

Factors Affecting Medication Non-Adherence in Adult Patients with Heart Failure: A Narrative Review

Ahmed O. Alenazi^{1,2*}, Laith Alreshaid^{2,3}, Ageel B. Alharbi^{2,3}, Farah F. Aladel^{1,2}

¹Department of Pharmaceutical Services, Imam Abdulrahman Bin Faisal Hospital, King Abdulaziz Medical City, National Guard Health Affair, Dammam, Saudi Arabia

²King Abdullah International Medical Research Center, Riyadh, Saudi Arabia

³Internal Medicine Department, Imam Abdulrahman Bin Faisal Hospital, King Abdulaziz Medical City, National Guard Health Affair, Dammam, Saudi Arabia

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*Corresponding author: Ahmed O. Alenazi

Department of Pharmaceutical Services, Imam Abdulrahman Bin Faisal Hospital, King Abdulaziz Medical City, National Guard Health Affair, Dammam, Saudi Arabia

Abstract

Original Research Article

Background: Heart failure (HF) is a chronic and progressive condition that places a significant burden on patients, caregivers, and healthcare systems worldwide. Despite advancements in pharmacological and non-pharmacological treatments, medication non-adherence remains a widespread issue that adversely affects clinical outcomes and healthcare costs. **Objective:** This narrative review examines the multifactorial barriers contributing to medication non-adherence in HF patients, with a focus on patient-related, medication-related, and healthcare system-related factors in the United States and Saudi Arabia. **Methods:** A comprehensive literature search was conducted using PubMed, MEDLINE, Web of Science, and Google Scholar for studies published between January 2010 and May 2024. The analysis included studies on adult HF patients that evaluated medication adherence and its influencing factors. Data were synthesized into three key categories: patient-related, medication-related, and healthcare system-related barriers. **Results:** The findings reveal that psychological barriers, such as depression and cognitive decline, significantly reduce adherence. Socioeconomic challenges, including high medication costs and limited insurance coverage, further exacerbate the issue, particularly in Saudi Arabia. Medication-related factors, such as polypharmacy and adverse effects, and healthcare system barriers, such as poor communication and limited access to care, were also significant contributors. **Conclusions:** Addressing medication non-adherence in HF requires a multidisciplinary approach, including targeted education programs, simplified treatment regimens, and improved healthcare access. The integration of culturally sensitive interventions and digital health solutions offers opportunities to enhance adherence and optimize HF management globally.

Keywords: Heart Failure, Medication Non-Adherence, Patient Barriers, Healthcare System Barriers, Medication-Related Barriers.

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INTRODUCTION

Heart failure (HF) is a chronic condition where the heart fails to pump blood efficiently, leading to inadequate oxygen and nutrient delivery to the body. This dysfunction results in frequent hospitalizations, reduced quality of life, and high mortality rates [1]. In the United States alone, nearly six million adults were diagnosed with HF between 2015 and 2018, a number expected to rise by 46% by 2030 [2]. The financial implications are significant, with annual costs exceeding \$30 billion due to hospitalizations and readmissions [3].

In Saudi Arabia, the increasing prevalence of HF mirrors the growing burden of chronic diseases [4,5]. Medication non-adherence is a critical issue, contributing to poor disease management, higher hospital readmissions, and elevated mortality rates [6,7]. Factors such as high medication costs, limited insurance coverage, and inadequate patient education exacerbate the problem [8].

Effective HF management involves a combination of pharmacological treatments—such as beta-blockers, ACE inhibitors, diuretics, and mineralocorticoid receptor antagonists, which are

essential for reducing hospitalizations and improving survival [9]. Non-pharmacological strategies, including lifestyle modifications, dietary restrictions, and symptom monitoring [10]. However, up to 60% of HF patients fail to adhere to their prescribed regimens, significantly undermining the effectiveness of these interventions [11].

METHODS

This narrative review focuses on factors contributing to medication non-adherence in adult HF patients. A systematic search of PubMed, MEDLINE, Web of Science, and Google Scholar was conducted to identify studies published between January 2010 and May 2024. Search terms included "heart failure," "medication adherence," "non-adherence," "barriers," and "healthcare system."

Inclusion criteria:

- Studies focusing on adult HF patients aged 18 or older.
- Research evaluating patient-related, medication-related, and healthcare system-related barriers to adherence.
- Articles published in English.

Exclusion criteria:

- Studies focusing exclusively on pediatric HF populations.
- Research limited to non-pharmacological interventions.
- Data from relevant studies were synthesized into three thematic categories to identify recurring barriers and propose strategies for improvement.

RESULTS

Medication adherence among patients with heart failure (HF) is affected by a variety of interconnected factors that encompass patient characteristics, medication issues, and healthcare system dynamics. Barriers related to the patient, including mental health conditions like depression, cognitive impairments, and low health literacy, significantly obstruct adherence to prescribed therapies. Socioeconomic factors, such as financial difficulties and inadequate social support, further aggravate these challenges. Medication-related issues, including the complexity of polypharmacy and the occurrence of adverse side effects, add to the difficulty of maintaining adherence. Moreover, healthcare system-related challenges, such as ineffective communication between patients and healthcare providers and limited access to medical care, can erode trust and patient engagement. Addressing these complex barriers is vital for enhancing medication adherence and optimizing the management of heart failure.

Patient-Related Barriers

Psychological Barriers: Depression and cognitive impairments emerged as critical factors influencing medication adherence. Up to 50% of HF patients experience depression, which diminishes their motivation and ability to adhere to prescribed treatment regimens. Additionally, cognitive decline, especially in older patients, complicates the management of complex medication schedules, often leading to errors in dosage and missed doses [12,13]. In Saudi Arabia, cultural stigmas around mental health may exacerbate these barriers by limiting patients' willingness to seek support [14].

Health Literacy and Knowledge Gaps: Limited health literacy directly affects a patient's ability to comprehend their condition and treatment plan. In Saudi Arabia, insufficient education about HF and medication regimens correlates with poor adherence [5]. Conversely, educational programs in the U.S. have demonstrated significant improvements in adherence, with interventions boosting rates by 20% or more [15].

Socioeconomic Challenges: Financial constraints are prevalent barriers in both the U.S. and Saudi Arabia. High medication costs and inadequate insurance coverage disproportionately affect low-income populations. Saudi patients often rely on out-of-pocket payments, while U.S. patients face significant co-payments, leading to increased rates of non-adherence [4,6].

Medication-Related Barriers

Polypharmacy and Complexity: The necessity for polypharmacy in HF management creates significant challenges for adherence. Patients managing multiple medications face confusion and an increased likelihood of dosing errors [16]. Studies suggest that simplified regimens, such as fixed-dose combinations, improve adherence by reducing complexity and the burden of multiple daily doses [17].

Adverse Effects: Common HF medication side effects, including fatigue, dizziness, and gastrointestinal discomfort, were significant contributors to treatment discontinuation. Patients who perceived medications as burdensome or harmful were less likely to continue long-term use [10]. Strategies such as personalized care and dose adjustments were identified as effective in mitigating these challenges.

Healthcare System-Related Barriers

Communication Gaps: Poor communication between healthcare providers and patients was a recurring theme in the literature. In Saudi Arabia, limited patient counseling and insufficient follow-up contributed to confusion regarding treatment regimens [5]. In the U.S., unclear instructions and a lack of continuity of care led to reduced trust in the healthcare system [18].

Access to Care: Geographic and logistical barriers were particularly pronounced in Saudi Arabia, where rural patients often lack convenient access to healthcare facilities. Telemedicine and mobile health solutions have

shown potential to improve access, but inconsistent adoption remains a limitation in both countries [2].

Table 1: Summary of key factors influencing Medication adherence

Patient-Related Barriers	Psychological Barriers	Depression Cognitive impairment
	Health Literacy and Knowledge Gaps	literacy
	Socioeconomic Challenge	Financial barriers Medication costs Limited insurance coverage
Medication-Related Factors	Complexity of Regimens	Polypharmacy
	Side Effects and Perceived Burden	Medication adverse effects
Healthcare System-Related Factors	Communication Gaps	Ineffective communication Limited counseling
	Access to Care	Geographic barriers Logistical barriers

DISCUSSION

The findings of this review highlight the intricate and interconnected factors contributing to medication non-adherence in HF patients. These factors span psychological, socioeconomic, medication-related, and healthcare system domains, emphasizing the need for comprehensive interventions.

Addressing Patient-Related Barriers like psychological barriers, such as depression and cognitive decline, are pervasive among HF patients and require immediate attention. Cognitive-behavioral therapy (CBT) and collaborative care models have shown promise in addressing depression and improving adherence rates in HF patients [13]. Additionally, caregiver involvement can help mitigate cognitive-related adherence issues, particularly in older adults with memory impairments [12].

Enhancing health literacy is another critical area. In Saudi Arabia, culturally tailored education programs are needed to bridge knowledge gaps, especially in rural and underserved communities. In the U.S., integrating health literacy components into routine care has proven effective, suggesting the potential for scalable interventions globally [15].

Socioeconomic barriers require systemic solutions, such as expanding insurance coverage and reducing medication costs through generic substitutions or governmental subsidies. In Saudi Arabia, national health policies aimed at providing universal coverage could play a pivotal role in reducing financial burdens [6].

Tackling Medication-Related Barriers such as polypharmacy and the complexity of HF regimens remain significant challenges. Simplifying treatment regimens, such as consolidating medications into fixed-dose combinations, is a proven strategy to improve adherence. This approach not only reduces the physical burden on patients but also minimizes the risk of dosing errors [16].

Managing adverse effects is equally critical. Healthcare providers must adopt patient-centered care models, where open communication allows for the customization of treatment plans to minimize side effects without compromising efficacy [10]. For instance, dose adjustments and alternative drug formulations can enhance tolerability and adherence.

Improving Healthcare System-Related Factors, communication barriers between healthcare providers and patients were a common theme across studies. In the U.S., fragmented care pathways hinder effective communication, while in Saudi Arabia, limited counseling services exacerbate misunderstandings about treatment regimens [5,18]. Implementing multidisciplinary care teams that include pharmacists, nurses, and physicians can foster better communication and ensure patients receive consistent, clear information about their care.

Access to care remains a pressing issue, particularly in resource-limited settings. Telemedicine has shown potential to address these gaps by providing virtual consultations and remote monitoring for HF patients in underserved areas [2]. However, challenges related to technology access and digital literacy need to be addressed to ensure equitable adoption.

Future Directions

The integration of digital health technologies offers promising opportunities to improve medication adherence. Mobile health applications, for example, can provide medication reminders, educational resources, and real-time communication with healthcare providers. These tools, combined with personalized care plans, could significantly enhance adherence rates, especially in younger and tech-savvy patient populations.

Moreover, culturally sensitive interventions must be prioritized. Programs designed to address regional disparities and cultural norms in Saudi Arabia and the U.S. will be critical for improving adherence and patient engagement. For example, involving family members in care plans could enhance adherence in

collectivist cultures like Saudi Arabia, where family support often plays a central role in health decision-making.

Finally, future research should focus on longitudinal studies that evaluate the long-term impact of these interventions on adherence rates and clinical outcomes. Understanding the sustainability and scalability of proposed solutions will be key to addressing the global burden of HF effectively.

CONCLUSION

Medication non-adherence in HF patients remains a significant challenge, driving poor clinical outcomes and increasing healthcare costs. This review emphasizes the importance of addressing psychological, medication-related, and systemic barriers through tailored education, simplified regimens, and improved healthcare access. Future research should explore culturally sensitive and scalable digital interventions to enhance adherence globally.

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