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The role of a clinical pharmacist in self-care in heart failure

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Abstract

Heart failure (HF) is a major health problem in the contemporary societies and one of the most common chronic syndromes, associated with high mortality and intensive healthcare resource use, both human and financial. Therapeutic strategies should include monitoring of the patients' health status since the hospital discharge, optimization of drug therapy, and modification of environmental factors. Self-care offers a significant strategic potential to relieve healthcare system in HF, allowing targeted resource transfer and potential increase of the healthcare system efficiency. Involving the clinical pharmacist in the process of self-care in regard to optimization of the drug treatment used, standardization of drug treatment during patient transfer between various areas of healthcare, clarification of recommendations regarding drug use, and professional counselling has significant consequences translating to an increased therapy effectiveness and healthcare resource utilisation. Promoting self-care in HF should be a strategic priority, and incorporation of self-care within the routine medical care for HF patients should be considered equally important to providing the patient with medications necessary to control this syndrome. This synergistic approach will result in a reduced readmission rate and an improved quality of life of patients with HF.

Key words: self-care, heart failure, pharmacist intervention

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Introduction

Heart failure (HF) is a major health problem in the contemporary societies and one of the most common chronic syndromes, associated with high mortality and intensive healthcare resource use, both human and financial. The prevalence of this syndrome in developed countries is 1–2%, rising to at least 10% in those above 75 years of age, but it has been predicted that in the next years, HF will develop in as much as 20% of the population [1]. In the United States, it has been estimated that in 2010–2030, the prevalence of all cardiovascular disease will increase by 9.9%, while the prevalence of HF will increase by 25%, and due to increasing use of increasingly advanced and complex therapies, the cost of treatment of this patient group will increase by as much as 215% by 2030 [2]. Although mortality due to HF has decreased slightly, it remains high, up to 40% during the first year after the initial hospitalization, and in patients who are regularly and frequently hospitalized, especially during the first year after the initial hospitalization, it may be as high as 50% [3].

Heart failure is a clinical syndrome characterized by typical symptoms and signs, developing due to physiological alterations, such as water and electrolyte disturbances, constrictor function of the blood vessels, and myocardial overactivity. The key to effective control of HF is adequate drug therapy, although the European Society of Cardiology (ESC) and American Heart Association (AHA) guidelines highlight the need to supplement drug therapy with non-drug treatment strategies implemented by interdisciplinary

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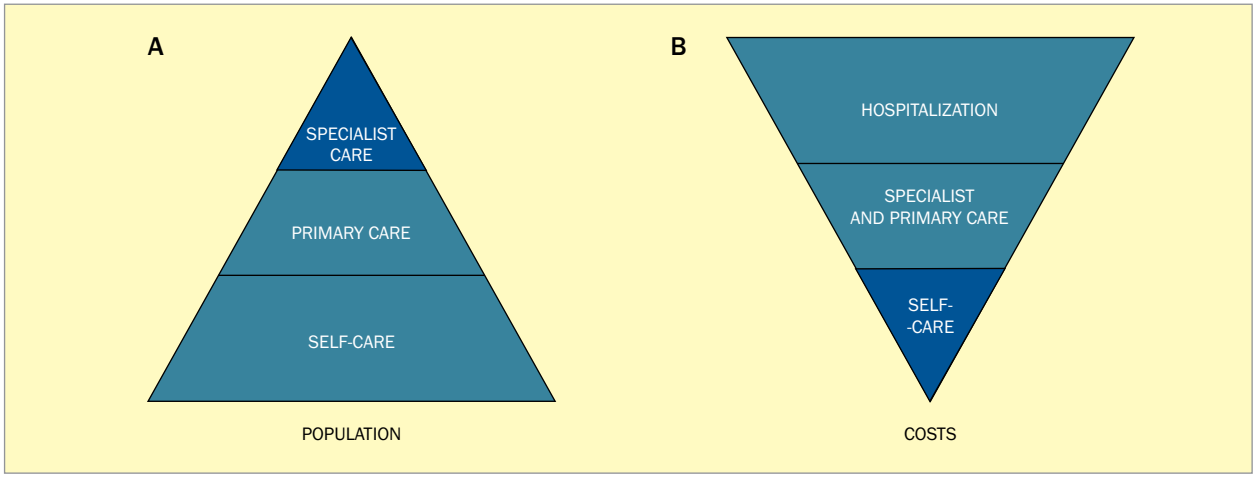

Figure 1A, B. The pyramid of self-care (based on [13])

specialist teams with patient involvement. These therapeutic strategies should include monitoring of the patients' health status since the hospital discharge, education, and optimizing drug therapy in response to HF worsening [4].

Self-care

The currently widely employed traditional healthcare model does not guarantee constant supervision of every patient by a physician or a nurse. Constant care and control is not only not feasible in the state-managed healthcare but also unnecessary in case of one-off interventions, such as pacemaker implantation, where long-term cooperation with the patient is not pursued, and the patient has no effect on the effectiveness of the device functioning [5]. In most patients with HF, initiation of systematic and long-term cooperation is necessary, and the more informed is this cooperation, the better are the treatment outcomes. Clearly, lack of medication adherence contributes to disease progression. Thus, all recommendations regarding modifiable risk factors such as diet, physical activity, and drug therapy should be provided using an effective, patient-adjusted communication, taking into account that implementation of these recommendations is associated with some discomfort and requires some sacrifices and effort from the patient. An appropriate message that includes estimates of benefits and risk is a prerequisite of patient cooperation. Informed patients who trust the content and purpose of therapeutic recommendations may positively affect their own wellbeing and treatment outcomes [6].

Thus, in response to clinical guidelines and technological advances, healthcare systems all over the world must evolve to maintain their economic and infrastructural efficiency [7]. Interventions to maintain the efficiency of healthcare systems focus on the achievement of rational savings, for example by reducing the number of hospitalizations that generate a substantial part of costs of care for HF patients, amounting to as much as 70% of the total cost of treating this syndrome [8]. It is known that the proportion of preventable event and hospitalization is high [9, 10]. As costs related to recurrent or long-lasting hospitalizations due to disease worsening [10] are mostly secondary to inadequate patient awareness and self-care [11], the current direction of healthcare system evolution is to increase the patient engagement in care, away from the traditional healthcare model with only inertial patient participation in the treatment process (Figure 1) [12, 13]. It has been confirmed that the costs of care for informed and involved patients who make autonomous decisions regarding the control of their own health status are 8–20% lower compared to inert patients [14].

The most common causes of hospitalization in patients with HF result from a delayed or absent patient response to worsening of chronic HF control, low adherence, and lacking self-care skills [15, 16]. Worsening of HF and avoidable hospitalizations are clearly related to self-care failures [11] and thus increasing the efficiency of this core component of healthcare has a fundamental role in stabilizing the health status, optimizing treatment effects and improving patients' quality of life [17]. The prognosis in HF depends on two factors: one is the choice of drug therapies made by the physician, and the other one is patient-dependent and self-care-based, including the motivation to adhere to the diagnostic and therapeutic recommendations [4].

Self-care is a set of autonomous actions of a disease-conscious patient, self-initiated to achieve and maintain an appropriate health status. These are mostly preventive actions related to healthy lifestyle, along with participation in the therapy [13]. Self-care delays development of disease complications and allows control and coping with incident

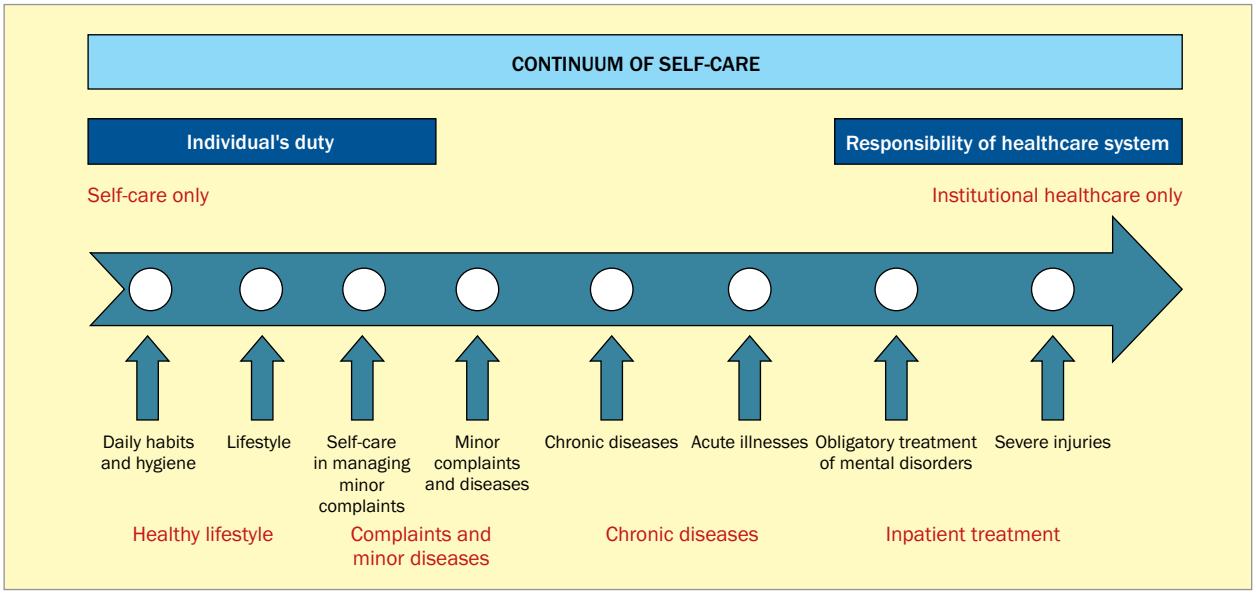

Figure 2. Continuum of self-care (based on [18])

symptoms. In general, self-care includes modification and control of such factors as environmental factors, socioeconomic factors, and medication self-administration. The latter is of particular importance both regarding the patient's own choice of medications and the way these medications are using in the framework of a responsible and informed management process. Self-care is a continuum (Figure 2) that includes both a number of actions undertaken directly and exclusively by the patient who is fully responsible for these actions, such as decision-making regarding daily activities, and managing common complaints, including seasonal ones, and on the other hand, also the complex management of acute and chronic diseases undertaken by specialized healthcare institutions [18].

The aim of self-care in HF is to develop and use skills related to non-drug support and regular self-monitoring of the patient's health status [4]. The most important components of control may be defined as recognition of symptoms and significant changes in their severity, along with the ability to decide, based on self-observation, that a specialist should be contacted.

The most important self-care actions that may improve prognosis in HF include self-education regarding the HF syndrome, adherence to the therapeutic and dietary recommendations, active participation in symptom monitoring and the ability to interpret symptoms that indicate HF control worsening, the ability to act at an early stage of health status deterioration, regular physical activity, control of substance use, and the management of concomitant conditions [16]. Implementation of dietary recommendations and monitoring such parameters as blood pressure and body weight significantly improve outcomes [19, 20], and persistence in self-care reduces hospitalizations, readmissions [21] and mortality [22] and improves patients' quality of life [23].

A stimulus and a prerequisite for popularization and spread of self-care is the increasing accessibility of medical information through the development of internet resources, increased drug availability, lifestyle changes, and a growing population potential for participation in the management process. The level of education and interest in the society continues to grow, all resulting in a higher patient participation in the treatment process. The extent of health awareness along with the ability and willingness to acquire information about the disease and its symptoms, but also limited access to physicians and clinics are additional stimuli for promulgating self-care. With self-care, patients may take some responsibility for their health, and governments may modify the mechanism of resource freeing in the context of increasing healthcare system overload in terms of both costs and infrastructural efficiency of the aging societies.

Initiation and implementation of healthcare is based on an adequate level of health literacy which also guarantees that the received information and therapeutic recommendations will allow informed decisions and actions [11].

The key prerequisite for patient compliance with the therapeutic recommendations is their understanding by the patient. All over the world, HF patients have or may have difficulties with comprehending the recommendations regarding drug therapy, particularly in case of complex treatment regimens, and with implementing lifestyle modification. To effectively adjust the way recommendations are communicated, the individual functional health literacy must be

determined, which includes the ability to read, write, and calculate at a level adequate for daily needs, and motivation and skills regarding accessing, understanding, evaluating and using health information for daily decision making [24]. Determining the level of patient's literacy allows creation and selection of appropriate informational materials, such as medication package inserts, posters, and educational campaigns. Unfortunately, a large proportion of patients do not understand and thus do not adhere to basic recommendations regarding self-care based on the written materials provided, only one in two patients read the recommendations correctly, and one in three patients do not understand the sense of the recommendation to take a medication on an empty stomach (i.e., fasting) [24]. As it has been shown that a higher level of health literacy increases compliance with the recommendations, improving health literacy is a strategic goal for the healthcare system and specialists, such as physicians, pharmacists, nurses and dieticians, and organizations involved in education and implementation of prevention programs.

Patients at a low level of health literacy have major problems with processing and acquisition of information regarding their health status, interpretation of the symptoms, and comprehending oral communications provided by a cardiologist or other physician. They are also 1.5 to 3 times more likely to develop adverse health outcomes [18]. An analysis of the study results published so far indicates that among hospitalized HF patients, health literacy is inadequate in 42% and marginal in 19% [25].

Lack of elementary knowledge on HF and self-care is a widespread phenomenon among both patients and their careers. Multiple studies showed that a low patient ability to engage in self-care in HF is associated with a generally low level of education and little knowledge on self-care. The identified areas of insufficient patient competencies include limitation of salt intake, compliance with the recommendations regarding the use of medication, body weight control, and physical activity. Lack of knowledge contributes to disorientation, delays in seeking help, uncertainty regarding the future, and inability to provide self-care. To increase benefits from actions undertaken by HF patients, it is necessary to regularly examine the level of the ability to solve problems and execute actions [26].

The main barriers to understanding the therapeutic recommendations include a complex healthcare system, lack of the sense of sufficient competence when making autonomous treatment decisions, specialized language of informational materials, and lacking communication skills by the healthcare personnel. Patients have indicated a lack of experience in self-observation and decision-making [16]. Obvious limitations for increasing patient participation in the therapy include impaired cognitive

Table 1. Barriers to the provision of self-care in heart failure (HF) and the proposed strategies and interventions

Barrier	Strategy	Intervention
Functional abilities and vision and hearing impairment	Evaluation of the degree of impairment Adjustment of informational materials and communication methods used	Use of teaching aids in the form of ergonomic mobile devices appropriate for the elderly patients, with large keys, fonts, and illustrations
Cognitive dysfunction, dementia	Use of tools and methods appropriate for the patient, communication with a high degree of information reiteration, dividing the message into absorbable portions, involving the direct patient carer in the education process	Interactive educational tools Brief informational materials, e.g. leaflets Multiple reiteration
Erroneous beliefs and lack of basic knowledge of the disease	Analysis of the cause(s) of erroneous beliefs and of the level of patient knowledge of the disease	Basic education regarding the disease and its treatment
Low level of motivation and interest in the treatment process	Adjustment to the patient's needs Thoughtful and constructive education	Evaluation of the patient's needs and expectations regarding the level of knowledge Holistic care Consideration of depression and fatigue
Low self-esteem and lack of belief in one's own capabilities	Materials and methods free from the elements of threat and punishment Positive motivating Support	Developing positive cooperation and interaction with the patient Education with elements of social support, e.g. teleadvice, home visits

function, concomitant depression which limits the ability of self-motivation, fear of autonomous execution of actions, and lack of social support [14]. Concomitant diseases, particularly in patients above 73 years of age, make it more difficult to correctly interpret and differentiate dyspnoea or fatigue. In addition, HF is rarely present as the sole clinical syndrome, as it is usually accompanied by other diseases affecting the number of symptoms requiring interpretation. On average, HF patients experience nine symptoms [27] that are non-specific and difficult to differentiate. A barrier to self-care is also the lack of physician acknowledgement of the effects of self-care, resulting in inadequate cooperation on the clinicians' side and their focus on drug therapy targets [14]. Clinicians question patient competencies, which significantly reduces the proportion of patients engaged in the process of supporting care [28].

Education in HF

Patients' level of knowledge about their HF is low, resulting in high rate of hospitalisation [29]. Increased level of knowledge and awarness to satisfactory level leads to health benefits such as reduction in re-hospitalisation [30].

Education regarding the knowledge on HF, its course and the consequences of non-compliance with the recommendations should be introduced at a basic level as early as possible, individually adjusted depending on the stage of disease acceptance, and the structure and order of providing the educational content should be consistent with the care plan. When improving health competencies, a challenge is to adjust educational materials to specific social groups, taking into account their cultural, gender, age, and other individual characteristics (Table 1) [31].

Education regarding self-care targeted at individuals at a low level of health literacy may improve the effectiveness of self-care and increase awareness of patients at risk of low effectiveness of HF therapy. Dissemination of self-care in HF requires an increased engagement of healthcare personnel that should be made aware of the potential of self-care and ways to promote it. An excellent strategy is to engage other healthcare personnel and to create multidisciplinary teams responsible for self-care [32] and education [33].

Direct contact with patients outside the stress-inducing clinical environment and the current revolution regarding traditional duties, and revolution in drug manufacturing all place the pharmacist in an ideal position for medical education and modification of health literacy [17]. Among various healthcare personnel, pharmacists are one of the best prepared for helping patients understand the treatment process. In the classical healthcare model, the role of pharmacist has mostly been to supply patients with proprietary medicinal products and compounded drugs. Over the last decades, however, this role has evolved towards increased participation in self-care.

Table 2. Overview of the education topics in heart failure

General counselling	Description of symptoms and complaints
	Aetiology
	Principles of health status monitoring
	Symptom self-control
	Body weight control
	Rationale for drug therapy
	Recommendations regarding medication use
	Prognosis
Professional advice regarding drug therapy	Medication effects, adverse effects, symptoms of toxicity
	Mode of drug administration
	Drug interactions (potential and avoidable)
	Diuretic use on the as-needed basis
Physical activity	Rest
	Systematic moderate physical activity
	Nature of professional activities
	Sexual activity
Diet and substances	Reduction of salt intake
	Reduction and control of fluid intake
	Avoidance of alcohol
	Quitting smoking
	Body weight-reducing diet
Vaccinations	Influenza
	Pneumococci
	SARS-CoV-2
Travel	Advice regarding flying
	Risk associated with tropical climate, high ambient humidity and temperature, and high altitudes with reduced air oxygen content

SARS-CoV-2 — severe acute respiratory syndrome coronavirus 2

The role of pharmacist in self-cares involves four areas: as a communicator, drug supplier, supervisor, and propagator. It is the pharmacist who initiates a dialogue with the patient, verifies the symptoms, and decides whether it is necessary to refer the patient to a physician. He supports the patient in the choice of drugs, guaranteeing their proper use based on the established rules of cooperation with other healthcare personnel. Clinical pharmacists provide advice at the time of hospital discharge, analyse the instituted drug treatment, and educate regarding new recommendations. At the level of a publicly available pharmacy,

they provide pharmaceutical care and offer counselling regarding minor complaints.

Pharmacist involvement in the above mentioned stages of the treatment process in HF patients improves adherences but these benefits disappear at 3 months after the discharge [34] which indicates the need for systematic efforts. Education provided by the pharmacist (Table 2) reduces all-cause and HF-related mortality [35] and lowers the readmission rate [34]. Pharmacist interventions also have an indirect economical dimension, as elimination of drug-related errors prevents the related costs [36]. HF patients receiving pharmaceutical care become more open in expressing their concerns or doubts, which allows to adjust the scope of education and eliminate barriers to self-care [37].

Involving the pharmacist in the delivery of self-care brings clinical benefits, improvement of the patients' quality of life, and benefits regarding healthcare management [38], increases adherence in HF [39], and reduces the rate of readmissions within the first 30 days after the discharge [35]. Involving the pharmacist in the process of self-care [40] in regard to optimization of the drug treatment used, standardization of drug treatment during patient transfer between various areas of healthcare, clarification of recommendations regarding drug use, and participation in diuretic use on the as-needed basis depending on the symptom severity has significant consequences translating to an increased effectiveness of drug therapy and healthcare resource utilisation.

Conclusions

Self-care offers a significant strategic potential to relieve healthcare system in HF, allowing targeted resource transfer to increase the contribution of modern and effective therapies, and thus potentially increase the efficiency of the healthcare system. Promoting self-care in HF should be a strategic priority, and incorporation of self-care within the routine medical care for HF patients should be considered equally important to providing the patient with medications necessary to control this syndrome. This synergistic approach will result in a reduced readmission rate and an improved quality of life of patients with HF.

Conflict of interest

None.

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