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Original Article

Policy Recommendations for Information Prescribing to Heart Failure Patients to Reduce Readmissions, Mortality, and Costs

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Abstract

Introduction: Heart failure is a leading cause of hospitalization and mortality, with frequent readmissions mainly due to poor self-care knowledge and low medication adherence. These readmissions increase healthcare costs and reduce patients' quality of life. Evidence shows that physician-prescribed, evidence-based information prescriptions (IPs) can enhance self-management and reduce readmission rates. This policy brief aims to propose strategies in this direction, taking an effective step toward achieving health equity and elevating the quality of care.

Methods: This policy brief was developed using a mixed-methods approach, including a 12-month randomized controlled trial among 120 heart failure patients at Shahid Madani Cardiovascular Teaching Hospital, a systematic review of evidence (Cochrane, UpToDate, and MedlinePlus), and expert focus group discussions. Evidence was synthesized and translated into policy recommendations with review. Quantitative data were analyzed using descriptive statistics and inferential tests (Chi-square, Kaplan–Meier, and Cox regression). A p-value of less than 0.05 ($P \leq 0.05$) was considered statistically significant at all stages of the analysis.

Results: Findings from the trial and expert analyses led to four interconnected policy recommendations: institutionalizing information prescription for heart failure patients as a national standard of care; establishing evidence-based information delivery units in cardiac and teaching hospitals to provide personalized patient education; developing a formal triangular collaboration framework among Clinical Team (Cardiologists and Nurses), medical librarians and Patients to coordinate educational activities; and launching a digital heart failure information prescription system integrated with national electronic health records to automate patient communication and follow-up.

Conclusion: Integrating Information Prescription into Heart failure care supported by evidence-based delivery units, interdisciplinary collaboration, and digital platforms can improve patient outcomes and system efficiency.

Introduction

Cardiovascular diseases (CVDs) remain one of the most significant challenges for healthcare systems worldwide and a leading cause of mortality.[1] According to the World Health Organization (WHO), approximately 17.9 million people die annually due to CVDs, and this figure is exceptionally high in middle-income countries like Iran, with projections indicating a further increase due to demographic shifts and evolving lifestyles.[2,3] It has been reported that these diseases contribute to up to 46% of all deaths and account for 20% to 23% of the overall disease burden in the country.[4] Among these conditions, heart failure (HF) stands out as one of the most common causes of hospitalization, particularly among the elderly, thereby placing a substantial burden on families and the national healthcare system.[5] Furthermore, studies demonstrate that nearly 40% to 50% of heart failure patients are readmitted within 30 days of discharge.[6] These frequent hospitalizations not only significantly impair the patients' quality of life but also impose substantial costs on the healthcare system.[7]

Multiple scientific studies have indicated that one of the most critical reasons for readmission among heart failure patients is a deficiency in knowledge, low health literacy, and an inability to manage self-care.[8-11] Many patients struggle to understand the importance of adherence to

Research Highlights

What is the current knowledge?

- Physician directed and medical librarian administrated information prescription boosts self-management and reduces readmission in HP patients.
- Clinical guidelines and healthcare system policies lack a clear recommendation about information prescription service.
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What is new here?

- The policy brief suggests that physician directed and medical librarian-prepared information prescription can improve outcomes in HF patients.
- This Policy brief recommends information prescription service to be established in health care system and included in clinical guidelines.

treatment, proper medication use, dietary restrictions, and post-discharge follow-up protocols.[11] In fact, a significant portion of these patients either fail to receive adequate information about their condition and necessary care from the treatment team or become confused when faced with numerous information sources in the digital space.[9]

Therefore, the most effective approach to mitigate the impact of low awareness and insufficient education on readmissions is through the prescription of information delivered by the physician concerning the patient's treatment. However, since physicians often lack the sufficient time to search, retrieve, and tailor information for individual patients, a collaborative approach involving the physician, the medical librarian, and the patient emerges as a promising solution. This team-based strategy ensures that the patient's need for evidence-based, reliable, and up-to-date information is met, based on the diagnosis and prescription provided by the attending physician.[12]

In recent years, minimizing healthcare costs, patient readmissions, and repeated procedures or surgeries has been a serious concern for governments and the public. Meanwhile, empowering patients with relevant information is an effective approach to minimizing readmission rates and costs, provided patients know how to manage their self-care.[13] In this regard, numerous studies have also demonstrated that implementing information prescriptions (IPs) can lead to improved patient adherence to treatment, enhanced self-care, and a reduction in both readmissions and hospitalization costs.[14-18]

Thus, it is crucial that health policymakers, considering the rising trend of chronic diseases and the resulting costs of readmissions, prioritize the development and implementation of policies to establish and institutionalize information prescription. This policy brief aims to propose strategies in this direction, taking an effective step toward achieving health equity and elevating the quality of care.

Materials and Methods

This policy brief is grounded in internal evidence derived from a randomized clinical trial that investigated the impact of providing evidence-based Information Prescription (IPs) on reducing readmission rates in heart failure (HF) patients at Shahid Madani Cardiovascular Teaching Hospital in Tabriz.[19] International evidence and supplementary documentation were based on a relevant systematic review and meta-analysis.[16]

Phase 1: Randomized Controlled Trial (Internal Evidence)

Data collection to establish internal evidence and examine the effect of evidence-based IPs on reducing readmission and mortality in HF patients was conducted via a 12-month RCT (December 2013–2014) (Trial registration number in the Iranian Registry of Clinical Trials: 201109217612N1). Based on hospital records showing an average daily admission of one HF patient, the sample size was determined to be 120 patients, who were randomly allocated to an intervention group (n = 60) and a control group (n = 60). Patient sampling utilized a random block method in three blocks of 40, generated using Excel software. The control group received routine verbal information from nurses or physicians. The intervention group received the routine verbal information plus the physician-prescribed information (IPs).

The prescribed information included background on heart failure (HF), causes, exacerbating factors, relevant medications, laboratory tests, exercise recommendations, appropriate diet, disease control factors, risk factors, and evidence supporting adherence to the prescribed drug regimen.

The information prescription was initiated by the attending physician. Based on the physician's prescription, a trained medical librarian/information specialist prepared the informational content using the most recent and reliable evidence sources, including Cochrane evidence-based patient summaries and UpToDate, as well as supplementary background information from MedlinePlus.The prepared materials were then translated, simplified, and adapted into patient-friendly language. Subsequently, the medical librarian/information specialist personalized the information for each patient based on the physician's clinical prescription and recommendations, taking into account the patient's condition and educational needs. The attending physician then reviewed the prepared content to ensure its accuracy, clinical relevance, appropriateness, and adequacy of information, and revisions were made where necessary. Following the physician's final approval, the finalized information prescription was provided to patients in the intervention group at the bedside in printed form. The delivery of this information prescription to patients was carried out with the assistance of the nursing staff, who facilitated communication and supported the explanation of the materials to ensure that the information was effectively conveyed to patients.

Because of the educational nature of the intervention, blinding of the service provider and patients was not feasible. However, allocation concealment was ensured using sealed opaque envelopes containing the randomization codes. The individual delivering the intervention was different from the outcome assessor. Outcome assessments at 3, 6, and 12 months were conducted by an assessor who was blinded to group allocation and had no information about the intervention. Data analysis was also performed without knowledge of group assignments to minimize bias. Inclusion criteria for the study were: 1) Diagnosed with HF (according to Framingham criteria); 2) Patient's companion, caregiver, or first-degree family member was not a physician or healthcare personnel; 3) Literacy at the reading/writing level (grade 6) by the patient or their caregiver/companion involved with the physician. Exclusion criteria included: 1) Individuals already possessing information about their disease;)This was assessed through patient self-report during the initial interview and further verified by reviewing the patient's medical records and documented clinical history regarding previous disease education or counseling(;2) Individuals with low consciousness levels; 4) Individuals with chronic kidney failure or on dialysis; 5) Individuals with brain/neurological problems. All patients provided written informed consent prior to participation.

Data were collected using a structured questionnaire comprising two parts: demographic/socio-economic information (age, gender, education, residency, admission date) and eight thematic items (including closed Yes/No and some open questions) assessing previous cardiac history, number of admissions, and reasons for admission.[19] The clinical and demographic data were collected from the medical chart of the patients and if needed complemented by asking question from the patient. The data on the number of re-admissions and death have respectively been collected from the medical charts of patients by data extraction form and a follow-up questionnaire. The follow-up questionnaire consisted of eight items regarding the time of hospital admission and discharge, time of re-hospitalization, cause of re-hospitalization, reading the IPs, death and time of the death.Construct validity was evaluated through expert review: ten experts assessed each item for relevance and clarity, and items with a content validity index (CVI) below 0.78 were removed. The modified Kappa-based method) > 0.88(was used to calculate agreement among experts[14].A score of 0 and 100 were used for each criterion.

The impact of the IPs intervention was quantified using a score of zero and 100 for each criterion. The score of one hundred was considered for each criterion observed in a patient chart, and the score of zero was considered for each criterion that was not observed.

The follow-up intervals were six and 12 months after the first intervention. The follow-up was carried out by telephonic interview with patient and/or the care giver and review of the medical records (from hospital archives, accounting, and medical documentation departments when needed) All 120 enrolled patients (60 per group) were successfully followed up with no reported loss to follow-up or significant missing data, allowing complete inclusion in the primary outcome analyses (readmission, death, or composite endpoint). Data analysis utilized descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (Pearson correlation coefficient, and for bivariate analysis: Mann–Whitney U, Chi-Square, Kaplan–Meier, and multivariate Cox regression model). Throughout all statistical stages, a p-value of 0.05 was set as the threshold for statistical significance, and data were analyzed using STATA v.14.0.

Phase 2: Systematic Review and Literature Update (External Evidence)

Furthermore, to ensure updated results, the researchers conducted a comprehensive review and search of all relevant studies in both Persian and English, covering the period 2020–2025, across databases including PubMed, Embase, Scopus, Web of Science, Magiran, and SID, along with Google Scholar. Key search terms included: "Cardiac failure or heart failure patients," "Information therapy, information prescription, written information intervention," "education intervention," "Hospital re-admission," "Mortality," "cost," "expenditure" and their Persian equivalents.

Study Selection and Screening Process

All identified articles were entered into article management software and duplicates were eliminated. To increase reliability and reduce bias, the screening process was performed independently by two reviewers (F.K. and V.G.) in three stages: (1) removal of duplicates, (2) screening of titles and abstracts against predefined inclusion and exclusion criteria, and (3) full-text review of potentially eligible articles. Titles were required to appear potentially relevant to the study area. Abstracts were then assessed against the following criteria: (1) the study was a randomized controlled trial; (2) the population consisted of patients with the main diagnosis of heart failure (HF); (3) written information (information therapy or information prescription) was used as the intervention; and (4) at least one of the main outcomes was the cost of re-admission. In cases of disagreement between the two reviewers, the case was discussed with the third author (the research team supervisor) in a face-to-face session, and a final decision was reached after discussion. Full-text papers were retrieved only if both reviewers agreed on eligibility. The Critical Appraisal Skills Program (CASP) tool was used for appraising the quality of included studies.

Data Extraction and Analysis

After extracting relevant data from the final included articles, analysis was conducted using thematic analysis. The extracted findings were grouped thematically to serve as external evidence for the subsequent qualitative phase (expert panel).

Phase 3: Qualitative Phase (Expert Consultation)

In the qualitative phase, the information gathered from the external and internal evidence was discussed through expert interviews conducted within focused group discussion (FGD) sessions. This involved consultation with five experts in the field (medical librarianship specialists, cardiologists, and head nurses) who were purposefully selected as policymakers and individuals with extensive experience in this domain, until theoretical saturation was reached. The in-person sessions, each lasting 90 minutes, were held in two meetings, during which detailed notes were taken. In these sessions, the effects, advantages, and disadvantages of information prescription on reducing HF readmissions were debated.

Phase 4: Consensus Development and Policy Option Finalization

Finally, the saturated findings derived from the qualitative discussions were synthesized and compiled into a checklist of policy options. This checklist was circulated among the participating experts to achieve consensus and to allow for final revisions. Expert feedback was incorporated to refine, validate, and finalize the proposed policy recommendations.

Results

Phase 1 Results: Randomized Controlled Trial (Local/Internal Evidence)

Impact of Information Prescription on Readmission and Mortality

The results of the randomized clinical trial conducted by Kazemi et al[14] indicated that while the readmission rate decreased in the intervention group during the initial six-month follow-up, bivariate analysis did not reveal a statistically significant difference between the groups [RR = 0.8, 95%CI: 0.51–1.26]. However, at the 12-month follow-up, the readmission rate in the intervention group was significantly lower than that observed in the control group ($P = 0.037$). During this period, 20 patients in the intervention group and 33 patients in the control group experienced readmission [RR = 0.61, 95%CI: 0.4–0.93].

Regarding mortality, the number of deaths during the first six months was lower in the intervention group (n = 3) compared to the control group (n = 5) [RR: 0.6, 95% CI: 0.15–2.40]. Although this difference was not statistically significant ($P = 0.46$), it was deemed to be clinically valuable. Furthermore, over the full 12-month period, 7 patients in the intervention group and 15 patients in the control group died [RR = 0.47, 95%CI: 0.20–1.06]. While the survival rate was higher in the intervention group, this difference reached only the borderline of statistical significance ($P = 0.05$). Overall, the study demonstrated that one year after discharge, the difference in the composite outcome of readmission and mortality was statistically significant between the intervention and control groups, with only 24 patients in the intervention group compared to 36 patients in the control group experiencing readmission or death [RR = 0.67, 95%CI: 0.46–0.97].

Phase 2 Results: Review and External Evidence

Previous Actions and Current Status (Contextual Evidence)

However, currently in Iran, the process of providing written information to patients is very limited and lacks information standards, particularly that of being evidence-based. This deficiency has led to dissatisfaction among most patients regarding the quantity and quality of information received, prompting demands for more precise and practical information.[20]

Therefore, given the available evidence, it is clear that one of the most effective strategies for reducing the burden of heart failure in the Iran is focusing on the systemic process of information prescription. This process involves providing patients with credible, evidence-based information prescribed by a physician and prepared by medical information specialists in a simple language tailored to the patient's individual condition, often in the format of an information prescription. This action not only can enhance patients' health literacy but also it can improve therapeutic adherence, reduce unnecessary visits and readmissions, and may result in significant savings for the healthcare system. In essence, as the quality of information received by the patient increases, the rate of recovery also improves, potential risks from lack of awareness decrease, and hefty additional treatment costs are lowered.

Global Evidence

Multiple studies indicate that Information Prescription (IPs), when integrated as part of clinical interventions, can significantly increase patients' knowledge, enhance their therapeutic decision-making, and lead to positive clinical outcomes.[13, 18, 19, 21]

National programs, such as the National Health Service) NHS (Information Prescriptions Programmed in the UK, were implemented starting in 2008 with the aim of empowering patients with chronic conditions like diabetes, cancer, and heart failure. Evaluation results from these programs demonstrated increased patient satisfaction, a better understanding of their disease, and improved adherence to treatment.[22]

Similarly, clinical studies have confirmed the efficacy of this approach. For instance, a randomized controlled trial on heart failure patients showed that the prescription of personalized information resulted in reduced readmission rates and an improved quality of life.[13] In another study, researchers demonstrated that personalized information prescribed improves self-care power of women with breast cancer.[18]

A Randomized Controlled Trial demonstrated that easy-to-understand patient letters significantly improve patients' capacity to comprehend and implement medical information and instructions, especially regarding the understanding of medical advice and the successful application of medication instructions Crucially, patients reported a substantial and undeniable need for intelligible post-discharge information, profoundly highlighting the vital role such accessible communication plays in enhancing patient autonomy, facilitating self-management, and ultimately improving post-hospitalization outcomes.[23]

In a separate study, researchers investigated patient preferences concerning the assessment of their supportive care needs and the delivery of relevant information for those undergoing treatment for breast cancer. The findings led to the conclusion that these informational and care needs must be more effectively addressed and systematically integrated within a structured follow-up care program.[24]

Beyond clinical effects, the psychological and behavioral consequences of IPs have also been addressed in the literature. For instance, a review by DeRosa et al.[25] suggests that patients receiving prescribed information reported a greater sense of control over their health status and experienced less anxiety. Furthermore, IPs has been shown to improve the patient-physician relationship and enhance patients' active participation in treatment decisions.

Overall, international evidence suggests that Information Prescription (IPs) may act not only as an educational intervention but also have potential therapeutic benefits, potentially contributing to reduced clinical errors, enhanced self-care behaviors, increased patient satisfaction, and improved health outcomes in certain contexts.

Phase 3 Results: Qualitative Phase (Expert Consultation)

During the focus group discussions, experts explored the current challenges and opportunities associated with implementing Information Prescription (IPs) in clinical settings. Analysis of the discussions revealed several key themes.

First, participants emphasized the limited effectiveness of routine verbal education during short clinical consultations, noting that patients often forget or misunderstand important medical instructions provided during brief encounters with physicians. Second, experts highlighted the growing risk posed by non–evidence-based health information available on the internet, which frequently leads to misinformation, patient confusion, and inappropriate self-management behaviors. Third, the discussions underscored the significant time constraints faced by physicians and nurses, which limit their ability to provide comprehensive and personalized patient education during routine care. Finally, participants stressed the need for a structured system for delivering reliable, evidence-based, and personalized health information to patients, particularly for individuals with chronic conditions such as heart failure who require ongoing self-care and monitoring. Overall, the focus group participants agreed that implementing Information Prescription within the healthcare system could help address these challenges by formalizing the process of providing validated patient information, strengthening interdisciplinary collaboration, and improving patient engagement in self-care.

Phase 4 Results: Consensus Development and Policy Options

Following the qualitative discussions, the synthesized findings from internal and external evidence were compiled into a checklist of potential policy options. These options were circulated among the participating experts for review and refinement. Consensus was achieved through iterative expert feedback, resulting in the final set of policy options presented in Table 1. This table briefly categorizes each approach, detailing its advantages, disadvantages, implementation requirements, and potential barriers.

Policy Recommendations

To operationalize the previously proposed policy options, the following executive strategies (policy actions) are presented to assist healthcare system administrators and policymakers.

Institutionalizing 'Information Prescription' (IPs) for Heart Failure Patients Within the Health System

For the effective implementation of this policy, it is essential that the Ministry of Health develops a national guideline and regulatory framework defining how information should be prescribed, personalized, and documented alongside pharmaceutical prescriptions. Policymakers should establish incentive mechanisms to encourage physicians, nurses, and medical librarians to adopt the model and reward evidence-based patient communication. A national monitoring and evaluation system should be introduced to assess implementation fidelity and patient outcomes. Given the existing readiness trained librarians, physician willingness, and supportive ministry policies the main policy priority is not infrastructural but governance-related: formalizing the right to prescribe and deliver information as a core component of patient care.

Establishment of "Evidence-Based Information Preparation and Delivery Units" in Cardiac and Teaching Hospitals

These centers will serve as institutional platforms for delivering evidence-based, patient-centered information, where trained medical librarians collaborate with cardiologists and nurses to provide simplified, personalized educational materials addressing key aspects such as diet modification, physical activity, medication adherence, and recognition of warning signs. In addition to reducing the educational burden on nurses and physicians, these centers will enhance patient trust, strengthen evidence-based communication within care teams, and elevate community health literacy. Collaboration with the Iranian Heart Association, academic libraries, and Centers for Evidence-Based Medicine will ensure the accuracy, accessibility, and cultural appropriateness of the provided content. At the policy level, the Ministry of Health must forecast a sustainable funding mechanism for the establishment and operation of these Centers, drawing from health promotion budgets, hospital education allocations, or insurance contributions.

Framework for Collaboration Among Clinical Team (Cardiologists and Nurses), Medical Librarians/Information Specialists, and Patients

Implementing a structured collaboration framework requires developing a national protocol that formally defines the shared roles of cardiologists, nurses, librarians, and patients in the process of information prescription and follow-up. Within this framework, the Physician prescribes the information (IPs) based on the patient’s condition, the Medical Librarian selects and provides credible scientific resources tailored to the patient’s literacy level, and the Nurse performs follow-up on adherence to recommendations via telephone contact or subsequent visits.

For this collaboration to be institutionalized, the Ministry of Health must formulate a specific interdisciplinary guideline and implement it as a pilot in academic cardiac clinics. Additionally, a module titled “Information Prescription Skills and Collaboration with the Medical Librarian” should be included in the continuous professional development (CPD) courses for physicians and nurses. Subsequently, a formal job designation for the “Medical Librarian” must be defined within treatment teams to elevate this role from a voluntary or informal status. The creation of a shared database between physicians and librarians for the rapid exchange of credible and up-to-date resources in heart failure is also an essential requirement of this policy.

Table 1. Proposed Policy Options, Advantages, Facilitators, Executive Barriers, and Implementation Requirements

Row	Policy Option	Policy Description	Advantages	Facilitators	Implementation Requirements	Executive Barriers
1	Institutionalizing 'Information Prescription' (IPs) for Cardiovascular Patients within the Health System	Integration of Information Prescription alongside the pharmaceutical prescription for heart failure patients; aimed at increasing patient awareness of the disease, warning signs, and self-care methods.	- Reduction in hospital readmissions, mortality rates, and healthcare costs - Strengthened trust and communication between physicians and patients - Improved patient participation in shared decision-making	- Patients’ strong interest in receiving personalized and evidence-based health information (supported by existing studies) - Existence of trained medical librarians specialized in clinical information services (through updated curricula and practical internships) - Supportive policies of the Ministry of Health toward medical librarianship and clinical information services - Successful implementation of medical librarianship programs in Iran - Physicians’ positive attitudes and willingness to provide patients with reliable information (as evidenced by research) - Evidence-based practices among some physicians in prescribing and directly delivering information to patients	- Need for developing a national guideline for prescribing information prescriptions - Need to establish an incentive system for physicians, nurses, and medical librarians to participate in this process - Need to promote a culture of patient education and evidence-based information delivery within healthcare settings	- Absence of an explicit and formal policy for prescribing and delivering information to patients - Lack of a binding legal framework to institutionalize the information prescription within the health system - Absence of a designated authority within the Ministry of Health responsible for monitoring and implementing patient information policies - Lack of evaluation and monitoring indicators in health policies to assess the extent of evidence-based patient information delivery
2	Establishment of “Evidence-Based Information Preparation and Delivery Units” in Cardiac and Teaching Hospitals	Development of dedicated hospital units responsible for the delivery of personalized, simplified, and evidence-based “information prescriptions” to cardiac patients. These units would collaborate with clinical and nursing teams to provide tailored educational materials covering topics such as low-sodium diet, safe physical activity, medication adherence, and warning signs	- Reduction in educational workload for medical and nursing teams Increased awareness and satisfaction among patients and caregivers Decrease in unnecessary emergency visits Enhanced patient empowerment and self-management capacity	Existence of evidence-based centers with a mission to localize and adapt clinical practice guidelines for patients Strong multidisciplinary (nursing and medical) teams capable of developing patient-oriented clinical guides Presence of trained medical librarians skilled in simplifying and personalizing evidence-based content for patients Collaboration with the Iranian Heart Association and center for evidence-based medicine for providing patient guidelines	Need to expand course offerings in disease concepts and medical terminology within medical librarianship programs Need to emphasize patient information provision and delivery practice within librarianship internship programs Need for structured collaboration between librarians and clinical teams Need for institutional protocols to verify, update, and standardize information Collaboration with the Iranian Heart Association and center for evidence-based medicine for providing patient guidelines	- Absence of a clear and formal national policy framework recognizing and institutionalizing “Evidence-Based Information Delivery and Dissemination Units” in hospitals Lack of designated authority or governing body within the Ministry of Health responsible for overseeing the implementation of patient information delivery policies

Table 1. Continued.

Row	Policy Option	Policy Description	Advantages	Facilitators	Implementation Requirements	Executive Barriers
3	Framework for Collaboration among Clinical Team (Cardiologists and Nurses), Medical Librarians/ Information Specialists, and Patients	Development of a formal collaboration model in heart failure clinics that integrates cardiologists, nurses, medical librarians/ information specialists, and patients into a unified communication framework. In this model, the physician prescribes the "information prescription" (IPs) based on the patient's clinical condition; the librarian or information specialist selects, personalizes, and delivers the evidence-based content to the patient; the nurse reinforces understanding and monitors adherence to the prescribed information through appropriate channels (e.g., phone calls, email, or follow-up visits); and the patient actively participates by applying the received information in daily self-care activities.	Increased accuracy and personalization of patient information according to clinical needs Reduced patient confusion arising from unreliable online health sources Strengthened interdisciplinary collaboration and communication within cardiac care teams Improved patient engagement and self-management in treatment and recovery Enhanced satisfaction and trust among patients and care providers	- Increasing workload and time constraints among nurses, limiting their capacity to provide personalized education for each patient - Limited opportunities for individualized patient education during routine medical visits -Ineffectiveness of verbal instructions delivered during short consultations in ensuring patient understanding and retention - Limited educational value of printed pamphlets, which often provide only general or encyclopedic information rather than tailored, evidence-based guidance - Proliferation of commercial and non-evidence-based online health information, contributing to patient misinformation and confusion - Growing dominance of generative AI chatbots that frequently disseminate inaccurate or hallucinated health content, highlighting the need for validated, evidence-based patient information delivery channels	Designing and approving a Cardiologist–Nurse–Librarian–Patient Collaboration Protocol at the national level Conducting pilot studies in academic cardiac clinics to assess feasibility and patient outcomes Developing educational programs to enhance health communication and interdisciplinary teamwork skills among healthcare professionals Ensuring Ministry of Health oversight for model implementation and quality monitoring Establishing secure digital platforms to facilitate coordination and follow-up between team members and patients	Absence of a formal policy framework recognizing the role of medical librarians/ information specialists in patient-centered clinical teams Limited awareness among physicians and hospital administrators regarding the value of structured information delivery models Institutional resistance to redefining professional boundaries and integrating new roles within traditional care teams

Results of this study suggest that the coordinated implementation of policies supporting physician-prescribed information (Information Prescription) may contribute to reduced treatment costs and improved quality of life for heart failure patients. Furthermore, such approaches could represent a meaningful step toward realizing patients' right to access evidence-based health information and advancing a patient-centered healthcare system in Iran.

Launching the Digital Heart Failure Information Prescription System (Digital HF InfoRx)

At the digital infrastructure level, Iran's existing EHR systems (SEPAS, SIB, SHAMS) provide a solid foundation for developing an automated Digital Heart Failure Information Prescription System (Digital HF InfoRx) capable of delivering evidence-based materials to patients via SMS, email, or secure patient portals upon discharge. To achieve this, the Ministry of Health, in collaboration with the Central Libraries of Universities of Medical Sciences, the Iranian Heart Association, and National Health Data Centers, should design a secure and user-friendly platform that integrates seamlessly with current EHR infrastructure. Policymakers must establish a comprehensive legal and ethical framework authorizing direct patient-facing communication, defining data privacy, consent management, and content validation protocols, and embedding these provisions into the national digital health roadmap. The platform should feature a simple, accessible user interface suitable for elderly individuals and patients with low literacy levels, and offer audio-visual formats of educational materials for diverse patient groups.

Continuous technical support and regular content updates are essential to maintain accuracy and system reliability. The initiative's effectiveness should be systematically monitored through measurable indicators such as reductions in hospital readmission rates, improved medication adherence, and enhanced patient awareness. This project can act as a pilot innovation phase within Iran's broader digital health transformation and ultimately serve as the foundation for expanding electronic information prescription systems to other chronic diseases in the future.

Discussion

The present policy brief integrates evidence from a randomized controlled trial[14,19], a systematic review[16], and expert consultations to inform policy options for implementing Information Prescription (IPs) in heart failure care. The randomized trial demonstrated that providing evidence-based, physician-prescribed information significantly reduced hospital readmissions and improved the composite outcome of readmission and mortality at 12-month follow-up. Findings from the systematic review corroborated the effectiveness of structured, personalized information interventions in improving patient knowledge, adherence, and clinical outcomes. In addition, qualitative consultations with experts highlighted major gaps in routine verbal education, risks associated with non–evidence-based online health information, and the need for formalized, interdisciplinary information delivery systems. Together, these findings underpin the proposed policy options aimed at institutionalizing Information Prescription within the Iranian healthcare system.

A review of the evidence indicates that information-based education and the provision of structured information to cardiac patients can reduce hospital readmission rates by up to 56%.[26] The findings from Iranian studies, involving evidence-based information prescription and reduced readmissions, are also consistent with this evidence.[14,21] Therefore, the implementation of Information Prescription (IPs) within the Iranian healthcare framework, specifically through physician prescription and the collaboration of medical librarians, can be an effective step in the management of cardiac patients.

In Iran, although the right of patients to access health information is recognized in upstream documents, the quality and systematic nature of the clinical information process remain weak and are largely limited to verbal or scattered education. In contrast, countries with advanced healthcare systems have integrated models of Information Prescription (IPs) into their care systems. For instance, in the UK, the "NHS Information Prescription Service," through the partnership of medical librarians and physicians, has provided specialized digital content for patients with chronic diseases (including cardiac patients) and demonstrated high effectiveness in improving treatment adherence.[22] These successful experiences represent an adaptable model for the Iranian healthcare system.

In the digital era, utilizing IT-based platforms for the management of chronic patients is considered an effective approach. Studies conducted in other countries have shown that the use of digital information prescriptions for diabetic patients resulted in a significant increase in self-management and blood glucose control.[27] Given the development of the Electronic Health Record System (SEPAS) in Iran, launching a digital information prescription subsystem for heart failure patients can be a major step toward the smart management of care and the continuity of treatment. Although challenges such as low digital literacy among the elderly and the need for adequate internet infrastructure must be considered, the benefits in terms of reducing treatment costs and enhancing patients' quality of life are substantial.

In a comparative analysis, the role of medical librarians in improving the quality of information interventions is extremely critical. While physicians focus on clinical aspects, librarians, skilled in evaluating scientific sources, are capable of providing accurate, simplified, and evidence-based information to patients. The combination of these two roles in the form of a "Physician–Librarian Joint Information Prescription" can bridge the existing gap between patients' information needs and the capacity of the healthcare system. Studies also emphasize this collaboration;[28] Zarea and Mahami's studies showed that information interventions involving librarians lead to improved awareness, satisfaction in chronic patients, a reduction in medical errors, and ultimately a lower workload for the care team.[17,20]

Considering this body of evidence, the institutionalization of Information Prescription (IPs) in the care system for heart failure patients appears to be a low-cost, evidence-based policy with high efficacy in reducing repeated and unnecessary hospital readmissions, mortality rates, and overall healthcare costs.

Limitations

One limitation of this study is that the primary RCT was conducted in 2013–2014, which may raise concerns regarding the timeliness of the evidence. This was addressed through an updated systematic review (2020–2025) confirming the continued effectiveness of Information Prescription (IPs) interventions, and through contemporary expert consultations (FGDs) that contextualized the findings within current healthcare practice, including digital health infrastructure and evolving patient engagement strategies. Another key limitation was the initially low physician engagement in prescribing and delivering IPs, as many physicians perceived it as equivalent to routine leaflets. After detailed explanations by medical librarians regarding the evidence base and the intervention's distinct impact, physician attitudes improved, though the initial resistance caused delays in data collection and limited the sample size during early phases. Combining historical RCT data, updated literature, and expert input ensures that the policy recommendations remain both evidence-based and relevant to current practice.

Conclusion

The convergence of internal and external evidence suggests that the targeted prescription of health information for patients with heart failure, particularly through collaboration between medical librarians and clinical specialists, may contribute to improving patients' access to reliable information and supporting self-care practices. Such approaches have the potential to enhance treatment adherence and patient engagement in disease management, and may help reduce hospital readmissions and associated healthcare costs.

To achieve this goal, it is essential to integrate the policies of "Information Prescription (IPs)," the "Evidence-Based

Information Preparation and Delivery Units," the "Team Collaboration Framework," and the "Digital Information Platform" within the nation's healthcare system. The implementation of these measures requires political will, investment in human resource training, and the establishment of necessary technological infrastructure to enable the Iranian healthcare system to transition toward evidence-based information prescription.

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Authors' Contribution

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Competing Interests

The authors declare that there is no conflict of interest regarding the publication of this study.

Data Availability Statement

The datasets are available from the corresponding author on reasonable request.

Ethical Approval

This policy brief is extracted from a research project approved by the Tabriz University of Medical Sciences with the ethics code 92157 All ethical considerations, including obtaining informed consent from all participants in the project and maintaining data confidentiality, were observed.

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