

Development of a Nursing Protocol for Hospitalized Patients with Reduced Cognitive Function in the Process of Recovery from Acute Exacerbation of Chronic Heart Failure

Haruka Otsu^{1*}, Tsukiko Narasaki², Ayumi Kamura³, Kyoko Maeda⁴, Tomoko Sumiwaka⁵, Tomie Uno⁶, Misato Takamori⁷, Toshimichi Wada⁸

¹Graduate School of Health Sciences, Hirosaki University, Hirosaki City, Japan

²Gifu Prefectural Tajimi Hospital, Tajimi, Japan

³Saga University Hospital, Saga, Japan

⁴Social Medical Corporation Aijinkai, Akashi Medical Center, Akashi, Japan

⁵Sosai Kosei Kai Social Medical Corporation, Matsunami General Hospital, Kasamatsu, Japan

⁶Local Incorporated Administrative Agency, Gifu Prefectural General Medical Center, Gifu, Japan

⁷University of Fukui Hospital, Eiheiji, Japan

⁸Fukui Prefectural Sukoyaka Silver Hospital, Fukui, Japan

Email: *h_otsu@hirosaki-u.ac.jp, narasaki-tsukiko@tajimi-hospital.jp, yamamoto5@cc.saga-u.ac.jp, maeda@amc1.jp, cn-dcn@matsunami-hsp.or.jp, t-u.to31g4@sf6.so-net.ne.jp, mito3310@gmail.com, sizemood@yahoo.co.jp

How to cite this paper: Otsu, H., Narasaki, T., Kamura, A., Maeda, K., Sumiwaka, T., Uno, T., Takamori, M. and Wada, T. (2018) Development of a Nursing Protocol for Hospitalized Patients with Reduced Cognitive Function in the Process of Recovery from Acute Exacerbation of Chronic Heart Failure. *Health*, 10, 879-901.

<https://doi.org/10.4236/health.2018.107065>

Received: June 16, 2018

Accepted: July 1, 2018

Published: July 4, 2018

Copyright © 2018 by authors and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

The purpose of this study is to develop a nursing protocol aiming at early recovery of hospitalized patients with reduced cognitive functions in the process of recovery from acute exacerbation of chronic heart failure. At the first stage of the research, a draft nursing protocol was prepared based on a basic survey. At the second stage of research, a semi-structured interview was conducted for 4 nurses certified for chronic heart failure nursing and 11 nurses certified for dementia nursing so as to ensure content validity of the draft nursing protocol. At the third stage of the study, the possibility of clinical application of the nursing protocol revision plan proposed at the second stage of the study was examined. The nursing protocol revision plan was effective for 118 nurses (90.1%) who carried out the protocol for the target patient on assessment items, essential points of nursing care and specific nursing care. There were no items or contents for which confirmation of usefulness was less than 60%. Since 90.1% of the usefulness was confirmed by nurses working in the actual clinical setting, the authors believe that this nursing protocol was secured to a certain level. The nursing protocol developed in this study has been requested by nurses at clinical sites in the past. It is very meaningful in improving nurs-

ing for the early recovery of hospitalized patients with reduced cognitive function in the process of recovery from acute exacerbation of chronic heart failure.

Keywords

Dementia, Cognitive Impairment, Acute Exacerbation of Chronic Heart Failure, Recovery, Nursing Protocol

1. Introduction

The majority of patients with heart failure are elderly people aged 65 years or older [1], and elderly people over 80 years of age tend to have a higher prevalence of dementia compared to those in other age groups [2]. For patients with cardiac disease who underwent cardiac rehabilitation in the hospital, it was reported that the hospitalization period was significantly longer in patients with heart failure than in patients with myocardial infarction, and that there were many coexisting dementias in their background [3]. One fourth of elderly heart failure patients repeat hospital admission, and expenditure of medical expenses in Japan is rising [1]. Therefore, it is important to manage diseases for early recovery and prevention of heart failure in elderly heart failure patients with complications of dementia.

In the United States, soaring medical costs related to treatment and care of heart failure has been a social problem [4], while disease management of dementia patients has not been regarded as a problem. A program to improve the implementation of self-care aiming at preventing prehospitalization due to deterioration of heart failure and reduction of medical expenses for heart failure patients who are able to self-manage the disease except for dementia in overseas research has been developed and implemented [5] [6] [7] [8] [9]. Furthermore, in a study that integrated metabolic analyses of the results obtained in previous studies on the disease management of chronic heart failure, the results of the disease management program for heart failure reduced overall hospitalization rate and mortality by approximately 20% [10]. Similarly, a disease management program aimed at preventing the deterioration of heart failure and reducing the re-hospitalization rate has been implemented in Japan [11], and long-term effects of up to 36 months after the program start have been verified [12] [13]. However, clinical nurses in Japan are struggling to manage patients with dementia and short of self-care rather than patients who are able to self-manage disease [14]-[19]. Therefore, the research has focused on disease management of chronic heart failure of dementia patients who have a high rate of re-hospitalization and difficulty in self-management [20] [21] [22] [23] [24]. Meanwhile, it has been reported that Mild cognitive impairment (MCI) at the preliminary stage of dementia is one of the factors for low self-care capacity in overseas [25]. However, there have been no researches on disease management of chronic heart failure

patients with decreased cognitive function.

There are infectious diseases, fever, dehydration, inadequate salinity and moisture restriction, internal malabsorption, as factors for deterioration of heart failure in elderly heart failure patients with dementia led to medical treatment [20] [21] [22] [23]. As a social background for the above, rehospitalization of dementia patients who have not been able to utilize social resources such as lone living or old-age care recipients tends to be more frequent [20] [21] [22] [23]. In management of diseases of chronic heart failure elderly people with complications of dementia who enter welfare facilities for elderly, it is difficult for nurses to support such patients. Therefore, the nurses wished to have a manual for nursing assistance for people with dementia complicated with chronic heart failure [21]. However, nursing protocols for preventing worsening of chronic heart failure of patients whose cognitive function has decreased despite the needs from nurses have not been created so far. Therefore, we developed a nursing protocol aiming at early recovery of hospitalized patients with reduced cognitive function in the process of recovery from acute exacerbation of chronic heart failure in this study.

2. Method

For the first step of the research, a draft of the nursing protocol was prepared based on a basic survey [26] for patients with chronic heart failure with impaired cognitive function. For the second stage, semi-structured interviews were conducted with 4 nurses specialized in chronic heart failure and 11 nurses in dementia care to ensure the content validity of the draft protocol. In the interviews, we asked their opinions on characteristics of patients with impaired cognitive function with acute exacerbation of chronic heart failure [26] as well as on the draft of the protocol. Then we revised the draft according to their opinions. Each interview lasted for about 120 minutes, and was conducted in a private room.

For the third stage, we examined the possibility of clinical application of the revised draft proposed in the second stage. We confirmed usefulness of the revised draft through actual cases that they experienced and completed the nursing protocol. The subjects had been working at 70 hospitals with cardiovascular ward, where they had a delirium prevention team and nurses specialized either in chronic heart failure or dementia. They all had experiences of nursing care in patients with impaired cognitive function with acute exacerbation of chronic heart failure. We requested nursing administrators of these hospitals in a written form to cooperate with us in this study, and for those who agreed, we asked them to send us replies regarding the number of copies of the survey forms that they need to distribute. The investigation was conducted during October and November 2017. The subject were asked to select all the items that they felt useful when assessing interruptions during the treatments as well as the care that they provided in order to successfully prevent the interruptions during the treatment.

Analysis Method

In the second stage of the study, we conducted an analysis using qualitative induction on data obtained by the interviews. We created verbatim records and extracted descriptions concerning the evaluation of the draft protocol. The extracted contents were coded and classified into similar semantic contents.

In the third stage, we performed a simple tabulation and counted the numbers of assessment items and nursing care contents selected by the nurses as useful. The items and contents selected by more than 60% of nurses were considered valid to be included in the nursing protocol. For items selected by less than 60% of nurses, we judged if the patients' heart failure could be aggravated by implementation of the nursing protocol. If the possibility was low, it was assumed that the protocol was not properly implemented as the subjects did not have adequate expert knowledge or skills in nursing care of chronic heart failure and dementia. Hence, we included these items in the nursing protocol as assessment items and nursing care contents.

3. Ethical Consideration

In the second and third stages, we explained the purpose, method, research contents, voluntariness of participation in the study, and protection of personal information to the nurses and nursing administrators in a written form. We conducted the investigation under the subjects' voluntary agreement. This research was approved by the Ethics Committee of the Graduate School of Health Sciences, Hirosaki University (Reference Number: 2015-047).

4. Results

4.1. Results of the First Stage

A draft of the nursing protocol was prepared based on the basic survey [26] and the guidelines for treatments of acute heart failure [27] in order to prepare a nursing protocol for treatments frequently performed for acute exacerbation phase of chronic heart failure in patients with impaired cognitive function. In the basic survey [26], we revealed issues in nursing care which make it difficult for patients with impaired cognitive function to continue treatments for acute exacerbation of chronic heart failure or to go through monitoring of symptoms. These issues included the following: 1) inadequate adaptation to the environment due to sudden hospitalization, 2) anxiety due to insufficient understanding regarding clinical examinations, management and treatments, 3) delay in recovery due to interruption of treatments and monitoring in the acute phase, 4) difficulty in capturing symptoms associated with deterioration of heart failure, 5) difficulty in monitoring symptoms when using diuretics, 6) difficulty in adhering to diet and fluid-intake restriction. Assuming that these problems would occur in time series through the process of hospitalization, clinical examination, treatment, and symptom monitoring, we created a chronological flowchart. On the left side of the flow chart, we assumed the problems in nursing care which

could occur at the beginning of hospitalization and conducted an assessment following the assessment items. In case where there was a possibility of having problems or risks, we created a summary of specific nursing care to be conducted following the significant points of nursing care on the right side of the chart. Regardless of the number of years of nursing experience, we listed specific nursing care contents to be conducted so that they could at least provide minimum nursing care.

4.2. Results of the Second Stage

4.2.1. Outline of Target

Table 1 shows the outline of the certified nurses who were the subjects of this study. A total of 15 people, including 4 certified chronic heart failure nurses and 11 nurses with dementia nursing care experience, were eligible. Age was 39.3 ± 8.3 years for chronic heart failure nurses and 40.2 ± 10.3 years for certified dementia nurses. Average years of experience as a nurse was 17.8 ± 8.5 for chronic heart failure nurses and 19.2 ± 6.8 years for certified dementia nurses. The years of experience of certified nurses was 3.0 ± 1.6 years for certified chronic heart failure nurses and 3.7 ± 0.8 years for certified dementia nurses. Sex in certified chronic heart failure nurses was 3 females and 1 male and for certified dementia nurses, it was 9 females and 2 males.

4.2.2. Evaluation of Draft Nursing Protocol by Nurses Certified in Chronic Heart Failure Nursing and Those Certified in Dementia Nursing

Table 2 shows opinions on the entire nursing protocol draft by nurses certified

Table 1. Outline of target.

Nurse	Sex	Type of certified nurse	Age	No. of years of experience (years)	No. of years of experience as a certified nurse (years)
A	Female	CHF nursing	40s	27.5	5
B	Female	CHF nursing	40s	18.5	3
C	Female	CHF nursing	40s	18.5	3
D	Male	CHF nursing	20s	6.8	1
E	Female	Dementia nursing	50s	26.5	3
F	Female	Dementia nursing	50s	30.3	3
G	Female	Dementia nursing	40s	21.5	5
H	Female	Dementia nursing	40s	21.5	5
I	Female	Dementia nursing	30s	13.3	4
J	Female	Dementia nursing	40s	14.7	3
K	Male	Dementia nursing	40s	23.3	3
L	Female	Dementia nursing	40s	19.8	3
M	Female	Dementia nursing	40s	20.8	4
N	Male	Dementia nursing	30s	10.6	4
O	Female	Dementia nursing	40s	26.9	4

in chronic heart failure nursing. The number of codes was 14 and the classification was 9.

The number of codes and classification for opinions of nurses certified in dementia nursing was 56 and 18, respectively (**Table 3**).

Table 2. Opinions on the entire nursing protocol draft by nurse certified in chronic heart failure nursing.

Classification	Number of codes
Oxygen therapy, drug therapy, and resting therapy are preferred in order of priority	3
The nursing protocol is useful for young staff.	2
I would like you to complete the nursing protocol as soon as possible.	2
It is better to prioritize the contents of the nursing protocol	1
It is better not to limit the use place of the nursing protocol.	1
The nursing protocol should be simple.	1
A nurse does not consider the difficulty in catching the symptom of deterioration of heart failure of a patient whose cognitive function has decreased until the patient's recover from symptoms as a problem.	1
When the patient recovers and the infusion for treatment is reduced or terminated, the patient tends to become overactive.	1
It is an important point of view in nursing to have the patient properly ingest water, including dehydration prevention.	1

Table 3. The opinions on the whole nursing protocol draft by certified nurse in dementia nursing.

Classification	Number of codes
It is better to separate nursing protocols according to the timing of implementation.	9
It is easier to implement the nursing protocols in the medical field if it is described in detail.	6
Nursing protocols should be divided into a summary and detailed implementation procedure.	6
It is easier to read the nursing protocol if it is described in a simpler way.	5
Priorities of nursing protocols should be in the order of medication, monitoring for worsening symptoms, moisture management, salinity management, and activity management.	5
The content of the nursing protocol is generally good.	4
This is enough as a flow of nursing protocols.	4
Nursing protocols may be expressions and contents that can be applied at the time of implementation.	4
Nursing protocols should be listed with their priorities.	3
Nursing protocol is useful for clinical nurses.	2
It should be easy to understand the points of the nursing protocol by summary and so on..	1
It is better to proceed with yes-no assessment for nursing protocols.	1
It is better to add indices of dehydration to the nursing protocol.	1
Nursing protocols are better with abstract content.	1
It is better for young nurses to include basic subjects as well as specialized content.	1
In patients with convalescence, the priority of nursing care differs according to the patient's condition.	1
Nursing protocols are good for practical use.	1
In nursing protocols, it is advisable to strengthen guidance on prevention of deterioration of heart failure for patients and their families in recovery period.	1

4.2.3. Difficulty in Identifying Symptoms of Deteriorating Chronic Heart Failure in Patients with Impaired Cognitive Function

Table 4 shows opinions on the nursing protocol about difficulty in identifying symptoms of deteriorating chronic heart failure in patients with impaired cognitive function by certified nurses.

4.2.4. Difficulty in Observing Eating and Drinking of Patients with Impaired Cognitive Function

Table 5 shows opinions on the nursing protocol about difficulty in observing eating and drinking of patients with impaired cognitive function by certified nurses.

Table 4. Opinions on the nursing protocol about difficulty in identifying symptoms of deteriorating chronic heart failure in patients with impaired cognitive function by certified nurses.

Nurses certified in chronic heart failure nursing
In the acute phase of initial hospitalization, the nurse monitors the patient using medical equipment, so it is unnecessary to deal with the difficulty in catching deterioration symptoms as a problem. It is necessary to take it as a problem for patients in recovery process.
Patients with impaired cognitive function in the recovery process themselves do not appeal, so nurses need to assess worsening signs.
Nurses are less likely to catch symptoms that are worsening in patients with dementia.
In home care, it is important for families and people around the patient to discover the symptoms of the patient at an early stage.
Nurses certified in dementia nursing
In discharge guidance, nurses need to explain how to monitor the symptoms of deteriorating heart failure to patients and their families in an easy-to-understand manner.
Nurses are less likely to capture the symptoms of deteriorating heart failure in patients with impaired cognitive function, but also in those without dementia.

Table 5. Opinions on the nursing protocol about difficulty in observing eating and drinking of patients with impaired cognitive function by certified nurses.

Nurses certified in chronic heart failure nursing
Patients who cannot restrict moisture cause deterioration of renal function, so it is difficult to increase diuretics.
It is also desired to add "Difficulty in observing non-eating and drinking" as an item. It is a problem that comes up in recovering process to some extent.
In the case of patients with decreased cognitive function, adherence should be continued within the possible range.
It is better to include nursing care for anorexia, not only for patient being unable to comply with eating and drinking.
Since symptoms deteriorating heart failure often cause loss of appetite, few patients overeat during the period of acute exacerbation. It is necessary to pick up the lack of intake as a problem point before overdosing as a sign of deterioration.
Since high concentration of oxygen therapy is performed during acute exacerbation period, the patient will have dry mouth. Drugs with diuretic action are used, so the patient gets dry in addition to the dry mouth
Since the patient can not comply with adherence, the goal is to receive assistance and maintain the condition.
Since meals burden patients' heart, patients' meal starts with three porridge. Regarding nursing care content related to meals, it is better to include important points to minimize heart load caused by meals.
Problems associated with water intake occur in the near term of discharge from convalescence. The patient may have as much drink as he/she wants and diuretics may be adjusted according to the intake.
Nurses certified in dementia nursing
Patients are allowed to eat from the first day of hospitalization in many cases. Even in an acute phase, there is no sense of discomfort even if it deals with compliance with salinity and moisture restriction.
In order to make it suitable for the actual condition of the patient, it is better to focus on maintaining an appropriate amount of diet, rather than to pay attention to improvements in compliance-related difficulties.
Some patients will be re-hospitalized as they forget to take medicine.

4.3. Results of the Research Phase 3

4.3.1. Distribution Number and Collection Number

We sent documents to nurse managers at 70 hospitals, and 31 institutes agreed to cooperate with us for the research. After that, total 140 copies of them were distributed to clinical nurses through nursing administrators. The total number of responses was 131, the collection rate and the effective response rate were 93.6%.

4.3.2. Outline of Targeted Nurse

For years of experience as a nurse, 10 nurses (7.6%) in the first year, 16 nurses (12.2%) in the second and third years, 16 nurses (12.2%) in the fourth to fifth years, 30 nurses (22.9%) in the 6th to 10th year, 34 nurses (26.0%) in the 11 to 20 years, 23 nurses (17.6%) in the 21st to 30th year, and 2 nurses (1.5%) with more than 31 years' experience. Furthermore, 124 nurses of them (94.7%) were female and 7 (5.3%) were males.

4.3.3. Evaluation of the Usefulness of the Nursing Protocol Revision Plan

There were one assessment item and seven contents of specific nursing care that the nurse conducted for the patient and was not useful (Table 6). For both items

Table 6. Contents in which clinical nurses conducted on patients and had no usefulness.

Assessment items
1. Assessment on overdose intake
<input type="checkbox"/> Recovery process
Concrete Nursing Care
2. In the case that the patient is dehydrated due to insufficient intake of water, heart rate will increase and heart failure may worsen.
3) Management after discharge
<input type="checkbox"/> If weight loss is seen rather than the proper body weight, increase the water intake, let the patient see the patient at an earlier stage
3. The patient's water intake may be excessive and heart failure may get worse.
1) Fulfillment of needs within the treatment range
<input type="checkbox"/> The nurse uses a sensor mat or a call mat which sounds when the patient steps on it.
4. As patients increase their cardiac output due to malnutrition and progression of anemia, heart failure deteriorates.
<input type="checkbox"/> Increasing the intake of drinks in patients with anorexia increases the dietary intake
5. Patient's salt management may not be properly performed, and heart failure may worsen.
1) Improvement of environment for compliance
<input type="checkbox"/> Nurses perform risk management using sensor mats to prevent the patient from stealing others' meals.
<input type="checkbox"/> In the case that there are patients who are forbidden to eat for their treatment, they should be in the room same as other disabled patients'.
2) Disease management at home
<input type="checkbox"/> For facilities and home care services where it is difficult to provide reduced salt diet, ask the patient to halve the amount of meal intake.
6. Overactive patients suffer from excessive heart load. Furthermore, patients with low activity have a risk of heart failure that worsens due to fatigue and dyspnea at the time of exertion.
6) Disease management at home
<input type="checkbox"/> The patient's exercise amount is measured with a pedometer and the nurse confirms the implementation status at the time of patient's visit to the hospital.

and contents, usefulness was recognized in experienced cases of nurses certified in chronic heart failure nursing or in dementia nursing at the 2nd stage of the research. However, we decided to delete the items “If weight loss is seen rather than proper body weight, increase the water intake, let the patient see the patient early” and “Increasing the intake of drinks in patients with anorexia increases their dietary intake” since the limit for increase in water intake is possibly unclear and it may cause deterioration of heart failure. Also, for the item “The patient’s exercise amount is measured with a pedometer and the nurse confirms its implementation status at the time of patient’s visit to the hospital”, it was difficult for a patient with declined cognitive function to continue activities and therefore we judged to delete it. With regard to other assessment items and specific nursing care, since experience cases of nurses certified in chronic heart failure nursing or in dementia nursing were recognized at the 2nd stage of the study, they were not deleted. Total 118 clinical nurses (90.1%) carried out all assessment items and specific nursing care for patients and they were effective.

The nursing protocol revision plan was modified based on the results of research at the second and third stages. From this process, we developed a nursing protocol aiming at early recovery of hospitalized patients with reduced completed function in the process of recovery from acute exacerbation of chronic heart failure (**Figure 1**). The time point for using this nursing protocol for patients is assumed to be the time when withdrawing from oxygen therapy (around 2 L/min or less), or when withdrawing from continuous infusion. The contents of specific nursing care for the point of nursing care are shown in **Figure 1**.

Specific nursing support contents of a nursing protocol for hospitalized patients with reduced cognitive function in the process of recovery from acute exacerbation of chronic heart failure

1) From inappropriate medications after discharge, patients have a risk of worsening of heart failure and re-hospitalization.

[Summary of Nursing Assistance]

□ The nurse instructs patients and care providers to use social resources and instructs a simple method that can be continued.

a) Devices aiming to ensure medication

□ Medication is the most important for discharging, and nurses support it so that internal oral administration can be continued at the very least.

□ In the case that the patient forgets to take medicines or make a mistake in taking them, the nurse attends and confirms it.

□ It is important to match the medication form to the patient’s condition so that patients can easily ingest.

e.g. Powder type is appropriate for the patient who shows rejection.

□ It is better to simplify the internal medicine with the cooperation of a doctor.

e.g. Pack the medicine into one package, reduce the number of times for taking them, adjust it to the number of meals after discharge

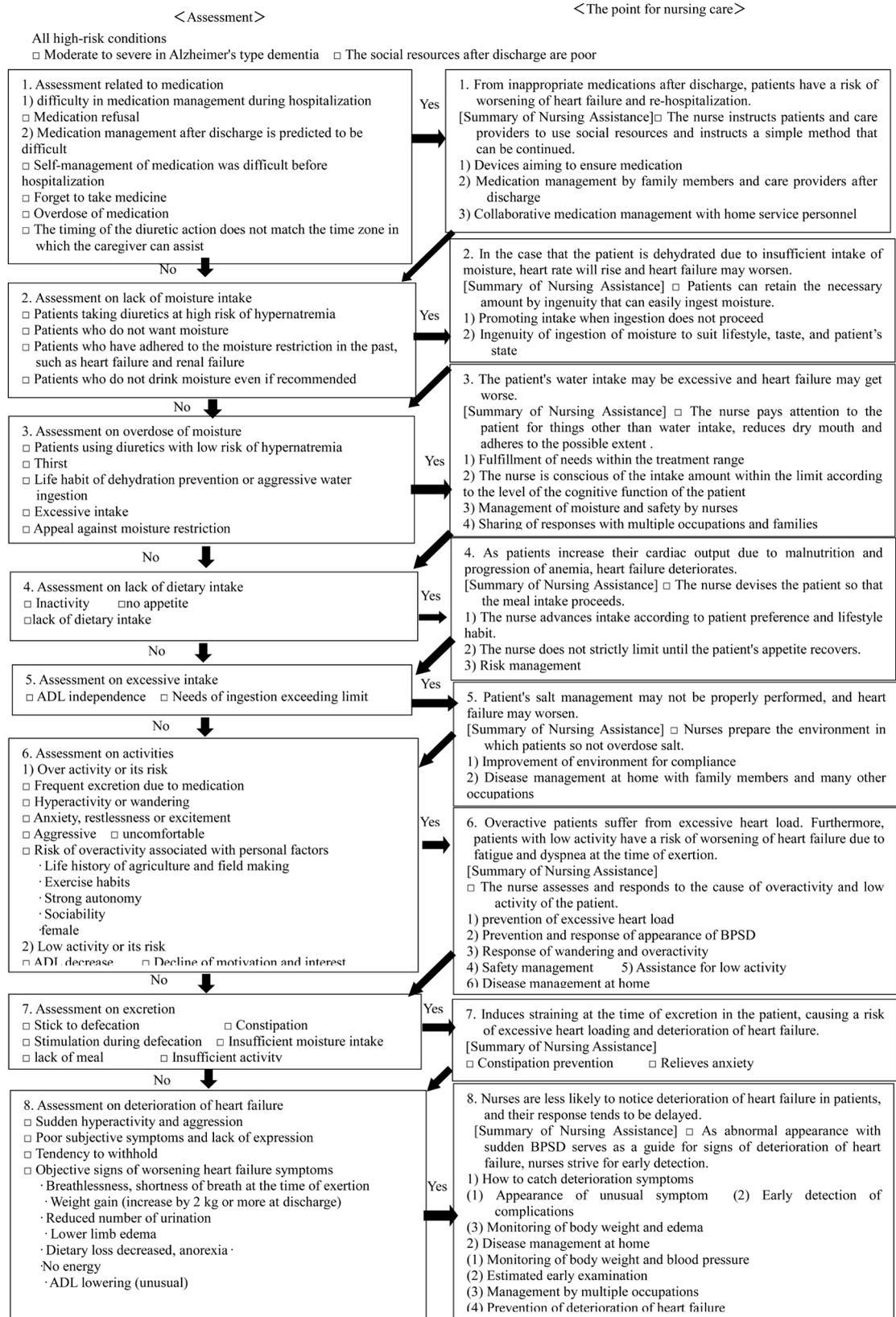


Figure 1. A nursing protocol for hospitalized patients with reduced cognitive function in the process of recovery from acute exacerbation of chronic heart failure.

□ In the case that the patient rejects and is excited, it should be changed to the counterpart or the patient should be contacted after an interval.

b) Medication management by family members and care providers after discharge

□ Nurses use visual materials such as pamphlets to explain the importance of oral medicine to the patients, their family member and care provider.

□ It is advisable to administer medication according to the patients ability and ways to which they are familiar with before hospitalization in cooperation with their family members and care providers.

e.g. Use of an internal use box, use of a medicine case, use of a medicine calendar, patient management for 2 - 3 days, a method the care provider takes each time after meals

□ In the case that self-management is possible, families and care providers confirm if the patient properly takes medicine after discharge from the hospital.

□ For the prevention of constipation, oral administration of laxative is also important for preventing deterioration of heart failure, and nurses explain how to adjust the dose to patients, their families and care providers.

□ The nurse will explain how to adjust the medication time so that the onset time of effect by the diuretic drug and the caregiver's time zone can be matched.

c) Collaborative medication management with home service personnel

□ The nurse tries to cooperate with the patients' families, care providers and the Long-Term Care Support Specialists and talks each other to ensure that the medication can be managed after discharge.

□ The use of the home service should be set on the time of taking oral medicine in the patient to make sure the patient takes medication without fail.

e.g. The nurse ask a doctor to take a patient's internal oral dose once or twice a day in accordance with the visiting time of a visiting nurse or a helper.

□ Regarding medication management for patients who tend to overdose medicines, care providers keep medicines out of reach of patients.

□ In the case that the patient can take internal medicine by themselves, their care provider writes the date and time on the medicine bag and confirms the medicine bag emptied by the patient.

2) In the case that the patient is dehydrated due to insufficient intake of moisture, heart rate will rise and heart failure may worsen

[Summary of Nursing Assistance] □ Patients can retain the amount needed for ingenuity with which they can easily ingest water.

a) Promoting intake when ingestion does not proceed

□ The nurse explains to patients, their families, and care providers that heart failure is exacerbated due to insufficient moisture intake.

□ The nurse urges the patient to ingest a small amount of moisture.

□ The nurse gives the patient moisture by assisting when it is needed for the patient.

□ The nurse recommends water moisture avoiding the patient's restless time zone.

b) Ingenuity of ingestion of water to suit the patient's lifestyle, taste and state

- In the case that the patient is accustomed to moisture limitation before hospitalization, the nurse urges the patient to ingest moisture to prevent deterioration of heart failure due to dehydration.

e.g. The nurse recommends time for every meal such as 10 o'clock, 15 o'clock, etc. and recommends the patient to ingest moisture.

- The patient's lifestyle is related to their wish for moisture. Nurses provide moisture according to patient's needs.

- The nurse provides the patient's favorite drink.

- The nurse confirms the swallowing condition of the patient and provides condensed moisture and jelly as necessary.

3) The patient's water intake may be excessive and heart failure may worsen.

[Summary of Nursing Assistance]

- The nurse pays attention to the patient for things other than water intake to, educates dry mouth and adheres to the possible extent.

a) Fulfillment of needs within the treatment range

- In order to obtain patient satisfaction even with a small amount, the nurse provides moisture by adjusting the time and amount according to the patient's lifestyle and needs.

- In the case that oxygen medicine and diuretic drugs are in use, the patient feels dry mouth, and therefore nurses provide necessary amount as a subdivision and record the intake situation and weight.

e.g. Use small cups to increase the number of times for intake little by little

- The nurse gives ice chips to the patient for a small amount of intake.

- The nurse uses artificial saliva and jelly to reduce patient's feeling of dry mouth.

b) The nurse is conscious of intake amount within the limit according to the level of the cognitive function of the patient

- The nurse marks the cup regularly used by the patient with the tape to draw the patient's attention about the intakeable amount.

- The nurse manages the moisture content of the patient using a container with a scale, a plastic bottle and a water bottle.

- The nurse specifically tells that the amount of water that can be ingested by the patient is equivalent to one PET bottle.

- For patients for repeatedly give questions, nurses notifies the amount of moisture that can be ingested a day and demonstrate how to measure the amount of water.

- The nurse explains to the patient to let them know that there is a limitation on moisture regardless of the types of drink.

c) Management of moisture and safety by nurses

- The nurse performs moisture management while the patient is in the hospital.

e.g. Water intake with assistance, confirmation of water intake etc.

□ For patients who are able to perform self-sustain walking and need strict moisture restriction, nurses make an environment where the patients cannot prepare moisture.

□ Nurses do not place moisture where patients can reach.

e.g. Nurses should keep an eye on care while using moisture for patients such as oral care.

□ In the case that a patient feels fever, the nurse uses cold compress without ice because the patient have a chance to eat the ice.

□ The nurse uses a sensor mat or a call mat which sounds when the patient steps on it.

□ The nurse diverts attention so that the patient cannot pay attention to moisture.

e.g. Distract the topic, focus on hobbies with less burden on the physical side, etc.

d) Sharing of responses with multiple occupations and families

□ The nurse explains about the restriction of the patient each time and displays it also on the bedside. This information should be shared with staff members, visitors etc. as a whole.

□ Many of other occupations, families, and care providers use the check table to manage the moisture content of patients.

□ Individual prepared beverages may not be grasped, and the nurse checks if there are drinks around the bed and in the refrigerator to make adjustments to fit the amount of moisture within the limits.

4) As patients increase their cardiac output due to malnutrition and progression of anemia, heart failure deteriorates.

[Summary of Nursing Assistance]

□ The nurse devises the patient so that the meal intake can proceed.

a) The nurse advances intake according to the patients' preference and lifestyle habit.

□ The nurse recommends what the patient is likely to eat.

□ The nurse asks the patients' families and the care providers about the patient's favorite food without restricting the content of the meal.

□ For patients with anorexia nurses provide supplements from which the patients can take high calories in small amounts.

□ Even in the case that the patient's heart failure recovers, if the appetite does not recover, the patient may be returned to the environment that the patient is familiar with before hospitalization.

e.g. Try to leave the hospital to home

b) The nurse does not strictly limit until the patient's appetite recovers.

□ The patient is provided with half a meal without salt limit until the patient's appetite returns.

c) Risk management

□ The nurse helps the patient consume the meal so as to prevent malnutrition.

□ The nurse performs oral care of the patient before meals and cleans the oral

cavity which also prevents aspiration.

□ Since weight gain and urine volume reduction are signs of worsening of right heart failure, nurses perform physical assessment of the patients.

5) Patient's salt management may not be properly performed, and heart failure may worsen.

[Summary of Nursing Assistance]

□ Nurses prepare the environment in which the patients do not overdose salt.

a) Improvement of environment for compliance

□ In order to shorten the fasting period, the nurse consults the doctor so that the patient can start the meal ahead of time.

□ The nurse requests patients' family members and care providers for their cooperation to restrict carried-in food.

□ For overeating, if the patient is able to communicate linguistically, the nurse talks to interrupt the meal.

□ The nurse accompanies the patient during meals and suppresses overeating and excessive intake of salt by the patient.

□ Nurses perform risk management using sensor mats to prevent the patient from stealing others' meals.

□ In the case that there are patients who are forbidden to eat for treatment, they should be in the room same as other disabled patients.

□ Since patients sometimes purchase food, nurses observe their behaviors.

b) Disease management at home with family members and many other occupations

□ To discharge the patient, the nurse grasps the usual meal content and lifestyle and concludes a possible salt reduction method with the patient's family and care provider.

e.g. In the case that the patient likes pickles, difference in amount of seasoning that the patients ingest between their home and hospital, amount of soy sauce that the patients ingest etc.

□ For patients receiving facility services or at-home services, the nurse tells the salinity limit to the person in charge.

□ For facilities and home care services where it is difficult to provide salt-reduced diet, ask the patient to halve the amount of meal intake.

□ For patients who are discharged to facilities, the nurse will ask the person in charge in the facilities to choose snacks with less salt.

e.g. Choose castella rather than rice cracker

6) Overactive patients suffer from excessive heart load. Moreover, patients with low activity have a risk of worsening of heart failure due to fatigue and dyspnea at the time of exertion.

[Summary of Nursing Assistance]

□ The nurse assesses and responds to the cause of overactivity and low activity of the patient.

a) Prevention of excessive heart load

□ For patients with strong independence and movement, nurses carefully

monitor their symptoms of heart failure deterioration.

- The toilet and washroom should be placed near the patient's bed so as to reduce the excessive burden on their daily activities.

- The nurse evaluates patient's heart load based on the usual living behavior of them, and manages oral administration.

b) Prevention and response of appearance of BPSD

- The nurse confirms whether there are influences of deterioration of the past medical condition and side effects of the medicine being used for the patient.

- The nurse confirms influences of physical pain, constipation, insomnia and hunger of the patient.

- The nurse confirms the mental pains of the patient such as sadness, anger, loneliness and influences of the patient's character.

- The nurse confirms influences of sensory and environmental distresses such as sound, light, taste, smell, air conditioning, humidity etc. of the patient.

- The nurse confirms influences of the surrounding involvement of the family member, care provider, nurse etc of the patient.

- The nurse confirms influences caused by the difference between the patient's life history and the familiar way of living and the present situation.

- Nurses make patients do their activities and hobbies, and make them feel calm.

c) Response of wandering and overactivity

- The nurse checks the purpose and reason for the patient's confusion and helps them achieve the purpose so that the heart load cannot be excessive.

- The nurse takes the patient to the ward on a wheelchair according to the level of their cardiac function and requests for taking the patient back to the room when the patient calms down.

- For patients who refuse to be on a wheelchair, a nurse sets a chair to let the patient take a break on the corridor and encourages the patient.

- The nurse should allow the patient to talk with staff members and other patients, listen to their story, and stay with them as possible as they can.

- For the reasons related to the patient's family and confusion caused by their desire to go home, the nurse gets the patient relieved by showing a letter from their family, letting them read it, or having the patient talk with their family members by telephone.

- For overactive BPSD, the nurse considers controlling drug symptoms with a doctor.

d) Safety management

- For bathing the patient, it is important to apply hot water from their feet, without squatting down suddenly, use a shower chair with a backrest and proceed with the operation slowly.

e) Assistance for low activity

- For living behaviors of the patient's toilet, washbasin, meal, etc., the nurse will ask the patient to do something that the patient can do themselves as

self-care.

□ Nurses consider using day care service and home visit rehabilitation to discharge patients.

f) Disease management at home

□ In the case that the patient uses long-term care insurance, it is important to use admission system services or outpatient-based services according to the patient's heart function. In addition, the nurse tells staff members about appropriate activity amount and contents so that the patient's heart failure cannot worsen.

□ At the early stage of discharge, it is necessary to pay attention to patient so that they cannot be forced to keep sitting for a long time.

□ When a patient gets on a wheelchair, it sometimes needs to take a long sitting position to reduce lower limb edema and adjust the amount of activity.

□ For patients who urinate a large number of times due to the drugs they use and are at risk of overactivity, their care providers prevent excessive heart load by transferring them to the toilet suitably by a wheelchair, or place them in a room closest to the toilet.

7) Straining is induced at the time of the patient's excretion, which causes a risk of excessive heart loading and deterioration of heart failure.

[Summary of Nursing Assistance] □ Constipation prevention

□ Relieves anxiety

□ To prevent straining at the time of patient's defecation, the nurse explains their family and care provider about dietary habits for constipation prevention and oral administration of laxative.

□ The nurse explains about constipation prevention to the patient, and puts an explanatory note in a place that can be seen by the patient according to the level of their cognitive function.

□ The nurse assists the patient to maintain proper diet, moisture and activity level.

□ Patients who are obsessed with defecation frequently appeal for bowel movement immediately after defecation. The nurse explains that the patient has defecated and appropriately carries out excretion induction and assistance.

□ In order to reduce patients' anxiety, nurses talk to the patients and invite them to hobby activities.

8) Nurses are less likely to notice deterioration of patients' heart failure and their response tends to be delayed.

[Summary of Nursing Assistance]

□ As abnormal appearance with sudden BPSD serves as a guide for signs of deterioration of heart failure, nurses strive for early detection.

a) How to detect deterioration symptoms

i) Appearance of unusual symptom

□ When a nurse receives information on statuses of patients' disabilities from a physical therapist, an occupational therapist, and a nursing care staff member,

the nurse assumes the possibility of deteriorating heart failure and performs assessment and nursing aid.

- When excitement, restlessness, aggression, hyperactivity, wandering, cold sweat, wheezing, pain symptoms appear suddenly in patients, nurses conduct physical assessment to find symptoms of deterioration of heart failure as soon as possible and deal with it.

- In addition to the complaint of the patient, the nurse assesses the patient by examining data, edema, loss of appetite, changes in activity as a measure of worsening signs.

- For patients who are able to complain of subjective symptoms, nurses grasp and observe subjective symptoms of the patients every day.

- ii) Early detection of complications

- During using diuretics, nurses detect signs of dehydration and renal function deterioration of patients at an early stage.

- Since the pulmonary edema is exacerbated by the merger of hypertension, it is necessary to prevent the appearance of coldness, constipation, wandering, excitement, hyperactivity and aggressive BPSD and continuously monitor blood pressure.

- For anemia, the nurse monitors the patient's heart rate and anemia symptoms.

- iii) Monitoring of body weight and edema

- In the case that it is difficult to measure urine volume, edema is assessed by weight measurement in early morning.

- The nurse confirms the moisture balance and weight change of the patient and consults a doctor for administration of diuretic at an early stage when the patient's weight gain increases.

- b) Disease management at home

- i) Monitoring of body weight and blood pressure

- Weight at discharge is used for weight monitoring during the process.

- Weight measurement as monitoring after discharge may be performed any time if it is possible to perform it even once a day. If it is difficult, reduce the frequency, such as once every few days.

- It is difficult for the patient to measure body weight under the same condition every day, so even if it cannot be measured every day, the nurse will observe the measurement results in a week as one index for a long time.

- If the patient cannot measure the body weight, ask their family members and care providers to monitor fatigue, decreased appetite, edema, respiratory distress at the time of exercise as a deterioration index of heart failure.

- For home care, the nurse ask the patient's family members and care providers to measure blood pressure once a day.

- In the case that the patient and their family members or care providers are able to continuously measure weight and blood pressure, the nurse instruct them to use a heart failure notebook or blood pressure notebook for monitoring.

ii) Estimated early examination

□ In the case that lowering dietary intake, diarrhea, constipation, decreased number of voids, weight gain and breathing are observed, the nurse prompts early visit to the patient.

□ In the case that the patient's sleep is disturbed at night and the patient suffers from dyspnea, coughing, lying up position or loss of appetite, there is a possibility of heart failure deterioration symptoms. It is a measure of early treatment for the patient.

iii) Management by multiple occupations

□ In the case that the patients cannot measure weight or blood pressure at home, staff members at the outpatient-based services measure and record them. Moreover, in the case that the weight gain is 2 - 3 kg or more per week, a consultation is needed.

□ Use of visiting nursing is considered depending on severity of heart failure and dementia.

□ Measured values among multiple occupations of home service need to be shared by using calendar for daily comparison of weight.

□ For outpatient-based services, it is necessary to give appropriate rest periods to the patient so that they cannot not be overactivated.

□ In the case of a facility entry after discharge, staff members confirm with patient's family or care provider if early treatment should be taken at the time of heart failure deterioration of the patient.

iv) Prevention of deterioration of heart failure

□ After discharge, it is important for the patient to take medicine without fail, be sure to undergo periodic medical examination and receives an early medical examination at the time of deterioration.

□ In the case that the patient is overactive and has shortness of breath, the nurse invites them to tea break to rest the patient.

□ The nurse helps cleaning the patient's foot and prevents shortness of breath during bathing.

□ Half bath is preferable. In winter, blood pressure rises in a shower bath and therefore it is necessary to warm the bathroom before bathing.

c) Prevention of infection

□ As respiratory infection deteriorates heart failure, the patient gargles and wash hands, and the nurse instructs the patient's family members and care providers to receive medical examination as soon as the patient catches a cold.

□ It is important to keep the body clean, to protect skin from edema and prevent infection.

□ It is important to for the patient to prevent urinary tract infections by washing the pudendal portion and ingesting moisture.

□ For swallowing pneumonia prevention, swallowing gymnastics and oral care are performed.

□ Influenza and pneumococcal vaccine are recommended for vaccination by consulting with a doctor.

5. Discussion

5.1. The Process of Nursing Protocol Preparation

Based on the evidence from the previous study (original draft) [26] and opinions of certified nurses specialized in chronic heart failure and/or dementia care, we prepared a revised draft of the nursing protocol using a mail survey on nurses working in clinical settings for the effects of assessment items and specific nursing care practice. The nursing protocol was considered useful by 90.1% of these nurses, suggesting that it is valid to a certain level.

5.2. Usefulness of the Nursing Protocol

5.2.1. For Improving Quality of Nursing Care

The nursing protocols created in the previous studies include the protocol for the elderly demented patients with wandering behavior [28], the nursing protocol for safe and efficient increase of the resting level in acute stroke patients [29], and the protocol for safe and easy step-wise change in the posture angle in acute stroke patients [30]. For dementia patients complicated by physical disorders, BPSD and delirium are likely to develop in the acute exacerbation phase of the physical disorders. Hence, nurses felt it difficult to deal with patients with dementia [31]. However, no one has ever attempted to create a nursing protocol aiming for conducting clinical examinations and treatments smoothly in patients with impaired cognitive function and physical diseases so that they can have a speedy recovery. The nursing protocol created in this study appears to contribute to the standardization of nursing care for patients with physical disorders with impaired cognitive function.

Moreover, for management of diseases of chronic heart failure patients who have dementia and enter welfare facilities for elderly, it is difficult for the patient to continue treatment of moisture and activity restriction despite the support by nurses [21]. Since nurses are struggling to support patients with dementia, many nurses (78.7%) feel that a manual for support is needed [21]. However, a nursing protocol for hospitalized patients with reduced cognitive function in the process of recovery from acute exacerbation of chronic heart failure has not been created so far even though there is a need for it. The nursing protocol created in this study is something that they had been waiting for in the clinical setting and therefore meaningful.

5.2.2. Usefulness of the Nursing Protocol for Anxiety Relief in Nurses

In the second stage of the study [26], we received a comment from the nurses specialized in chronic heart failure that they were awaiting for the nursing protocol to be completed very soon as it would be helpful for young nurses. In addition, we also had a comment from the nurses specialized in dementia care that we should include basic contents about nursing care for young nurses. Hence, we considered that this nursing protocol would be useful especially for newly graduated/employed nurses as a procedure manual. Newly graduated nurses can

do what they are supposed to do. However, they feel anxious about working independently especially when they still have lots of things to learn [32]. In acute hospitals, anxiety and tension are regarded as factors associated with incidents and accidents that nurses can have repeatedly [33]. It has been reported that one of the most common reasons for newly graduated nurses to leave their job is their concerns for medical accidents [34]. We consider that this nursing protocol will be useful especially for newly graduated/employed nurses as a procedure manual which can reduce their anxiety or stress caused by lack of knowledge or experiences.

6. Conclusion

It has been confirmed that the nursing protocol created in this study is useful for early recovery of hospitalized patients with reduced cognitive function in the process of recovery from acute exacerbation of chronic heart failure. Additionally, the nursing protocol created in this study is useful for standardization of nursing care of patient in recovery process. In order to generalize this research result, it is necessary to increase the number of target nurses and further verify the usefulness of nursing protocols.

Acknowledgements

We would like to express our sincere gratitude to all the nurses specialized in chronic heart failure and/or dementia care for participating in this study through interviews, as well as to nurses from all over the country for participating in the questionnaire survey.

Funding

This research was conducted with the aid of 2015-2018 Scientific Research Grant Subsidized Project Basic Research (C) (Issue No. 15 K11577).

References

- [1] Izumi, T. (2007) Chronic Heart Failure, Disease Burden Increases. *Journal of Clinical and Experimental Medicine*, **221**, 306-307.
- [2] Kawai, Y., Inoue, N. and Onishi, K. (2012) Clinical Picture and Social Characteristics of Super-Elderly Patients with Heart Failure in Japan. *Congestive Heart Failure*, **18**, 327-332. <https://doi.org/10.1111/j.1751-7133.2012.00297.x>
- [3] Yamazaki, M., Makita, S., Majima, M. and Nishimura, S. (2005) Comparison of Consequences of In-Hospital Rehabilitation for Heart Failure Patients and Patients with Acute Myocardial Infarction. *Journal of Japanese Association of Cardiac Rehabilitation*, **10**, 96-99.
- [4] Andrews, R. and Cowley, A.J. (1995) Clinical and Economic Factors in the Treatment of Congestive Heart Failure. *Pharmacoeconomics*, **7**, 119-127. <https://doi.org/10.2165/00019053-199507020-00004>
- [5] Rich, M.W., Beckham, V., Wittenberg, C., Leven, C.L., Freedland, K.E. and Carney, R.M. (1995) A Multidisciplinary Intervention to Prevent the Readmission of Elderly

- Patients with Congestive Heart Failure. *The New England Journal of Medicine*, **333**, 1190-1195. <https://doi.org/10.1056/NEJM199511023331806>
- [6] Stromberg, A., Martensson, J., Fridlund, B., Levin, L.A., Karlsson, J.E. and Dahlstrom, U. (2003) Nurse-Led Heart Failure Clinics Improve Survival and Self-Care Behavior in Patients with Heart Failure: Results from a Prospective, Randomised Trial. *European Heart Journal*, **24**, 1014-1023. [https://doi.org/10.1016/S0195-668X\(03\)00112-X](https://doi.org/10.1016/S0195-668X(03)00112-X)
- [7] Smeulders, E.S., van Haastregt, J.C., Ambergen, T., Janssen-Boyne, J.J., van Eijk, J.T. and Kempen, G.I. (2009) The Impact of a Self-Management Group Programme on Health Behaviour and Healthcare Utilization among Congestive Heart Failure Patients. *European Journal of Heart Failure*, **11**, 609-616. <https://doi.org/10.1093/eurjhf/hfp047>
- [8] Jaarsma, T., Lesman-Leegte, I., Hillege, H.L., Veeger, N.J., Sanderman, R. and van Veldhuisen, D.J. (2010) COACH Investigators: Depression and the Usefulness of a Disease Management Program in Heart Failure: Insights from the COACH (Coordinating Study Evaluating Outcomes of Advising and Counseling in Heart Failure) Study. *Journal of the American College of Cardiology*, **55**, 1837-1843. <https://doi.org/10.1016/j.jacc.2009.11.082>
- [9] Smeulders, E.S., van Haastregt, J.C., Ambergen, T., Stoffers, H.E., Janssen-Boyne, J.J., Uszko-Lencer, N.H., Gorgels, A.P., Lodewijks-van der Bolt, C.L., van Eijk, J.T. and Kempen, G.I. (2010) Heart Failure Patients with a Lower Educational Level and Better Cognitive Status Benefit Most from a Self-Management Group Programme. *Patient Education and Counseling*, **81**, 214-221. <https://doi.org/10.1016/j.pec.2010.01.003>
- [10] Jonkman, N.H., Westland, H., Groenwold, R.H.H., Agren, S., Atienza, F., Blue, L., Bruggink-Andre de la Porte, P.W.F., DeWalt, D.A., Hebert, P.L., Heisler, M., Jaarsma, T., Kempen, G.I.J.M., Leventhal, M.E., Lok, D.J.A., Martensson, J., Muniz, J., Otsu, H., Peters-Klimm, F., Rich, M.W., Riegel, B., Stromberg, A., Tsuyuki, R.T., van Veldhuisen, D.J., Trappenburg, J.C.A., Schuurmans, M.J. and Hoes, A.W. (2016) Do Self-Management Interventions Work in Patients With Heart Failure? An Individual Patient Data Meta-Analysis. *Circulation*, **133**, 1189-1198. <https://doi.org/10.1161/CIRCULATIONAHA.115.018006>
- [11] Otsu, H. and Moriyama, M. (2011) Effectiveness of an Educational Self-Management Program for Outpatients with Chronic Heart Failure. *Japan Journal of Nursing Science*, **8**, 140-152. <https://doi.org/10.1111/j.1742-7924.2010.00166.x>
- [12] Otsu, H. and Moriyama, M. (2012) A Follow-Up Study for a Disease Management Program for Chronic Heart Failure 24 Months after Program Commencement. *Japan Journal of Nursing Science*, **9**, 136-148. <https://doi.org/10.1111/j.1742-7924.2011.00194.x>
- [13] Otsu, H. and Moriyama, M. (2014) 36-Month Follow-Up Study of Post-Intervention Chronic Heart Failure Patients. *Health*, **6**, 559-575. <https://doi.org/10.4236/health.2014.67075>
- [14] Otsu, H., Moriyama, M. and Makaya, M. (2013) The Realities Regarding Difficult Nursing Support for Elderly Demented Patients with Deteriorating Chronic Heart Failure. *The Journal of Japanese Association of Cardiovascular Nursing*, **8**, 26-34.
- [15] Otsu, H., Takayama, S. and Watanabe, Y. (2013) The Current Status of Complicated Nursing Care and Support for Elderly Outpatients with Dementia and Chronic Heart Failure in Cardiovascular Clinics with Respect to Disease Management. *Journal of Health Science Research*, **3**, 1-11. [http://hoken-kagaku.com/journal/Vol3\(2013\).pdf](http://hoken-kagaku.com/journal/Vol3(2013).pdf)

- [16] Otsu, H. (2013) Current Status of Complex Nursing Care and Support Given by Nurses to Elderly Outpatients with Dementia and Chronic Heart Failure. *Journal of Japanese Society for Dementia Care*, **12**, 619-630.
- [17] Otsu, H. (2014) Feeling of Difficulties in Nursing Support for Elderly Demented People with Chronic heart Failure Living in Welfare Facilities for the Elderly Requiring Long-Term Care and the Realities Regarding the Nursing Support. *The Journal of Japanese Association of Cardiovascular Nursing*, **9**, 30-38.
- [18] Otsu, H. (2014) Difficult Situation of Home Visit Nursing Support for Elderly Demented People with Chronic Heart Failure Regarding Disease Management, Actual, and Effective Nursing Support. *The Journal of Japanese Association of Cardiovascular Nursing*, **10**, 82-90.
- [19] Otsu, H. (2015) The Realities of Difficult Nursing Situations and Ways to Support Elderly People with Dementia and Chronic Heart Failure Living in Health Care Facilities for the Elderly Requiring Long-Term Care. *Journal of Health Science Research*, **5**, 1-12. [http://hoken-kagaku.com/journal/Vol5\(2015\).pdf](http://hoken-kagaku.com/journal/Vol5(2015).pdf)
- [20] Otsu, H., Moriyama, M. and Makaya, M. (2013) Factors for Hospital Readmission in Elderly Demented Patients with Chronic Heart Failure and the Realities Regarding Disease Management for Home Care. *The Journal of Japanese Association of Cardiovascular Nursing*, **8**, 35-46.
- [21] Otsu, H. (2013) The Realities Regarding Support of Disease Management in Elderly Demented Patients with Chronic Heart Failure Living in Welfare Facilities for the Elderly Requiring Long-Term Care. *The Journal of Japanese Association of Cardiovascular Nursing*, **9**, 109-116.
- [22] Otsu, H. (2014) The Realities Regarding Disease Management Support for Elderly People with Dementia and Chronic Heart Failure in Home Care. *Journal of Health Science Research*, **4**, 1-10. [http://hoken-kagaku.com/journal/Vol4\(2014\).pdf](http://hoken-kagaku.com/journal/Vol4(2014).pdf)
- [23] Otsu, H. (2015) Disease Management in Elderly People with Dementia and Chronic Heart Failure Living in Health Care Facilities for the Elderly Requiring Long-Term Care. *Journal of Health Science Research*, **5**, 1-12. [http://hoken-kagaku.com/journal/Vol5\(2015\).pdf](http://hoken-kagaku.com/journal/Vol5(2015).pdf)
- [24] Otsu, H. (2015) Difficulty and Effective Nursing Care of Demented People with Chronic Heart Failure for Certified Nurse in Dementia Nursing. *The Journal of Japanese Association of Cardiovascular Nursing*, **10**, 64-74.
- [25] Cameron, J., Worrall-Carter, L., Page, K., Riegel, B., Lo, S.K. and Stewart, S. (2010) Does Cognitive Impairment Predict Poor Self-Care in Patients with Heart Failure? *European Journal of Heart Failure*, **12**, 508-515. <https://doi.org/10.1093/eurjhf/hfq042>
- [26] Otsu, H., Inoguchi, T., Moriyama, M., Takayama, S., Watanabe, Y. and Kume, M. (2018) Characteristics of Patients with Decreased Cognitive Function Undergoing Treatment for Acute Exacerbation of Chronic Heart Failure-Basic Survey for Standardization of Nursing to Prevent Discontinuation of Treatment. *Health*, **10**, 667-690. <https://doi.org/10.4236/health.2018.105052>
- [27] Guideline on Diagnosis and Treatment of Cardiovascular Disease (Report of Joint Research Group of 2010): Guidelines for Treatment of Acute Heart Failure (JCS 2011). www.j-circ.or.jp/guideline/pdf/JCS2011_izumi_h.pdf
- [28] Otsu, H., Takayama, S. and Watanabe, Y. (2013) An Examination of the Utility of Protocol in Dealing with Wandering for Elderly People with Dementia. *Journal of Health Science Research*, **3**, 1-11. [http://hoken-kagaku.com/journal/Vol3\(2013\).pdf](http://hoken-kagaku.com/journal/Vol3(2013).pdf)
- [29] Nakazawa, A. (2013) An Attempt to Introduce a Protocol to Increase the Resting

Degree by Nurses Led to Acute Stroke. *Brain Nursing*, **29**, 53-57.

- [30] Kobayashi, Y., Yano, S. and Koga, M. (2015) The Creation and Investigation of the Efficacy of Safe and Comfortable Dorsal Open Sitting Position Protocol for Patients with Acute Cerebral Hemorrhage Patients. *Journal of Japanese Academy of Neuroscience Nursing*, **3**, 23-31.
- [31] Otsu, H., Tamada, S., Kudo, M. and Ogasawara, E. (2016) Fundamental Inquiry to Consider a Way of Nursing Care for Demented Elderly with Physical Disease. *Journal of Health Science Research*, **6**, 1-6.
[http://hoken-kagaku.com/journal/Vol6\(2016\).pdf](http://hoken-kagaku.com/journal/Vol6(2016).pdf)
- [32] Kambara, Y. and Sawamoto, K. (2014) Learning from Nursing Practice Experience of the Beginner Nurse who Receives Instruction under Beginner Nursing Personnel Training -In 9 Beginner Nurses Interviews-. *Japan Bulletin of Educators for Human Development*, **14**, 1-11.
https://www.jstage.jst.go.jp/article/jaehd/14/0/14_KJ00009868422/_pdf
- [33] Nakamura, M., Kondo, H., Iwanaga, K., Imai, Y., Sugita, A., Sukawa, M. and Nagai, Y. (2016) Study on Factors Related to Repeated Incidents and Accidents Caused by Nursing Professionals. *The Kitakanto Medical Journal*, **66**, 279-288.
https://www.jstage.jst.go.jp/article/kmj/66/4/66_279/_pdf/-char/ja
- [34] Uchino, K. and Shimada, R. (2015) Literature Research on Removal of a New Care Nurse in Japan. *Journal of the Japan Society of Health Sciences of Mind and Body*, **11**, 18-23. https://www.jstage.jst.go.jp/article/jhas/11/1/11_18/_pdf/-char/ja