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Nurses' Support for Patients Undergoing Cardiac Rehabilitation

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As a disease management program, comprehensive cardiac rehabilitation is needed during hospital stay, and should also be continued after patients are discharged from the hospital and return to society. Cardiac rehabilitation is composed of not only exercise therapy but also patient education and counseling. Nurses' skills of supporting self-management in cardiac rehabilitation are to assess the individual risks of the patients and to use the assessment for the management of safe rehabilitation; for patient education, to assess correctly the status of self-management; and, for counseling, to show interest in patients, consider how they are feeling, and provide them with mental support. Collaborating with different health professionals and providing continuous comprehensive support, as well as playing the role of coordinator for these, are also important parts of nurses' responsibilities in cardiac rehabilitation.

Key words: heart failure, self-management, education, counseling

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INTRODUCTION

With the rapid aging of the population in Japan, approximately 1 million people are affected by heart failure（HF）[1]. In the future, it is expected that the number of patients with HF will increase, [2] as will the associated medical expenses. Therefore, improving the long-term prognosis and reducing the number of hospital admissions for exacerbation of HF are presently urgent issues that need to be addressed as goals for the field of HF treatment. Cardiac rehabilitation for HF effectively progresses exercise tolerability, reduces the rate of rehospitalization, and improves long-term prognosis by suppressing neurohumoral factors and inflammatory cytokines, and improving vascular endothelium function and musculoskeletal metabolism through exercise training [3-8]. After discharge, few patients continue cardiac rehabilitation, including exercise training commenced during their hospital stay, and the rate of outpatient cardiac rehabilitation implementation is very low [9]. To function as a HF management program, the continuation of an outpatient cardiac rehabilitation program after hospital discharge is a major challenge.

Basics of cardiac rehabilitation

As a disease management program, comprehensive cardiac rehabilitation is needed during hospital stay, and should also be continued after patients are discharged from the hospital and return to society [10]. The purposes of cardiac rehabilitation are the correction of physical and mental deconditioning, early return to social activities, secondary prevention, improvement of long-term prognosis, and improvement of the quality of life（QOL）. Cardiac rehabilitation is composed of not only exercise therapy but also patient education and counseling. Table 1 shows the

Table 1. Precipitating causes leading to hospital readmission (n=93)

	No. of patients (%)
Lack of compliance	43 (46)
With diet	31 (33)
With drugs	11 (12)
With restriction of activity	10 (11)
Systemic infection	19 (20)
Arrhythmias	10 (11)
Physical and emotional stress	5 (5)
Myocardial ischemia	5 (5)
Uncontrolled hypertension	4 (4)
Other	7 (8)

Table 2. Duration of worsening symptoms before admission for heart failure

Symptom	Duration of worsening (days) Mean ± SD
Edema	12.4 ± 11.1
Cough	10.1 ± 9.3
Weight gain	11.4 ± 9.4
Dyspnea walking	8.4 ± 7.5
Dyspnea lying flat	8.4 ± 7.7
Dyspnea at rest	6.4 ± 6.3

exacerbating factors of HF in 93 Japanese patients. Seventy-five percent of the exacerbating factors of HF fall under the category of inadequate management of the recuperation period, which includes noncompliance to salt and water restriction, infections, overwork, non-adherence to medication, and stress [11]. In cardiac rehabilitation for secondary prevention, proper management of the recuperation period is crucial. The other 25% of the exacerbating factors comprised diseases and complications, such as arrhythmia, myocardial ischemia, and hypertension. Early detection of these abnormalities and monitoring of their management status are equally important for implementing cardiac rehabilitation. The utility of efforts to improve self-management in patients and continuous monitoring is described in the guidelines for the diagnosis and treatment of HF. Thus, patient education is extremely important.

Patient education in cardiac rehabilitation

Table 2 shows the symptoms and duration (days) before patients are hospitalized owing to exacerbation of HF [12]. According to this table, edema appears from 12 days before hospitalization, and subsequently, cough, body weight increase, and shortness of breath occur more commonly. However, regarding the patients' understanding of the symptoms, more than half of them respond that they do not know the causes, that they would wait for improvement, or that they did not need immediate treatment [13]. Only 4% of the patients consider the symptoms to be the results of exacerbated HF. Although the patients may have been educated in the ward or outpatient office, they failed to understand the symptoms and correlate the symptoms with HF.

Role of nurses in cardiac rehabilitation

Patients with HF exhibited difficulties in recognizing their symptoms, even during the period when their condition worsened. Earlier symptom identification and response may reduce the number of rehospitalizations and duration of hospital stay. Consequently, it is important to identify patient needs and provide individualized information adapted to those needs [13]. Cardiac diseases are chronic diseases, and despite the importance of self-management, many patients find it difficult to correlate changes in their physical conditions, such as symptoms, with the disease. For patients to recognize the changes in physical conditions by themselves, nurses must identify the changes together with the patients. Thus, nurses must support patients to help them understand the significance of the changes. In supporting patients' self-management and self-monitoring, the nurses at the cardiac rehabilitation department, use the component factors of self-monitoring for patients with chronic HF (Table 3). On the premise of the presence of correct knowledge, technique, and interest, we list abilities to be aware of, measure, and interpret the changes in physical symptoms, changes in physical activities, and the status of health management as antecedent factors. Consequently, these will enable appropriate self-management and improvement of QOL, which will further lead to appropriate coping behaviors, as well as correction of lifestyle habits and reduction of the risk of heart failure exacerbation. In addition, as a basis for these, self-efficacy (i.e., self-confidence that "I can do it") is necessary. When looking at the status of self-monitoring or self-management of the patients, each of these items should be examined. Regarding the changes of their own health, the following are

Table 3 Component factors of self-monitoring

Dyspnea/shortness of breath
Edema
Body weight
Range of activity
Palpitation/chest pain
Appetite
Sleep
Common cold/cough/fever

assessed to identify the items where they need support: whether they understand its meaning; whether the changes require coping behaviors; whether they lack the prerequisite knowledge, technique, or interest, and thus need assistance; and whether they have confidence in making the changes. As for the roles of the nurses, risk evaluations in exercise therapy, patient education, and counseling are important to have patients acquire and maintain self-efficacy, and thereby to improve their QOL.

Practical approach in self-management support

Self-care in HF patients has been positively associated with better health outcomes, including a reduction in biomarkers of systemic inflammation and fewer hospital admissions [14-16]. The interview sheet (Table 3) is used to list items to be checked on the day of cardiac rehabilitation. Then, the nurses confirm the systemic conditions of the patients through interviews and measurement of vital signs and then share the information with physical therapists and rehabilitation physicians in charge, before starting cardiac rehabilitation. At the time of history taking, nurses check the heart failure record book and blood pressure record book, among other references, in which patients record relevant measurements at home. We review the descriptions on the sheet and the changes in blood pressure and body weight measured at home. In addition to confirmation of HF symptoms and self-monitoring status, we also look at the living conditions, matters that require attention, and medication adherence. For example, for the item of "edema," although patients say, "I don't have edema," it often happens that they do. In one instance, when we checked for edema with a patient, they saw clear sock marks, and the patient recognized that he did have edema. Some of these patients show high morning blood pressure, particularly high diastolic blood pressure, indicating that they had a high cardiac load. In these cases, we may suggest to them to visit their primary care physicians for medical attention/consultation or adjustment of medication or to consult with physical therapists for adjustment of the amount of physical activity. We may ask the patients to score (100 points) their subjective health conditions to gauge their QOL, or we may examine whether the scores can be changed following subtle modifications. The base scores of patients with low left ventricular ejection fraction and long hospitalization period are often low. Meanwhile, the scores often remain constant in patients with decreased cognitive function or those with asymptomatic ischemic heart disease. These patients with low or constant scores need to be followed up carefully for any changes in health conditions. In addition, we encourage our patients to fill out the free entry field if they wish to schedule a consultation. We respond to post-discharge problems and queries, such as, "I am worried about high blood pressure" or "How should I cope with a slope?" In addition, we listen to not only the patients but also the families supporting them for any problems or queries [17].

Self-management support system is not only for information gathering but also for following up any specific changes from previous descriptions and for patients' awareness building. Checking the home HF and blood pressure records is important for ascertaining the self-monitoring status and for us to show our interest in what the patients are doing. As for self-monitoring, we look at whether the patients have ascertained the status or changes in their own physical conditions or whether they have changed their behaviors for the appropriate management of the recuperation period based on their own understanding and judgment. Then, based on our assessment of their self-management status, we provide them with the necessary feedback and make efforts for preventing re-hospitalization or for secondary prevention. We also pay attention to the QOL of the patients: whether the patients are leading their own way of life after discharge from the hospital; whether their life reconstruction is successful; and whether they are leading a fulfilling life, not merely

a restricted life.

Nurses' skills of supporting self-management in cardiac rehabilitation

The important points are as follows: to assess the individual risks of the patients and to use the assessment for the management of safe rehabilitation; for patient education, to assess correctly the status of self-management; and, for counseling, to show interest in patients, consider how they are feeling, and provide them with mental support. Collaborating with different health professionals and providing continuous comprehensive support, as well as playing the role of coordinator for these, are also important parts of nurses' responsibilities.

DECLARATION OF NO CONFLICT OF INTEREST

All the authors declare that they have no conflict of interest.

ETHICS POLICY

This article does not contain any studies in human or animal subjects performed by the authors.

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