine. Observational and clinical data suggest that moderate to high coffee and tea consumption may reduce arrhythmia risk and cardiovascular mortality, potentially due to antioxidant effects. Micronutrient considerations include cautious calcium supplementation, routine vitamin D assessment, and targeted correction of deficiencies. Vitamin D may reduce inflammation but does not improve mortality. Coenzyme Q10, supported by randomized trials and meta-analyses, shows potential for reducing hospitalizations, improving symptoms, and enhancing LVEF, though it remains adjunctive. Magnesium and thiamine may benefit patients with low intake or those using loop diuretics. Iron deficiency is common in HF. Intravenous ferric carboxymaltose can improve exercise capacity and quality of life but may cause hypophosphatemia. Oral iron may help in patients with low hepcidin. Overall, optimized nutritional management—including sodium control, micronutrient monitoring, and selective supplementation—supports improved functional status, symptom reduction, and quality of life in individuals with heart failure.

Mortality Predictors And Inotropes In Cardiogenic Shock

Hoda Raffiei Jelodar

Cardiologist , Heart Failure And Transplant Fellowship Assistant Professor Of Cardiology

Inotropes aim at increasing cardiac output by enhancing cardiac contractility. They constitute the third pharmacological pillar in the treatment of patients with decompensated heart failure (HF), the other two being diuretics and vasodilators . Decompensated HF patients who need inotropic support belong to two distinct, though partly overlapping, subpopulations, namely acutely decompensated or acute HF (AHF) and advanced HF .In either condition: low cardiac output that results in end-organ hypoperfusion, with or without hypotension, despite adequate or even elevated filling pressures. Besides symptomatic improvement, however, there is no compelling evidence suggesting a survival benefit of inotropes by a series of clinical studies. In contrast, some inotropes have even been associated with increased short and long-term mortality in clinical trials and propensity score-matched analyses of registries. Patient factors potentially associated with an increase in early mortality included an age greater than or equal to 75 years of age, peripheral arterial disease, chronic kidney disease, and female sex. Procedural and presentation factors potentially associated with increased mortality included out-of-hospital cardiac arrest, left main culprit artery, left ventricular ejection fraction less than 30%, dialysis, and need for mechanical circulatory support. Revascularization in the form of coronary artery bypass graft and percutaneous coronary intervention were potentially associated with reduced in-hospital mortality.

Navigating The Net State Of Immunosuppression: Bioavailability Vs Bioactivity In Heart Transplant Monitoring

Ali Reza Bakhshandeh

Department Of Cardiovascular Surgery, Imam Khomeini Hospital Complex, TUMS, Tehran, Iran

Background: The net state of immunosuppression in transplantation reflects both pharmacokinetic drug exposure (bioavailability) and pharmacodynamic (bioactivity). Trough levels of calcineurin inhibitors are widely used to guide therapy, yet they may not reliably capture cellular immune suppression. This discrepancy is particularly relevant in low resource settings, where advanced assays are limited. Methods: We studied 152 heart transplant recipients who completed the first post transplant year. Cyclosporine trough levels and CD4/CD8 ratios were measured at 3 month intervals (3, 6, 9, and 12 months). Results: Correlation analysis demonstrated weak and inconsistent associations between cyclosporine trough levels and CD4/CD8 ratios across the one year follow up. At 3 months, Pearson correlation was r = 0.18 (p = 0.09); at 6 months r = 0.12 (p = 0.21); at 9 months r = –0.05 (p = 0.62); and at 12 months r = 0.09 (p = 0.34). Regression analysis confirmed that trough levels were not significant predictors of CD4/CD8 ratio, with coefficients of determination (R^2) consistently below 0.05. Several patients exhibited therapeutic trough levels but persistently elevated CD4/CD8 ratios, highlighting pharmacokinetic–pharmacodynamic mismatch. Conclusion: Reliance on trough levels alone risks misclassification of immune status. In low resource settings, longitudinal monitoring of simple indices such as CD4/CD8 ratio, neutrophil to lymphocyte ratio, and total lymphocyte count can provide indirect measures of bioactivity. Where feasible, functional assays offer direct pharmacodynamic readouts. Integrating both bioavailability and bioactivity markers across time provides a more comprehensive and practical strategy to individualize immunosuppression, reduce rejection risk, and optimize long term outcomes in heart transplantation.

Patient-centered Care And Respect For Patient Wishes And Autonomy

Setareh Tajdari

Assistant Professor, Medical-Surgical Department, School Of Nursing & Midwifery, Tehran University Of Medical Sciences

Heart failure represents a major global health challenge. Effective management requires not only pharmacological therapies and advanced technologies, but also ethical considerations and strong interprofessional collaboration. Heart failure is more than a medical condition; it encompasses ethical, familial, and societal dimensions that profoundly influence patient outcomes. Evidence consistently demonstrates that active patient involvement leads to better adherence to treatment, fewer hospital readmissions, and significant improvements in quality of life. Yet, several challenges remain: cultural differences in the perception of autonomy, time constraints in busy clinical settings, and ethical conflicts among healthcare professionals. Patient-centered care is therefore not optional, but a necessity in heart failure management. It rests upon three pillars: respect for patient autonomy, meaningful family engagement, and robust societal support. Ultimately, respecting patient wishes builds trust in healthcare systems and enhances quality of life, reminding us that successful care is not only about treating the heart, but about honoring the human being behind it.

Pharmacological Therapy In PH: Current Standards And Emerging Options

Keyhan Mohammadi

Assistant Professor Of Clinical Pharmacy, Tehran University Of Medical Sciences (TUMS)

Pulmonary arterial hypertension (PAH) remains a progressive disease with high morbidity and mortality despite current therapies. As of 2025, 16 medications are FDA-approved, almost exclusively for WHO Group 1 PAH. Current treatment targets three pathways of endothelial dysfunction: excessive endothelin-1 (treated with oral ERAs: bosentan, ambrisentan, macitentan), deficient nitric oxide signaling (PDE5 inhibitors sildenafil and tadalafil; riociguat), and deficient prostacyclin signaling (parenteral, inhaled, and oral prostanoids including selexipag). Early upfront oral double or triple combination therapy and rapid escalation according to risk are now standard, extending median survival from <3 to 6–8 years. Despite these advances, pulmonary vascular remodeling persists, driven by TGF-β superfamily imbalance (shift to pro-proliferative Smad2/3 signaling), growth factor overactivity, inflammation, and epigenetic changes. Sotatercept, the first disease-modifying agent, restores balance by trapping activin A/B and GDF8/11, reducing Smad2/3 activation. In phase 3 trials (STELLAR and ZENITH), sotatercept added to maximal background therapy significantly improved 6MWD, NT-proBNP, functional class, and, in high-risk patients, reduced death, transplantation, or hospitalization by ~70%. Emerging pipeline therapies include exogenous BMP9, inhaled seralutinib (PDGF/c-kit/CSF1R inhibitor), and BRD4 inhibitors (olaparib, apabetalone). The approval of sotatercept marks the beginning of a new era of anti-remodeling therapies that promise to further transform PAH prognosis beyond vasodilation alone.

Population-Level Education On Self-Management In Heart Failure

Mahdi Nabi Foodani

Medical-Surgical Nursing Department, School Of Nursing And Midwifery, Tehran University Of Medical Sciences, Tehran, Iran

Background: Heart failure remains one of the most significant public health challenges worldwide, associated with chronic complications, recurrent hospitalizations, and high healthcare costs. Population-level education is an emerging approach aimed at improving knowledge, attitudes, and behaviors related to self-care in individuals with HF. This narrative review aimed to identify and analyze existing evidence on population-level educational programs that enhance self-management among patients with heart failure. Methods: A narrative review approach was conducted by searching English-language articles published between 2010 and 2025 in PubMed, Scopus, Web of Science, and Google Scholar databases using keywords such as "heart failure," "self-management," "education," "community-based," and "population-level." Studies addressing large-scale, community-based, or national educational interventions for HF self-care were included. Data were thematically analyzed and categorized according to the type and delivery of educational programs. Results: Findings indicated that population-level education programs can be classified into three main categories: Mass-media-based education programs: Delivered via television, radio, social media, and public campaigns. Community-based education programs: Conducted in health centers, patient associations, and wellness clubs through group sessions, workshops, and peer education. Technology-based education programs: Utilize mobile applications, tele-nursing systems, reminder messages, and online platforms to promote continuous follow-up, symptom monitoring, and self-responsibility. Conclusion: Population-level education is a promising, cost-effective strategy to improve self-management and reduce disease burden in patients with heart failure. Keywords: Heart failure, Self-management, Education, Population health, Narrative review, Patient empowerment

Postoperative Right Ventricular Failure After Cardiac And Transplant Surgery: Predict, Prevent, And Treat

Seyedmohsen Mirhosseini

Cardiovascular Research Center Shahid Beheshti University Of Medical Sciences Tehran Iran.

Postoperative right-ventricular failure (RVF) is a major cause of morbidity and mortality after complex cardiac surgery and heart transplantation. Early risk recognition and structured management are essential. Prediction: Main risk factors include preoperative pulmonary hypertension, pre-existing RV dysfunction, long ischemic time, redo or complex procedures, tricuspid disease, and prolonged bypass. Key predictive tools are TAPSE, RVFAC, RV strain, and hemodynamic markers such as RAP, PAP, and PVR. Continuous perioperative monitoring is necessary, especially in transplant candidates at risk for PGD-RV. Prevention: Maintain optimal preload, avoid abrupt afterload increases, preserve sinus rhythm, correct electrolytes and acidosis, and ensure adequate oxygenation and ventilation. In high-risk patients, consider early selective pulmonary vasodilators and prepare for mechanical support. The first 48–72 hours require the closest surveillance. Treatment (Stepwise): 1. Medical Therapy: Tailored preload management; inotropes (milrinone, dobutamine); vasopressors to protect systemic pressure; strict avoidance of hypotension. 2. Selective Pulmonary Vasodilation: Inhaled nitric oxide, prostacyclin, or inhaled milrinone to reduce PVR without systemic effects. 3. Mechanical Support: Early use of VA-ECMO or temporary RVAD/ECPELLA for refractory cases. These strategies are crucial in post-transplant PGD-RV. Heart Transplantation: PGD-RV is a major early postoperative issue. Optimal donor-recipient matching, minimizing ischemic time, intraoperative RV protection, and immediate MCS availability are key components of modern management. Key Message: RVF can be predicted, minimized, and effectively treated through structured algorithms, precise monitoring, selective pulmonary vasodilation, and timely mechanical support.

Prostatic Artery Embolization (PAE): Global Perspective And Local Experience

Mohammad Sadegh Dr.mohammad Sadegh Keshmiri

National Research Institute Of Tuberculosis And Lung Diseases, Shahid Beheshti University Of Medical Sciences, Tehran, Iran

Overview Benign Prostatic Hyperplasia (BPH) is a non-cancerous prostate enlargement causing urinary flow restriction. Conventional treatments include TURP and HoLEP and medical therapy. PAE is a minimally invasive procedure that restricts blood supply to the prostate, achieving 30-50% gland shrinkage and improving IPSS, quality of life, and urinary flow without affecting sexual function. Evidence and Guidelines Multiple studies (Wang 2016: 840 patients; Somwaru 2020: 72 patients) demonstrate significant improvements. PAE is approved by NICE (UK, 2017), conditionally recommended by AUA (USA, 2021), and recognized by EAU (Europe, 2023) as a valid alternative. Patient Selection Ideal candidates: BPH with prostate >50cc, IPSS ≥15, high surgical risk (ASA III-IV, cardiovascular disease, anticoagulation), medical therapy failure, or desire to preserve ejaculation. Contraindications: active prostate cancer, active UTI. Local Experience 210 cases, ages 68-75, prostate volumes 75-120cc, >90% bilateral technical success. Results at 6-24 months: 30-50% prostate reduction, 45-65% IPSS improvement, 40-70% PVR reduction, >90% sexual function preservation, 85-90% catheter removal success. Advantages vs HOLEP PAE requires local anesthesia only, minimal bleeding (ideal for anticoagulated patients), outpatient/24-hour stay, 0-48 hour catheterization, preserved ejaculation (90%), 3-7 days return to activities, moderate learning curve. HOLEP requires general anesthesia, 1-2 day hospitalization, 2-5 day catheterization, 70-90% ejaculation loss, 2-4 week recovery. Safety Minor complications: temporary perineal pain (15-25%), mild dysuria (10-15%), hematuria (5-8%). Major complications <2%. Long-term efficacy sustained up to 5 years. Conclusion PAE is a safe, effective, minimally invasive treatment for BPH with international guideline support, over 10,000 cases worldwide, and excellent outcomes for appropriately selected patients.

Recurrent Myocarditis In A Young Man

Sepideh Jafari Naeini

Cardiovascular Research Center, Shahid Beheshti University Of Medical Sciences,Tehran,Iran

Eosinophilic myocarditis can arise from various causes, including drug reactions, hypereosinophilic syndrome, and rheumatologic disorders. Recurrent myocarditis may occur due to different underlying factors, such as viral infections, genetic cardiomyopathy, rheumatologic conditions, or without a clearly identified cause. A 37-year-old man with a history of ulcerative colitis and hypothyroidism was admitted to our facility due to new-onset dyspnea that had begun the previous week. He had a COVID-19 infection approximately 40 days prior. Although he was a cigarette smoker, he denied any substance abuse and was only taking sulfasalazine and levothyroxine. During his initial admission, an echocardiogram revealed a left ventricular ejection fraction (LVEF) of 10%. Cardiac magnetic resonance imaging (CMR) suggested acute myocarditis, and an endomyocardial biopsy(EMB) confirmed positive cytomegalovirus (CMV) PCR and eosinophilic myocarditis. He was treated with intravenous methylprednisolone and ganciclovir and discharged with an improved LVEF of 40%. He experienced two additional hospitalizations, one three months later and another one year later. The first episode involved dyspnea, which was diagnosed as a pulmonary embolism, while the second hospitalization was due to systemic CMV infection accompanied by another episode of myocarditis. In this patient, several potential causes for recurrent myocarditis can be considered, including inflammatory bowel disease, the use of mesalazine, or an undetected underlying rheumatologic disorder can accompany by eosinophilic infiltration. Although recurrent myocarditis is uncommon, it can be fatal if a precise diagnosis is not made.

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Sleep Disorders Associated With Heart Failure

Zahra Abbasi Dolatabadi

Associate Professor, Department Of Medical-Surgical Nursing, School Of Nursing And Midwifery, Tehran University Of Medical Sciences, Tehran, Iran

Sleep disorders are common and can impair physical health, mental well-being, and daily functioning. Patients with heart failure (HF) often experience more severe sleep disturbances. A bidirectional relationship exists between HF and sleep disorders, where each condition may worsen the other. Nurses play a vital role in preventing deterioration in HF patients by promoting self-care strategies. This narrative review explored the impact of nursing-led preventive approaches on sleep disturbances in HF patients. Articles published between 2015 and 2025 were retrieved from PubMed, Scopus, Web of Science, SID, and Google Scholar using keywords such as "heart failure," "sleep disorder," "sleep apnea," "complications," and "prevention." Studies addressing the relationship between HF and sleep disturbances, and nursing interventions for managing sleep-related complications, were selected and analyzed thematically. Sleep-disordered breathing (SDB), including sleep apnea, contributes to nocturnal hypoxemia, sympathetic activation, and cortical arousal, leading to daytime sleepiness and reduced quality of life. SDB is more common in individuals with obesity, hypertension, coronary artery disease, HF, or atrial fibrillation. Common sleep issues in HF patients include difficulty initiating sleep, frequent awakenings, and early morning arousal. HF with preserved ejection fraction (HFpEF) is increasingly associated with SDB, though less than in HFmrEF or HFrEF. Moderate-to-severe SDB is more frequent in men, with predictors including male sex, older age, higher BMI, and NYHA class III/IV. This review highlights the importance of nursing interventions particularly sleep hygiene education, symptom monitoring, and individualized care planning in managing sleep disturbances in HF patients. Systematic assessment and targeted nursing care can empower patients and improve outcomes.

Supportive And Palliative Care In Heart Failure

Pooneh Pirjani

Iranian Cancer Control Center (MACSA), Tehran, Iran.

WHO Definition Palliative care is an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other physical, psychosocial and spiritual Patients with chronic heart failure often experience significant symptoms and face a bleak overall prognosis, making early integration of supportive and palliative care beneficial. The disease course is frequently uncertain, which can heighten psychological distress and complicate care decisions. But many individuals still lack ready access to appropriate expertise and facilities. Heart failure teams should champion the early incorporation of supportive and palliative principles, focusing on enhancing quality of life. As the use of optimal medical therapy and devices such as ICDs, CRT and LVADs grows, survival and quality of life for HF patients may improve. Simultaneously, broader access to disease-modifying therapies brings new challenges, concerns, and expectations that must be addressed. Supportive and palliative care team should recognize the important role that medical treatment and invasive interventions play in sustaining both quality of life and longevity for people with HF. Supportive and palliative care should strengthen communication among clinicians, patients, and families, and offer more options for symptom management. The core principles of supportive and palliative care should inform comprehensive care planning across any setting or care model. Incorporating a supportive- palliative approach into HF care can enhance quality of life, reduce suffering and healthcare costs, and improve overall care quality.

Tachycardia Causes Cardiomyopathy And Vice Versa

Mojgan Hajahmadi

Arrhythmia Connection

Arrhythmias frequently occur in individuals with heart failure (HF) and left ventricular (LV) dysfunction. Tachycardias, atrial fibrillation, and premature ventricular contractions can precipitate a reversible form of dilated cardiomyopathy known as arrhythmia-induced cardiomyopathy (AiCM). Despite similar arrhythmia burdens, the reasons certain patients are more susceptible to developing AiCM remain uncertain. A major clinical consideration is determining whether arrhythmias are entirely, partly, or not at all responsible for the LV dysfunction observed. Clinicians should suspect AiCM in patients with a mean heart rate above 100 beats per minute, in those with atrial fibrillation, and in individuals with a premature ventricular contraction burden of at least 10%. The diagnosis is confirmed when cardiomyopathy improves following elimination of the arrhythmia. Management strategies are guided by the specific arrhythmia involved, accompanying comorbidities, and patient preferences. Once LV function recovers, patients still require ongoing follow-up if any abnormal myocardial substrate persists. Proper identification and treatment of AiCM can improve quality of life, enhance clinical outcomes, and decrease hospitalizations and overall health care expenditures.

Technical Aspects Of Heart Transplantation

Zahra Ansari Aval

Associate Professor Of Cardiac Surgery Rajaie Cardiovascular, Medical And Research Institute

Despite the advent of innovative mechanical circulatory support systems for treating patients with heart failure , heart transplantation has continued to be the gold standard for the surgical treatment of heart failure .donor management, myocardial protection , immunosuppression therapy and surgical technique has evolved. Surgical technique is the key point for successful outcome .In 1967 the first heart transplantation was done byLower and Shumway .They reported biatrial anastomosis technique.It was simple and efficient.Bicaval anastomosis was introduced in 1991 with its benefits of reducing right atrial pressure,avoiding post transplant tricuspid regurgitation, maintaining sinus rhythm and yielding a better 5-year survival rate due to a lower incidence of right heart failure.Today bicaval method is advocated as the best method.After trimming the donor heart,cardiopulmonary bypass was established. Aorta and SVC and IVC was cannulated . Heparin is administered . Aorta is clamped.Cardiectomy of recepient heart was done . Then the first anastomosis of left atrium to left atrium was done . Next sequence may be different. Anastomosis of posterior part of pulmonary artery to pulmonary artery and aorta to aorta was done . After rewriting and deairing aortic clamp was released. Anastomosis of IVC to IVC and SVC to SVC was done . There are specific and important considerations in these anastomosis

Title: Patient-Centered Care And Respect For Patients' Wishes And Autonomy

Setareh Tajdari

Assistant Professor, Medical-Surgical Department, School Of Nursing & Midwifery, Tehran University Of Medical Sciences

Background & Objective: Heart failure is not only a clinical condition but a human experience with ethical, familial, and social dimensions. This presentation highlights the role of patient-centered care and respect for autonomy in improving outcomes and quality of life. Methods: Recent evidence from clinical trials and qualitative studies was reviewed, including BMJ Open Heart (2024), AMULET Trial (2024), and Evidence-Based Nursing (2025), focusing on patient preferences, family involvement, and social support in heart failure management. Results: • Shared decision-making and autonomy increase trust and adherence. • Family participation reduces caregiver burden and strengthens disease management. • Social support and equitable access improve patient adaptation. • Innovative approaches (Narrative Medicine, digital tools, advance care planning) enhance self-management. Conclusion: Patient-centered care in heart failure is an ethical, familial, and social necessity. Respecting patients' wishes, engaging families, and ensuring social justice—combined with scientific innovations—significantly improve clinical outcomes and quality of life. Keywords: Heart Failure, Patient-Centered Care, Autonomy, Family, Social Justice

Treatment Options In Recovered Cardiac Function After CTRCD

Mina Mohseni

Cardiovascular Research Center, Institute Of Basic And Clinical Physiology Sciences, Kerman University Of Medical Sciences Kerman, Iran

Cancer therapy–related cardiac dysfunction (CTRCD) is a common complication of modern cancer treatment, occurring in 5–25% of patients and more frequently with agents such as anthracyclines and trastuzumab. CTRCD may interrupt oncologic therapy and negatively affect cancer outcomes, underscoring the need for early detection and coordinated cardio-oncology care. Recovery of cardiac function is variable and not uniformly sustained. Anthracycline-associated dysfunction often results in partial recovery, whereas trastuzumab-induced CTRCD shows higher rates of complete recovery, typically within 3–6 months. Recovery after immune checkpoint inhibitor myocarditis is unpredictable and may lead to permanent dysfunction. Favorable recovery is linked to early diagnosis, initiation of guideline-directed medical therapy (GDMT), and absence of baseline cardiovascular disease. Management after recovery focuses on continuation of heart-failure therapies—including ACE inhibitors or ARBs/ARNi, beta-blockers, MRAs, and SGLT2 inhibitors—to prevent relapse. Ongoing cardiac monitoring with LVEF, global longitudinal strain, and biomarkers is essential, particularly when cancer therapy is restarted. Multidisciplinary decision-making is required when re-exposing patients to cardiotoxic regimens; trastuzumab can usually be resumed safely, while anthracyclines require caution, and ICIs may need permanent discontinuation when myocarditis occurs. Lifestyle optimization and risk-factor control further support long-term outcomes. Until results from ongoing randomized trials clarify whether GDMT can be safely withdrawn, continued therapy and close surveillance remain recommended.

Tricuspid Regurgitation In HF “Echo Guided Decisions For Better Outcomes”

Fariba Bayat

Associate Professor Of Cardiology,Echocardiologist.Modarres Hospital,SBMU

• in patients with heart failure the prevalence of TR is 10% to 29% and up to 39% in patients with HFpEF and AF. • Only 8%–10% of patients with TR present with clear anatomical abnormalities of the TV apparatus (primary TR) and mostly are secondary TR that TV leaflets are structurally normal and regurgitation is caused by annular dilatation and/or leaflet tethering due to RA and RV dilatation(atrial and ventricular Secondary TR). And finally Cardiac implantable electronic device (CIED)-related TR . • Echocardiography is recommended to assess patients with TR and should include evaluation of severity and aetiology , the impact of TR on the right sided chambers and assessment of PAP. • Before any intervention is considered, careful evaluation of TR aetiology,disease stage (TR severity, RV and LV dysfunction, and PH), patient operative risk, and likelihood of recovery by a dedicated collaborative Heart Team is recommended . In patients with severe TR but without the need for left-sided valve surgery,surgical intervention is recommended in operable symptomatic patients with primary TR • Furthermore, it should be considered in symptomatic patients with secondary TR, or in asymptomatic patients with primary or secondary TR and signs of RV dilatation or RV function deterioration.However patients with severe LV/RV dysfunction or PH do not qualify due to high operative risk. • TV surgery is recommended at the time of the index Procedure(left side) in associated severe primary or secondary TR. • In patients with moderate TR, TV repair annuloplasty during MV surgery should be considered. .Transcatheter TV treatment should be considered to improve quality of life and RV remodelling in high-risk patients with symptomatic severe TR despite optimal medical therapy in the absence of severe RV dysfunction or pre-capillary PH.TTVI including TEER, direct annuloplasty, and orthotopic and heterotopic TV valve replacement.

Ultrasound Assessments Of Shock Patients And Pulmonary Congestion Difficulties

Hamidreza Hatamabadi

Professor Of EM Shahid Beheshti University Of Medical Sciences

Ultrasound is presented as a crucial tool in managing critical patients due to its substantial benefits. The Core Assessment Protocols For rapid evaluation in acute respiratory failure and shock, two standardized protocols are highlighted: the BLUE Protocol and the RUSH EXAM. 1. The BLUE Protocol focuses specifically on the lung and pleural structures 2. The RUSH EXAM (Rapid Ultrasound for Shock) is a broader assessment designed to quickly identify the etiology of shock. It is structured around the H.I.M.A.P. Understanding specific artifacts and signs is fundamental to interpreting lung ultrasound results: Bat Sign: This is identified as a basic step in the assessment. The Pleural line and ribs make a permanent Landmark on the image, defining this sign. Lung Sliding and Seashore Sign: Under M-mode, the pleural line normally separates two distinct patterns. This phenomenon demonstrates lung sliding, and the corresponding M-mode pattern is known as the Seashore sign. Abolished Sliding and Stratosphere Sign: The detection of abolished lung sliding sign allows immediate suspicion of all cases of pneumothorax. The M-mode representation of abolished sliding is referred to as the Stratosphere sign. 1. A-lines: These artifacts are defined as a Hyperechoic horizontal artifact arising from the pleural line. Crucially, A-lines indicate air, representing reverberations of the pleural line. 2. B-lines: These are highly specific artifacts described as a comet-tail artifact, which is laser-ray like, hyperechoic, and well-defined. B-lines originate from the pleural lines and move with lung sliding. The presence of B lines indicates alveolar-interstitial syndrome. 3.Lung consolidation appears on the ultrasound as Subpleural hypoechoic with an irregular border, known as the Shred sign. BLUE Protocol Diagnostic Rule 1. Asthma or COPD: A lines + lung sliding. 2. Pulmonary Edema:Multiple diffuse B lines + lung sliding. 3. PTE: Normal profile + DVT.

Why I Should Get Genetic Testing In My Hypertrophic Cardiomyopathy Patient

Mohammadreza Taban Sadeghi

Tabriz University Of Medical Since , Tabriz Cardiovascular Research Centre.

The genetic basis of HCM is complex and involves several layers. Pathogenic variants in genes encoding .The most commonly implicated genes are MYBPC3 and MYH7, which constitute ~80% of identified defects. several non-sarcomeric genes and some phenocopy genes (e.g., GLA for Fabry disease, TTR for amyloidosis) is crucial for differential diagnosis. Mitochondrial dysfunction, is recognized as a potential primary driver in these patients, advocating for the inclusion of mitochondrial genome sequencing in genetic evaluations. Genetic status significantly influences the clinical course and prognosis of HCM, Specific genotypes correlate with distinct phenotypes. For instance, MYH7 mutations often lead to earlier and more severe hypertrophy, while TNNT2 mutations are associated with a high risk of sudden cardiac death (SCD) despite minimal wall thickening. Sarcomere mutation carriers exhibit a higher burden of myocardial fibrosis and altered myocardial mechanics even before the development of overt LVH. sarcomere-positive patients are diagnosed approximately 13 years earlier and experience a nearly two-fold higher lifetime burden of major adverse cardiovascular events (heart failure, atrial fibrillation, ventricular arrhythmias, SCD) compared to sarcomere-negative individuals. Korean cohort studies confirm that genotype-positive status is an independent predictor of worse composite outcomes. Genetic testing is recommended for index patients to confirm diagnosis, guide differential diagnosis from phenocopies, and enable cascade testing of at-risk relatives. Identifying a pathogenic variant allows for disciplined, cost-effective family screening, focusing surveillance only on genotype-positive relatives. While evidence for using genetics in SCD risk stratification is still evolving (Class IIb), genotype provides independent prognostic information, identifying a subgroup with a more aggressive disease course.

تازه های اندازه گیری فشارخون

Zahra Rooddehghan

دانشیار گروه داخلی جراحی، دانشکده پرستاری و مامایی، دانشگاه علوم پزشکی تهران، شماره تماس ۰۹۱۲۶۹۴۵۷۵۹

مقدمه: فشار خون بالا بیش از یک میلیارد نفر را در سراسر جهان تحت تأثیر قرار می‌دهد. اطمینان از اندازه‌گیری و تفسیر صحیح فشار خون بسیار مهم است. در این مقاله سعی شده است تا تازه های اندازه گیری فشارخون مورد بررسی قرار گیرد روش مطالعه: این مطالعه مبتنی بر مررمتون و مقاله های تازه منتشر شده در خصوص اندازه گیری فشار خون می باشد. نتایج: امروزه، نسل جدیدی از دستگاه‌های فشار خون با هدف آسان‌تر کردن تشخیص و کنترل فشار خون بالا عرضه شده‌اند. برخلاف دستگاه‌های سنتی، این دستگاه‌ها بدون کاف بازو عمل می‌کنند و مقادیر فشار خون را در صورت نیاز، در صورت فشار دادن انگشت کاربر روی حسگر، یا به طور مداوم، در صورت اندازه‌گیری توسط ساعت، انگشتر یا دستبند، ارائه می‌دهند. از جدیدترین دستگاه‌ها و فناوری های نوین برای کنترل فشار خون میتوان به دستگاه‌های فشار خون هوشمند و پوشیدنی، ساعت‌های هوشمند و گجت‌های سلامتی، اپلیکیشن‌های موبایل برای مدیریت فشار خون، سیستم‌های پایش بیمار از راه دور، دستگاه‌های فشار خون غیر تهاجمی و فناوری‌های پیشرفته نانومقیاس و فناوری‌های مبتنی بر هوش مصنوعی و یادگیری ماشین را نام برد. دستگاه‌های اندازه‌گیری بدون کاف مختلف مبتنی بر روش‌هایی هستند که به جای تعیین مستقیم فشار خون، از حسگرها برای ثبت سیگنال‌های غیرمستقیم مختلف استفاده می‌کنند. این سیگنال‌ها توسط الگوریتم‌های مختلف یا مجموعه‌ای از رویه‌های ریاضی برای به دست آوردن مقادیر فشار خون پردازش می‌شوند. در اندازه گیری فشارخون علاوه بر استفاده از فناوری ها و تکنولوژی رعایت نکاتی حین اندازه گیری و آماده بودن برای اندازه گیری فشارخون، می تواند منجر به دقت بیشتر در اندازه گیری گردد. این نکات شامل پوزیش قرارگرفتن بدن حین اندازه گیری، آرام بودن حین اندازه گیری، پرهیز از خوردن و آشامیدن، زمان مناسب برای اندازه گیری و اولویت اندازه گیری فشارخون در منزل به جای مراکز درمانی است. نتیجه گیری:پیشرفت‌های علمی و تکنولوژیکی که در این زمینه اندازه گیری فشارخون صورت گرفته در کنار رعایت نکات لازم برای اندازه گیری فشارخون می تواند اطلاعات دقیق تری در مورد میزان فشارخون و در نهایت مدیریت بهتر آن ها را فراهم آورد.