Perspective Piece

Patient education and follow-up units in Iran: A quality improvement project

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ABSTRACT

Background & Aim: The rising prevalence of chronic and non-communicable diseases, presents significant challenges to health systems. This study aims to empower patients and their families by establishing patient education and follow-up units, thereby improving readmission rates, reducing unplanned referrals to emergency departments, and enhancing patient satisfaction, which are key nursing-sensitive indicators.

Methods & Materials: This perspective article presents a quality improvement project utilizing the Plan-Do-Study-Act cycle model. Initially, the problem of non-compliance among discharged patients and the resulting adverse consequences were identified. Consequently, a program for patient and family education and follow-up post-discharge was proposed. In the second step, patient education and follow-up units were implemented across three universities of medical sciences, and the results were analyzed in the third step. Upon confirming the achievement of the expected outcomes, the fourth step involved the national dissemination of implementation guidelines.

Results: The established units in hospitals demonstrated significant improvements in NSIs. The percentage of readmission among follow-up patients decreased from 14.3% in the first half of 2023 to 6.6% in the first half of 2024. The indicator of unplanned referrals dropped from 8.93% to 6.1% over the same period. Additionally, patient satisfaction increased from 91% to 93%.

Conclusion: The experience of establishing patient education and follow-up units highlights that this strategy during the transition to home is an effective, affordable, and sustainable solution that can improve NSIs. This approach, facilitated by nurses, can play a crucial role in managing non-communicable and chronic diseases.

Introduction

Chronic diseases are conditions that have persisted for a long time and often progress gradually, typically lacking a definitive cure. These diseases are usually non-contagious and result from various factors such as genetics, lifestyle, and environment. In addition to their effects on the quality of life of patients and their families, chronic diseases impose significant economic and social burdens on health systems, communities, and individuals, which often require continuous management and care (1).

Globally, the prevalence of chronic and non-communicable diseases (NCDs), along with the increasing demand for health services and associated costs, pose significant challenges to health systems (2). Estimates indicate that by 2030, NCDs will account for approximately 75.26% of all deaths worldwide (3). These diseases are the leading cause of death globally, with rising prevalence across all age groups, genders, and races, particularly in low- to middle-income countries, including Iran. Currently, 80% of deaths in these countries are attributed to chronic diseases (4). In Iran, deaths due to NCDs have increased by 14.5% over the past two decades. Of these deaths, 82.2% are due to cardiovascular diseases, cancers, chronic lung

diseases, and diabetes, which are the leading causes of death in the country (5).

Chronic diseases lead to undesirable outcomes, some of which are avoidable and can be managed by taking appropriate measures. Recognizing and improving these outcomes is essential for the effective management of these diseases. Nursing-sensitive indicators (NSIs) are criteria for changes in health status that nursing care can directly affect. They have been increasingly adopted as valid and reliable tools due to their features such as objective assessment, improvement of clinical practice, and evaluation of nursing care quality and performance. NSIs influence patient care outcomes so effective management of these indicators is crucial for addressing the consequences of chronic diseases, as they help ensure that patients receive comprehensive and continuous care, reducing complications and improving overall health outcomes (3).

Readmissions to hospitals, unplanned visits to emergency departments (ED), and patient satisfaction are significant NSIs. Managing these effectively is crucial for controlling health system resources, and reducing the burden on medical centers (4). Readmission after discharge is a significant indicator of weaknesses in the care transition process from hospital to home and inadequate follow-up. The readmission rate for diseases such as chronic heart failure is 21% (7) and for chronic obstructive pulmonary diseases (COPD) is 18%(5) in the country, which is a costly consequence (8). Readmission not only affects patients by decreasing their quality of life, increasing complications and infection rates, and raising mortality rates but also increases out-of-pocket expenses and the overall cost of care, impacting both patients and the health system.

Patients with NCDs experience numerous illnesses and treatment-related adverse effects(6). While many of these adverse effects can be managed in the ambulatory setting, many patients receive potentially unnecessary ED care due to inadequate care coordination(7). Potentially unnecessary ED visits have been associated with poor patient experiences and increasing care costs(8). Furthermore, EDs are often overcrowded, and because of the variety of conditions treated in the ED, patients may be exposed to communicable diseases(9, 10). This frequent use gradually reduces the sensitivity of care providers in delivering timely and early care, thereby threatening patient safety (9).

From another perspective, patient satisfaction is a crucial and practical NSI for evaluating the quality of health services and planning improvements in the health system. Although most research in the country has reported favorable patient satisfaction levels (11), the lack of standardized conditions for these evaluations raises concerns about the reliability of these reports. Accordingly, some studies have reported low levels of satisfaction (12), which warrants further attention to this indicator.

The global approach to managing chronic diseases, in line with the principles of UHC, includes prevention, timely treatment, and the identification of adverse effects of the illness (2). Therefore, programs have been designed to manage the transfer of patients from hospital to home, aiming to improve the NCD patients' outcomes (6), focusing on the World Health Organization's recommendation for affordable, cost-saving interventions to achieve national goals for NCDs (11).

This approach enhances the empowerment and support of patients and their families to manage symptoms and reduce the complications of the disease (2). Patients are expected to play an active role in managing their disease through health awareness and literacy, while nurses, through nurse-led clinics (NLCs), are responsible for following up with patients to ensure their ability to take care of themselves after discharge at home(13). These clinics, as fundamental methods for the control of chronic diseases, are highly effective and low-cost, significantly enhancing patient outcomes (12).

Following international trends, the necessity of attention to the learning requirements of patients and the role of education in improving patient outcomes, particularly for chronic patients, culminated in the launching of independent NLCs in 2010 in Iran to provide education and counseling services to patients in hospital outpatient wards of major cities. The provision of services in these centers has been voluntary and creative. However, in 2019, the development and promotion of patient and family education

programs became the research priorities of the Nursing Deputy of the Ministry of Health (13).

Based on international and national experiences, improving NSIs is a key strategy to ensure patients receive high-quality nursing care. This study aims to empower patients and their families by establishing patient education and follow-up units, thereby improving readmission rates, reducing unplanned referrals to emergency departments (ED), and enhancing patient satisfaction as nursing-sensitive indicators (NSIs).

Methods

The current quality improvement project, based on the Plan-Do-Study-Act (PDSA) Cycle model, aims to improve NSIs, including readmission rates, unplanned ED visits, and patient satisfaction by empowering NCD patients. The PDSA model is widely used for quality improvement in healthcare systems, promoting quality improvement processes through the scientific method of experiential learning. The main methodological features of this model include:
• Defining the problem, determining the goal, formulating a program, and selecting evaluation indicators.
• Implementing a small-scale pilot project.
• Analyzing the results and comparing them with expected outcomes.
• Expanding and implementing the program on a larger scale (14).

1. Defining the problem, determining the goals and indicators of program evaluation, and developing the plan

In many countries, nurses play a crucial role in transferring care from the hospital to the home. However, in Iran, the role of community health nurses in meeting the health needs of the population within the health system has not been clearly defined (15, 16). This has led to a treatment-based approach and weak interaction between nurses and other care providers in hospitals and the community. Consequently, hospitals have taken on the responsibility of treating and caring for patients only from admission to discharge, leaving patients without adequate support post-discharge (17).

Evidence suggests that hospitals can play a significant role in interventions related to transitional care and integrated care programs (18). One of the most effective interventions by hospitals is telephone follow-up, which can meet patients' information and communication needs, improve self-care, and reduce post-discharge problems (19). This approach provides nursing services to patients at the lowest cost and with maximum accessibility (20). Therefore, to modify and redefine the processes related to the management of patients with selected NCDs after discharge, one strategy for continuing patient care, especially during the transition from hospital to home, is to conduct training and telephone follow-up of patients post-discharge.

Since the most important challenges faced by patients with NCDs and incurable diseases after discharge from the hospital include non-compliance with treatment (21), low health literacy (22), failure of the follow-up system, disconnection between treatment staff and patients (23), and the complex and progressive nature of NCDs (24), addressing these challenges is crucial. This involves educating patients and their families on managing the disease at home to achieve self-management, as well as following up with patients after discharge to monitor the effectiveness of the education and care provided. Ensuring patient compliance with recommendations, addressing their questions and needs, and preventing problems can help reduce readmissions and emergency department visits. This highlights the necessity of creating a mechanism for patient education and follow-up after discharge.

In response to this need, and based on the analysis of upstream documents and the necessity to increase the cost-effectiveness of care, reduce health costs, and enhance the effectiveness of nursing care, the establishment of a "Patient Education and Follow-up Unit" was considered a key program by the Deputy of Nursing assistant of the Ministry of Health & Medical Education.

The establishment of these units, initially introduced as the "follow-up nurse plan," aims to continue patient care, especially during the transition from hospital to home. The goals include preventing post-discharge problems,

reducing hospital length of stay, decreasing readmissions, developing nursing services at the community level, and improving the coordination of patient follow-up services after discharge.

2. Implementation of a small-scale pilot project

The first version of the executive instructions for the follow-up nurse unit was designed and compiled in August 2019. According to these instructions, the structure of the follow-up nurse unit was defined in terms of physical space, standard equipment and resources, and follow-up nurse criteria. In June 2020, these instructions were sent to the pilot centers, including seven selected hospitals affiliated with Shahid Beheshti, Shiraz, and Birjand Universities of Medical Sciences. In this phase, for the purpose

of trial implementation, patients with NCDs, including chronic heart failure, chronic obstructive pulmonary disease, cerebrovascular accident, and cancer, were selected as the target group.

3. Analyzing the results and comparing them with the expected outcomes

After the preliminary implementation, the strengths and areas for improvement of the plan were identified, and the existing challenges were analyzed. The status of the indicators was evaluated and found to be in line with the expected outcomes. The status of three indicators—readmission, unnecessary visits to the emergency department, and patient satisfaction—are shown in Table 1.

Table 1. Readmission, unnecessary visits to the emergency department, and patient satisfaction (July 2020-June 2021)

Number	Index Definition	Index Percentage
1	The percentage of followed patients who needed to be re-hospitalized related to the disease	5.8
2	The percentage of unplanned referrals of followed patients to the hospital emergency room	3.3
3	The satisfaction percentage of patients followed up with the services of the patient education and follow-up unit	91

Despite achieving satisfactory results from the small-scale implementation of the plan, the development of the plan on a national scale was postponed. The second version of the implementation instructions for the "Follow-up Nurse Unit," developed with the participation of the Non-Communicable Diseases Management Center of the Ministry of Health and including diabetes, was notified to 28 universities of medical sciences in June 2021 for implementation. Considering that universities of medical sciences needed to provide suitable infrastructures such as human resources, equipment, and physical space to set up this unit, and it took time to provide these for hospitals, the collection of performance indicators from the universities was omitted during the implementation period of this phase.

4. Expanding and implementing the program on a large scale

Considering the success of the follow-up nurse project and its acceptance by universities of medical sciences, the program was integrated

with the patient education program. In the first half of 2022, the implementation instructions for the new program, titled "Patient Education and Follow-up Unit," were issued. These instructions included interview tools for patients, patient stratification (to determine the frequency of follow-up), an Excel file for unit information collection, program evaluation indicators, and a unit evaluation checklist. The program targeted 11 selected diseases: chronic heart failure (CHF), chronic obstructive pulmonary disease (COPD), cerebrovascular accident (CVA), cancer, diabetes, hypertension, chronic renal failure, burns, mental disorders, amputation, and myocardial infarction (MI). These instructions were sent to all universities of medical sciences in the country.

In June 2024, due to the importance of training and follow-up for infants and children and increasing the health literacy of their caregivers, follow-up for four additional conditions was added to the unit's services including infants discharged from the neonatal intensive care unit (NICU), children with epilepsy, cancer, and diabetes. Additionally,

given the particular importance of hereditary cancers, the instructions emphasized referring first-degree relatives of individuals with breast and colorectal cancers to comprehensive health service centers for early detection and screening.

A brief overview of project results so far

According to the results of the program's implementation in the country's hospitals and the stakeholders' satisfaction, especially nurses and doctors, the number of these units increased from seven in 2020 to more than 800 by the end of August 2024, covering 85% of the country's active hospitals. According to the latest information collected in September 2024, program indicators in 2023-2034, are presented in Table 2.

Table 2. Performance indicators of the units (2023- 2024)

Period	Readmission (%)	Unplanned Visits (%)	Follow-ups (%)	Patient Satisfaction (%)
First half of 2023	14.3	8.9	38.26	91
Second half of 2023	7.8	9.7	54	88
First half of 2024	6.6	6.1	64.3	93

Challenges of patient education and follow-up units

Since these units are considered part of nursing services in hospitals, challenges related to nursing services directly impact their performance. The main challenge is the lack of sufficient and specialized nursing staff, which sometimes leads to the employment of less experienced nurses with lower levels of education. At the beginning of the program design, it was decided that in teaching hospitals, the units could be managed by nursing faculty members through the employment of postgraduate students. This approach has been a breakthrough in some centers and has somewhat reduced the burden on hospital nursing systems.

The lack of an official structure for the units and the failure to determine approved tariffs for nursing services are also common problems reported by universities. For the continuation of these services, it is necessary to create a stable system to compensate the nurses working in these units and to establish the unit's position within the hospital organization. With consultations carried out with relevant units in the Ministry of Health and the support provided, these challenges are hoped to be resolved soon.
To further strengthen the program, efforts are underway to integrate these services within the Hospital Information System (HIS), connect these units to comprehensive health service centers within the primary healthcare system, and increase the use of telenursing facilities. These initiatives are currently under investigation and feasibility assessment.

Conclusion

The experience of establishing patient education and follow-up units, aimed at improving outcome indicators sensitive to nursing care—such as reducing readmission, unplanned ED visits, and improving patient satisfaction—using the PDSA model, has shown that patient education and follow-up during the transition to home remains an effective, affordable, and sustainable solution. This approach, facilitated by nurses, plays a crucial role in the management of NCDs and chronic diseases.

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Conflict of interest

The authors declare no conflict of interest.

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