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## Factors related to the transition from hospital to home care in terminal cancer patients in Okinawa -Questionnaire survey of hospital nurses assisting the patient's discharge-

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### ABSTRACT

The purpose of this study was to examine the factors related to the realization of transition from hospital to home care in terminal cancer patients, and to clarify the problems that need to be solved in promoting home care in Okinawa. The subjects were 197 nurses who supported a terminal cancer patient's discharge in 17 hospitals with more than 200 beds that provided medical treatment for cancer patients. A questionnaire survey was conducted by mail. Among the 165 nurses who responded, 113 nurses had assisted a terminal cancer patient's transfer from hospital to home care within the last six months and gave valid responses that were analyzed in this study. In order to identify the factors related to the realization of transition to home care in terminal cancer patients, a multiple logistic regression analysis was performed. Results revealed a total of 3 items as related factors. The terminal cancer patient's discharge was facilitated by "Hospital nurse's confirming terminal cancer patients' understanding of their disease condition and treatment," and by "Hospital nurse's requesting intervention of the palliative care team or a palliative care doctor if necessary." "Difficulties in collaboration among doctors in charge, ward nurses, and the section of discharge support" impeded patient's transfer to home care. To promote a terminal cancer patient's smooth transition to home care, it is important that hospital nurses confirm that patients understand their own disease condition and treatment, and make necessary arrangements for palliative care services to them in proper timing. The findings also showed that it was necessary to facilitate cooperation among various healthcare professionals in patients' discharge planning. Thus, systematic strategies to overcome these problems would contribute to promoting a home care in terminal cancer patients in Okinawa. *Ryukyu Med. J., 31(1,2)11~23, 2012*

Key words: terminal cancer patients, transition to home care, discharge planning support

### INTRODUCTION

Cancer has been a leading cause of death in Japan since 1981, as well as in Okinawa prefecture since 1977. The cancer mortality rate in Okinawa is relatively low compared with other prefectures, but it has been increasing every year<sup>1)</sup>, suggesting that growing awareness of cancer treatment is expected among the people of Okinawa. Under

these circumstances, the Cancer Control Act was implemented in 2007. Based on this law, the Basic Plan to Promote Cancer Control Programs<sup>2)</sup> was established, which aims at reducing the cancer burden, as well as improving the quality of life of patients and their families. This specifies to prepare a system where patients can choose to receive treatment in the familiar environment of their own homes based on the wishes of cancer

patients, and emphasizes the use of the percentage of home death for cancer patient as a referential parameter, indicating that governmental policies for terminal cancer patients aim at making a transition to the familiar environment of their own homes to receive home care until the end of life. In the world, home death is increasingly regarded as a "gold standard" for high-quality end-of-life care<sup>3)</sup> because terminally ill cancer patients worldwide prefer to die at home<sup>4-10)</sup>.

In our country, a nationwide survey on end-of-life care<sup>11)</sup> reported that more than 60% of the people responded that they "wish to be cared at home", and 10.9% preferred to "die at home". In a questionnaire survey of Okinawa<sup>12)</sup>, 53.0% of the residents responded that they "wish to be cared for at home", and 42.9% preferred to "die at home" if they become terminally ill. However, the actual rates of death at home are only 6.7% in Japan and 7.9% in Okinawa, while more than 80% of patients with cancer die in general hospital ward<sup>13)</sup>. Considering the abovementioned policy background, together with people's needs regarding end-of-life care, it is necessary to promote a shift from hospital to home care for terminal cancer patients.

In the United States, there has been a focus on the importance of promoting a shift to home care and providing discharge support mainly for elderly people since the 1980's, its efficacy has been proven<sup>14-16)</sup>. As the studies conducted in terminal cancer patients, there have been many researches examining the factors associated with continuing home care and dying at home<sup>4-6)</sup>. On the other hand, in certain European countries, home palliative care has been developed in tandem with the advancement of palliative and hospice care since the late 1980's<sup>17)</sup>. Our neighbors, Korea and Taiwan, legislated the Cancer Control Act in 2003; palliative care programs for cancer patients have been developed in both countries since then<sup>18,19)</sup>. The percentage of home death in cancer patients in these countries has been reported as 39% in the United States<sup>20)</sup>, from 12.7% to 45.5% in European countries such as the UK, the Netherlands, and Germany<sup>7,8)</sup>, 42.9% in Korea<sup>9)</sup> and 32.4% in Taiwan<sup>10)</sup>. These rates are higher than those in Japan. This has been attributed to difference in social background among various countries, such as culture, popularization of home care, and medical insurance systems<sup>21)</sup>. Therefore, in order to promote a

shift to home care in our country, it is important to examine optimal support which is based on Japan's health care systems and social backgrounds<sup>22,23)</sup>.

Various factors were reported to be associated with the shift to home care in terminal cancer patients in Japan, such as the intention of patients and their families, care resources, alleviating symptoms, recognition of health care providers, and community networks in previous studies which involved a single facility or a small number of patients, as well as in a multicenter randomized study<sup>23-27)</sup>. In particular, ward nurses who work very closely with patients play an important role in assisting transfer to home care<sup>27-29)</sup>, so that the realization of a smooth transition is closely associated with the recognition and assistance of ward nurses. However, no studies examined the type of nursing interventions which promote a smooth transition to home care, or the difficulties which impede it. No similar studies have been reported in Okinawa. Thus, the aim of this study were to examine the type of nursing interventions, difficulties, and nurse's awareness of the hospital environment associated with the realization of the transition from hospital to home care in terminal cancer patients, and to clarify the tasks that need to be solved in promoting home care in Okinawa.

## SUBJECTS AND METHODS

### I. Subjects

Subjects were hospital nurse managers and staff nurses who worked at the surgical or internal medicine ward, or the section of discharge support at 18 hospitals with more than 200 beds that provided medical treatment for cancer patients in Okinawa prefecture, and have experience of being involved in assisting the transition of terminal cancer patients to home care.

In this study, "terminal cancer patients" was defined as follows: patients with cancer who are not likely to respond to treatment and whose life expectancy is less than 6 months.

### II. Procedures and Ethical approval

A self-administered questionnaire survey was conducted between November, 2009 and the end of January, 2010. Before conducting a survey, a letter was sent to the directors of nursing at the 18

hospitals to explain the study purpose, methods and ethical issues. They were asked to return an enclosed response card indicating their intention to participate in this study, as well as the number of participants that met our study criteria. After obtaining informed consent from the nursing directors, the requested number of questionnaire forms was sent to each facility that agreed to participate in this study. Questionnaires were collected by mail directly from each subject. Before conducting a survey, subjects received a statement which included the purpose, methods, and ethical considerations, including that the study was an anonymous survey, data obtained would not be used to identify the facility or the individual, participation was voluntary, and that return of the questionnaire represented consent to participate in this study. This study was approved by the ethics committee in epidemiological research of the authors' institution.

### III. Survey item

The questionnaire consisted of the following items: basic attributes including age, duration of clinical experience, clinical area, and frequency of participation in palliative care workshops, experience in assisting the transition to home care in terminal cancer patients within the past 6 months, whether patients with whom the nurse involved could successfully be transferred to home care, 8 items about care networks regarding discharge planning support (the presence or absence of the following: the section of discharge support, discharge planning nurses, counseling room for patients and their families, regular conferences and hospital manual regarding transition of cancer patients to home care, a region collaborative critical pathway, a region collaborative system between home-visit nursing station, and a region collaborative system between regional hospital that can respond to urgent admission of a patient), and 5 items about palliative care services (the presence or absence of the following: palliative care team, outpatient department for palliative care, palliative care doctors, palliative care nurses, and a committee for palliative care).

Based on our pilot study<sup>29)</sup> and previous studies<sup>23,26)</sup>, 13 items about nursing interventions when assisting transfer of terminal cancer patients to home care were prepared, including

confirming the understanding of patients' disease condition and their wishes toward home care, guidance for patients and their families, and coordination with other health care providers. They were rated on a 5-point Likert-type scale, ranging from "strongly agree" to "disagree"; with higher scores indicating a higher level of engagement in their services. Twenty-six items about difficulties when supporting a transition to home care were prepared based on our pilot study<sup>29)</sup> and other studies<sup>22,23,30,31)</sup>, including the status of patients and their families, alleviating symptoms, hospital environment, and community network. They were rated on a 5-point Likert-type scale, ranging from "strongly agree" to "disagree"; with higher scores indicating more difficulties.

### IV. Statistical analysis

Data regarding subjects' basic attributes, hospital environment, and nursing interventions and difficulties when assisting the transition of terminal cancer patients to home care were analyzed using descriptive statistics. Cronbach's  $\alpha$  was used to measure the reliability of items regarding nursing interventions and difficulties. To examine the potential determinants of the realization of transition to home care, subjects were classified into two groups: nurses who have experienced patient's successful transition to home care within the last 6 months as "transition group", and nurses who have never experienced patient's successful transition to home care within the last 6 months as "non-transition group". The chi-square test or Mann-Whitney U-test was used to compare differences between the two groups. After the analysis, a multiple logistic regression analysis was performed to identify the final determinants of the realization of transition to home care in terminal cancer patients. In the multiple logistic regression analysis, independent variables with p values less than 0.05 in the prior analysis were entered.

All p values were two-tailed, and p value of < 0.05 was considered statistically significant. The analysis was performed with the statistical software SPSS ver.20.

## RESULTS

Of the 18 institutions we asked for cooperation, 17 hospitals agreed to participate in this study. The subjects were 197 nurses of these facilities. Of the 165 responses obtained (response rate: 83.8%), 7 subjects with missing data and 45 subjects who did not assist the transition of terminal cancer patients to home care over the past 6 months were excluded, and, as such, a total of 113 responses were used for analysis.

### I. Basic attributes and hospital environment

Most subjects were in their 40s, which accounted for 40.7%, followed by 30s and over 50s. Regarding duration of clinical experience, 49.5% of the subjects worked for more than 20 years. About the clinical area, 35.4% of the subjects worked in the internal medicine ward or surgical ward, respectively.

Those who had participated in palliative care workshops accounted for 85.0%. Of the subjects, the transition group accounted for 55.8% (63 subjects), and the non-transition groups, 44.2% (50 subjects), and no significant difference in characteristics was observed between the two groups (Table 1).

Regarding discharge planning support of the hospital, 82.3% of nurses responded that they had a section of discharge support, which was highest, followed by a counseling room for patients and their families (62.8%), regular conferences for the shift to home care (31.0%), the presence of discharge planning nurses (25.7%), cooperation system between regional home-visit nursing stations (19.5%), and a region collaborative system between regional hospital that can respond to urgent admission of a patient (13.3%). However, only 5.3% of the subjects responded that they had a hospital manual for supporting patient's discharge, and no

Table 1 Characteristics of the subjects according to the transition and non-transition groups

Variables		Total subjects n=113	Transition <sup>a</sup> n=63	Non-transition <sup>b</sup> n=50	n (%) p-value †
Age	20-29	13 (11.5)	5 ( 7.9)	8 (16.0)	0.487
	30-39	28 (24.8)	15 (23.8)	13 (26.0)	
	40-49	46 (40.7)	27 (42.9)	19 (38.0)	
	50-	26 (23.0)	16 (25.4)	10 (20.0)	
Duration of clinical experiences	<5years	4 ( 3.5)	1 ( 1.6)	3 ( 6.0)	0.694
	5-9 years	17 (15.1)	8 (12.7)	9 (18.0)	
	10-14 years	17 (15.1)	9 (14.3)	8 (16.0)	
	15-19 years	19 (16.8)	11 (17.4)	8 (16.0)	
	≥ 20 years	56 (49.5)	34 (54.0)	22 (44.0)	
Region of work	South	34 (30.1)	14 (22.2)	20 (40.0)	0.177
	Middle	57 (50.4)	36 (57.2)	21 (42.0)	
	North and islands	22 (19.5)	13 (20.6)	9 (18.0)	
Clinical area	Internal medicine ward	40 (35.4)	24 (38.1)	16 (32.0)	0.754
	Surgical ward	40 (35.4)	23 (36.5)	17 (34.0)	
	Mixed ward	30 (26.5)	14 (22.2)	16 (32.0)	
	Discharge support	3 ( 2.7)	2 ( 3.2)	1 ( 2.0)	
Interest in home care	Interested	109 (96.5)	62 (98.4)	47 (94.0)	0.207
	Not interested	4 ( 3.5)	1 ( 1.6)	3 ( 6.0)	
Participation in palliative care workshops	Some	96 (85.0)	57 (90.5)	39 (78.0)	0.065
	None	17 (15.0)	6 ( 9.5)	11 (22.0)	

<sup>a</sup>Transition: Group of nurses who have experienced patient's successful transition to home care within the last 6 months.

<sup>b</sup>Non-transition: Group of nurses who have never experienced patient's successful transition to home care within the last 6 months.

† Chi-square test

hospital had a region collaborative critical pathway. Regarding palliative care services, 66.4% of the subjects responded that they had a palliative care team, which was highest, followed by a palliative care doctor or a doctor who could provide advice (61.9%), a hospital committee for palliative care (51.3%), palliative care nurses (irrespective of qualification, 40.7%), and outpatient department for palliative care (33.6%). In the transition group, nurses who responded that they had palliative care nurses and discharge planning nurses were significantly higher than the non-transition group ( $p < 0.05$ ) (Table 2).

## II. Nursing interventions and difficulties according to the transition and non-transition groups

Cronbach's  $\alpha$  coefficient of 13 items regarding nursing interventions was found to be 0.900. A significant difference was observed in 10 of 13 items between the transition and non-transition groups

( $p < 0.05-0.01$ ). Especially in the items, "I request intervention of the palliative care team or palliative care doctor, if necessary", "If the patient wants to have home care, I will inform a doctor in charge, and take necessary actions for the patient's discharge as soon as possible", "I request the patient's doctor to talk to his/her family about the patient's disease condition and prognosis, and then I confirm the family's level of understanding", "I advise patient's family about patient's care and treatment", and "I tell the patient and family that even after home care starts, they can contact the hospital whenever they need assistance, such as in case of emergency, or if they are worn out due to the heavy burden of nursing", the mean scores were significantly higher in the transition than non-transition groups ( $p < 0.01$ ) (Table 3).

Cronbach's  $\alpha$  coefficient of 26 items regarding difficulties in assisting the transition to home care was found to be 0.877. The mean score was signifi-

Table 2 Hospital environment according to the transition and non-transition groups

Variables	Total subjects n=113	Transition <sup>a</sup> n=63	Non-transition <sup>b</sup> n=50	n (%) p-value †
〈Discharge planning support〉				
Existence of the section of discharge support	93 (82.3)	53 (84.1)	40 (80.0)	0.568
Existence of discharge planning nurses *	29 (25.7)	21 (33.3)	8 (16.0)	0.036
Existence of a counseling room for patient and family	71 (62.8)	41 (65.1)	30 (60.0)	0.579
Existence of regular conferences for the shift to home care	35 (31.0)	20 (31.7)	15 (30.0)	0.842
Existence of a hospital manual for supporting patient's discharge	6 ( 5.3)	4 ( 6.3)	2 ( 4.0)	0.461
Existence of a region collaborative critical pathway for supporting patient's discharge	0 ( 0.0)	0 ( 0.0)	0 ( 0.0)	-
Existence of region collaborative system between home-visit nursing stations	22 (19.5)	9 (14.3)	13 (26.0)	0.118
Existence of a region collaborative system between regional hospital that can respond to urgent admission of the patient	15 (13.3)	6 ( 9.5)	9 (18.0)	0.187
〈Palliative care services〉				
Existence of a palliative care team	75 (66.4)	46 (73.0)	29 (58.0)	0.093
Existence of outpatient department for palliative care	38 (33.6)	25 (39.7)	13 (26.0)	0.126
Existence of palliative care doctors	70 (61.9)	41 (65.1)	29 (58.0)	0.441
Existence of palliative care nurses *	46 (40.7)	31 (49.2)	15 (30.0)	0.039
Existence of a committee for palliative care	58 (51.3)	36 (57.1)	22 (44.0)	0.165

<sup>a</sup>Transition group: Group of nurses who have experienced patient's successful transition to home care within the last 6 months.

<sup>b</sup>Non-transition group: Group of nurses who have never experienced patient's successful transition to home care within the last 6 months.

† Chi-square test \*  $p < 0.05$

cantly lower in the transition group than that of the non-transition group ( $p < 0.05$ ) in the following 2 of the 26 items: "It is difficult to realize transition to home care without strong request from the patient and family" and "It is difficult to cooperate among the doctor in charge, ward nurses, and the section of discharge support" (Table 4).

### III. Factors associated with the shift to home care

In order to identify the factors most strongly associated with the transition from hospital to

home care in terminal cancer patients, the multiple logistic regression analysis was conducted using transition and non-transition as dependent variables, and the following 14 items which showed a significant difference in the prior analysis as independent variables: 2 items about hospital environment, 10 items about nursing interventions, and 2 items about difficulties. As the results, the following 2 items about nursing interventions and 1 item about difficulties were extracted: nurses "confirm patients' understanding of their disease condition

Table 3 Nursing interventions according to the transition and non-transition groups

Variables ‡	Total subjects n=113	Transition <sup>a</sup> n=63	Non-transition <sup>b</sup> n=50	(Mean ± SD)
				p-value †
1) I confirm the patient's understanding of his/her disease condition and treatment.*	3.83 ± 0.981	4.06 ± 0.759	3.54 ± 1.147	0.020
2) In preparation for the possible situation where the patient's condition is too bad to be treated, I give the patient information about palliative care.	3.32 ± 1.144	3.40 ± 1.100	3.22 ± 1.200	0.409
3) I request intervention of palliative care team or palliative care doctor if necessary.**	3.37 ± 1.290	3.70 ± 1.145	2.96 ± 1.355	0.005
4) I ask the patient how he/she wants to spend his/her time.*	3.42 ± 0.989	3.64 ± 0.848	3.14 ± 1.088	0.012
5) I ask the patient how he/she wants to spend his/her terminal stage after his/her condition gets too bad to be treated.*	3.17 ± 1.051	3.38 ± 0.974	2.90 ± 1.093	0.019
6) If the patient wants to have home care, I will inform a doctor in charge, and take necessary actions for his/her discharge as soon as possible.**	4.04 ± 0.823	4.21 ± 0.845	3.82 ± 0.748	0.005
7) I provide information about nursing services at home to the patient and family.*	3.76 ± 1.071	3.94 ± 1.076	3.54 ± 1.034	0.032
8) I request the patient's doctor to talk to his/her family about patient's condition and prognosis, and then I confirm family's understanding.**	3.94 ± 0.869	4.14 ± 0.877	3.68 ± 0.794	0.002
9) I arrange simplified medical treatment for the patient's home care, in order to make it possible for their family to care.	3.62 ± 1.055	3.70 ± 1.057	3.52 ± 1.054	0.272
10) I advise the patient's family about patient's care and treatment.**	3.92 ± 0.965	4.14 ± 0.931	3.64 ± 0.942	0.004
11) I recommend the patient and his/her family trial staying out/at home.*	3.89 ± 0.810	4.00 ± 0.899	3.74 ± 0.664	0.035
12) A conference is held among member of a healthcare team in order to share of information about the patients.	3.59 ± 1.083	3.73 ± 1.110	3.42 ± 1.032	0.072
13) I tell the patient and his/her family that even after discharge, they can contact hospital whenever they need assistance, such as in case of emergency, or if they are worn out due to heavy burden of nursing.**	4.00 ± 1.044	4.21 ± 1.034	3.74 ± 1.006	0.004

‡ Rated on a 5 point Likert-type scale of "1: disagree" to "5: strongly agree"

<sup>a</sup>Transition: Group of nurses who have experienced patient's successful transition to home care within the last 6 months.

<sup>b</sup>Non-transition: Group of nurses who have never experienced patient's successful transition to home care within the last 6 months.

† Mann-Whitney U test \* :  $p < 0.05$  \*\* :  $p < 0.01$

Table 4 Difficulties in assisting terminal cancer patient's discharge according to the transition and non-transition groups

Variables ‡	(Mean ± SD)			
	Total subjects n = 113	Transition <sup>a</sup> n = 63	Non-transition <sup>b</sup> n = 50	p-value †
1) It is difficult to realize transition to home care without strong request from the patient and family.*	2.15 ± 1.011	2.00 ± 1.092	2.34 ± 0.872	0.018
2) It is difficult to determine when to encourage the patient and family to start home care.	3.78 ± 0.821	3.91 ± 0.875	3.62 ± 0.725	0.080
3) It is difficult to solve relationship problems between the patient and family.	3.75 ± 0.851	3.75 ± 0.879	3.76 ± 0.822	0.956
4) It is difficult to give concrete explanation about home care.	2.97 ± 0.891	2.97 ± 0.950	2.98 ± 0.820	0.717
5) It is difficult to obtain an understanding of his/her disease condition and prognosis from patient.	3.21 ± 0.700	3.21 ± 0.744	3.22 ± 0.648	0.785
6) It is difficult to obtain an understanding of the patients' disease condition and prognosis from family.	3.07 ± 0.842	3.10 ± 0.856	3.04 ± 0.832	0.704
7) It is difficult to determine the patient and families' level of understanding of patient's condition and prognosis.	3.08 ± 0.857	3.10 ± 0.856	3.06 ± 0.867	0.691
8) It is difficult to suggest transfer to home care to patient who want to continue aggressive therapy.	3.59 ± 1.015	3.70 ± 1.102	3.46 ± 0.885	0.111
9) It is difficult to transfer the patient to home care if he/she relies highly on medical care, and his/her family would have to shoulder big burden of nursing care in home care setting.	3.96 ± 0.860	3.92 ± 0.867	4.00 ± 0.857	0.671
10) It is difficult to transfer the patient to home care if their family are not cooperative, or if they are incapable of nursing.	4.20 ± 0.778	4.29 ± 0.750	4.08 ± 0.804	0.159
11) It is difficult to advise the patient and family on patient's care and treatment in home care setting.	3.58 ± 0.924	3.54 ± 0.930	3.62 ± 0.923	0.657
12) It is difficult to transfer the patient to home care if the patient and family have financial difficulties.	3.44 ± 0.990	3.40 ± 1.009	3.50 ± 0.974	0.353
13) It is difficult to relieve of cancer pain.	3.27 ± 0.856	3.27 ± 0.902	3.26 ± 0.803	0.797
14) It is difficult to minimize side effects of opioids.	3.13 ± 0.881	3.10 ± 0.856	3.18 ± 0.919	0.575
15) It is difficult to relieve of dyspnea.	3.52 ± 0.877	3.43 ± 0.893	3.64 ± 0.851	0.170
16) It is difficult to relieve of anorexia or fatigue.	3.37 ± 0.770	3.37 ± 0.768	3.38 ± 0.780	0.797
17) It is difficult to relieve of digestive symptoms like ileus, nausea and vomiting.	3.37 ± 0.847	3.32 ± 0.839	3.44 ± 0.861	0.325
18) It is difficult to relieve of symptom of delirium.	3.35 ± 0.981	3.24 ± 1.027	3.50 ± 0.909	0.149
19) It is difficult to relieve of psychological symptom like depression and anxiety.	3.41 ± 0.979	3.35 ± 1.065	3.48 ± 0.863	0.432
20) It is difficult to share the patient's information among healthcare team members.	2.51 ± 0.857	2.46 ± 0.877	2.58 ± 0.835	0.519
21) It is difficult to cooperate among doctor in charge, ward nurses and the section of discharge support.*	2.50 ± 0.867	2.35 ± 0.845	2.68 ± 0.868	0.037
22) It is difficult to cooperate in relieving the patient's pain between ward nurses and doctor in charge.	3.05 ± 0.943	2.89 ± 0.882	3.26 ± 0.986	0.059
23) It is difficult to cooperate in relieving the patient's symptoms except pain between ward nurses and doctor in charge.	3.03 ± 0.921	2.87 ± 0.871	3.22 ± 0.954	0.053
24) It is difficult to transfer the patient to home care because of shortages of home-visit nursing station.	3.69 ± 1.078	3.68 ± 1.060	3.70 ± 1.111	0.864
25) It is difficult to transfer the patient to home care because of shortages of community clinic capable of providing medical care to cancer patients.	3.70 ± 1.117	3.76 ± 1.088	3.62 ± 1.159	0.545
26) It is difficult to transfer the patient to home care because of shortages of home-visit nursing station capable of providing nursing care to cancer patients.	3.39 ± 1.105	3.51 ± 1.105	3.24 ± 1.098	0.193

‡ Rated on a 5 point Likert-type scale of "1: disagree" to "5: strongly agree" † Mann-Whitney U test \*: p < 0.05

<sup>a</sup>Transition: Group of nurses who have experienced patient's successful transition to home care within the last 6 months.

<sup>b</sup>Non-transition: Group of nurses who have never experienced patient's successful transition to home care within the last 6 months.

and treatment" (odds ratio [OR], 95% confidence interval [CI]: 1.584, 1.020-2.460) and nurses "request intervention of the palliative care team or palliative care doctor if necessary" (OR, 95% CI: 1.542, 1.104-2.153) as factors most strongly associated with the shift to home care, and "It is difficult to cooperate among the doctor in charge, ward nurses, and the section of discharge support" (OR, 95% CI: 0.578, 0.354-0.944) as a factor which impedes the realization of a shift to home care.

## DISCUSSION

### I. Nursing interventions associated with the realization of a shift to home care

In this study, we found that one of the factors most influential on the realization of transition to home care for terminal cancer patients was nursing interventions to enhance patients' understanding of their disease condition and its treatment. It has been reported previously that the nurses' active involvement in informed consent influenced the discussion about the transition to home care in terminal cancer patients in Japan<sup>22</sup>. Regarding the fact that an increasing number of patients currently make the transition from an outpatient setting to home palliative care due to recent advances in anti-cancer therapy, Hamamoto<sup>32</sup> who is cancer nursing of certified nurse specialist and supports the terminal cancer patients in community, warned that "cancer treatment starts without enough communication between patient/family and health care providers; therefore, patients are not properly informed that every possible treatment was given, or the patient had a limited time to live. Even if they were told, they sometimes could not accept the reality." Nakajima et al.<sup>33</sup> reported that advanced cancer patients, for whom no explanation regarding the endpoint of chemotherapy had been provided by the attending physicians at its initiation, were unable to stop their treatments at an appropriate time point, which would have impacted adversely on their quality of life at the end-stage. Shirahige<sup>34</sup>, who established a home palliative care network called "Doctor Net" in Nagasaki City, described the current status of cancer treatment and emphasized that the duration of life-sustaining chemotherapy is always uncertain, and therefore, medication is continued for as long

as required and hospital doctors cannot predict the duration of treatment required. Cancer treatment has become increasingly prolonged and complicated with advances in therapies available and, as a result, it is predicted that patient's difficulties with decision making regarding the treatment at the end-of-life will increase. Utsunomiya<sup>35</sup> stated that it is important to help patients understand their current disease condition and prognosis, then listen to how patients want to spend their remaining time during discharge support for terminal cancer patients. Fujii<sup>36</sup> reported that patients' correct understanding of their disease before choosing home care is a factor to achieve successful home-based terminal care, and other reports<sup>24,25</sup> also indicated its importance. In the study of predictive factors for home deaths among Swedish palliative cancer patients<sup>37</sup>, an understanding of their disease conditions and impending deaths was found to have contributed significantly to their end-of-life quality at home. As a result of this study, the role of nursing with regard to promoting greater understanding among terminal cancer patients about their disease condition and treatment has been shown to be important with regard to patients being able to make the best use of the time left to them.

In addition, we clarified that another factor related to realization of transition to home care in terminal cancer patients is nursing support when requesting the intervention of a palliative care team or a doctor, if necessary. Hosoya<sup>38</sup> reported that it is important to tell the purpose of the treatment and possible prognosis, as well as provide information on palliative care to patients and their families from the early stages of cancer treatment, and ask them to consider how they wish to spend their lives with medical treatment. In a survey of Taiwanese hospice care workers<sup>39</sup>, it was reported that among the barriers to the discharge planning for terminal patients were lack of knowledge about palliative care and communication skills among health professionals. It is recognized in western countries that provision of palliative care in the hospital or community contributes to patients' control of their symptoms, satisfaction, quality of life and their peaceful deaths<sup>14,15,35,40-42</sup>. However, palliative care is not properly recognized by people in Japan. A survey of 318 bereaved family members of cancer patients who died at the pallia-

tive care unit<sup>43)</sup> reported that family's improper recognitions about palliative care, such as "A palliative care unit is a place to wait for death" and "Palliative care will shorten the life of the patient", insufficient communication with physicians, and lack of preparation for a patient's deterioration may hamper patients to receive palliative care at a proper timing. Another study<sup>44)</sup>, which investigated public awareness of end-of-life care at home, also reported that patients' improper recognitions, such as "Use of opioids can lead to dependence" and "Drip infusion should be continued until the last moment of patient's life as minimum treatment" will prevent them from receiving end-of-life care at home. For these reasons, it is important that hospital nurses assess the level of understanding by patients and their families with regard to palliative care and cooperate with other health professionals in order to provide palliative care when required.

## II. Difficulties that hamper the realization of a shift to home care

This study results show that "difficulties in collaboration among doctors in charge, ward nurses, and the section of discharge support" can be a factor to hamper the realization of a shift to home care of terminal cancer patients. Higuchi et al.<sup>45)</sup> also said that difficulties of cooperation within the medical staff prevent the patients from the shift to home care at the proper timing. Yoshida<sup>46)</sup> highlighted that a team approach is vital when conducting discharge planning, and it is important to integrate the obtained information of team members to confirm the support policy for discharge proceedings. To promote cooperation of a multidisciplinary team, coalition conference, a critical pathway, and making discharge plans are considered effective<sup>37,46,47)</sup>. However, according to the present study, 31% of the subjects answered that regular conference on the shift to home care was conducted, and only 5.3% said that hospital have a discharge support manual. It is necessary to develop tools for sharing information among medical team members and to examine the efficacy, in order to achieve promoting discharge support for the terminal cancer patients with multidisciplinary team in the future.

## III. Nurse's awareness of the hospital environment associated with the realization of a shift to home care

Regarding the hospital environment about discharge planning support and palliative care services, no factors which affect the realization of transition to home care in terminal cancer patients were extracted. However, the percentage of palliative care nurses and discharge planning nurses allocated in hospitals was significantly higher in the transition than non-transition group. Some studies reported that the involvement of palliative care certified nurse or certified nurse specialist in discharge planning facilitates smooth palliative care and patient/family guidance<sup>32,48,49)</sup>, and the introduction of discharge planning nurses contributes to promoting the discharge of cases with difficulties in transition to home care, and educational effects, such as raising awareness of discharge planning among doctors and nurses<sup>35,46)</sup>. These findings indicate the need to promote the development of human resources, such as discharge planning nurses, palliative care nurses, and certified nurse specialists as well as improving the hospital service structure to effectively use these resources to promote a transition to home care in terminal cancer patients.

In our study, respondents who said that hospital had a region collaborative system between home-visit nursing agencies accounted for only 19.5%. According to a nationwide survey involving home visiting nurses in Japan, more than half of those who were requested to provide home care for terminal cancer patients considered that the timing of referrals was very late<sup>50)</sup>. The following reasons were given for this response: poor level of awareness of home care among ward nurses and hospital doctors; insufficient understanding by nurses of patients' daily life after hospital discharge; and poor discharge arrangements provided by the hospital for home care<sup>25,26,45,49)</sup>. It is difficult for a hospital nurse, with no experience of home care, to appreciate the details of a patient's daily life<sup>51)</sup>. In particular, if home visiting nurses are directly involved in the discharge planning for terminal cancer patients with major medical care needs, patients and families would experience lesser anxiety in transferring to home care and patients can expect a more peaceful death<sup>51,52)</sup>. To improve hospital nurse's awareness and promote a shift to

home care at a proper timing, it is considered important to establish a "face-to-face cooperation system" to have patient interviews with a visiting nurse or conduct coalition conferences for discharge during patients' hospitalization.

In addition, with regard to the hospital environment for promotion of transition to home care, respondents in this study said that no hospital had established a regional collaborative critical pathway. The Basic Plan to Promote Cancer Control Program in Okinawa Prefecture proposes the following goals for a regional collaborative system: establishment of a regional medical network centered around the medical institution as a hub for cancer treatment; preparation of regional collaborative critical pathways; and establishment of a home care system in the community<sup>53</sup>. However, the Japan Council for Quality Health Care's evaluation of this plan was highly unfavorable because of its vague quantitative indicators<sup>54</sup>. Although the Cancer Control Act was implemented five years ago, the community medical collaborative system in Okinawa has not been fully implemented to date, partly because of these findings. On the other hand, Shimane Prefecture's plan gained the highest score<sup>54</sup>. In Shimane Prefecture, the government made a concerted effort to promote its cancer control program, and this was the first prefecture in Japan to enact the "Prefectural Ordinance for Promotion of Cancer Control"<sup>55</sup>. Among other reasons for this favorable evaluation, the ordinance upholds a unique slogan seeking "Collaboration among citizens, patients and their families, medical facilities, government, educational institutions, representative council, companies, and mass media." Okinawa Prefectural government therefore needs

to indicate concrete goals and a positive direction to improve medical services for cancer patients, and demonstrate cohesive leadership not only with regard to regional medical collaboration but also in general for cancer control programs for residents.

Lastly, this study examined factors associated with the realization of a transition to home care in terminal cancer patients by focusing on nursing interventions, difficulties, and nurse's awareness of the hospital environment, but these need to be further examined from the aspects of details of cooperation with doctors or visiting nurses who provide home care, and patients' quality of life after discharge. This may contribute to yield an ideal approach to discharge planning support which can allow patients to spend their remaining time in a familiar environment and to spend the last moment of their life peacefully with their families. The authors consider that this study contributes to the accumulation of new insights in terms of examining nursing interventions and the hospital environment which promotes or hampers of the realization of transition to home care in terminal cancer patients, and identifying future tasks in Okinawa.

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Table 5 Factors related to the realization of transition to home care in terminal cancer patients

Variables ‡	Transition/Non-transition to home care			
	$\beta$	Odds Ratio	95% Confidence interval	p
Nurses confirm the patient's understanding of their disease condition and treatment	0.460	1.584	1.020-2.460	0.041
Nurses request intervention of palliative care team or palliative care doctor if necessary	0.433	1.542	1.104-2.153	0.011
Difficulties in collaboration among doctors in charge, ward nurses, and the section of discharge support	-0.549	0.578	0.354-0.944	0.029

Multiple logistic regression analysis using transition/non-transition to home care as dependent variables.

Model chi-test  $p < 0.001$ ; Hosmer-Lemeshow test  $p = 0.739$ ; Overall rate of correct classification 65.5%

‡ Rated on a 5 point Likert-type scale of "1: disagree" to "5: strongly agree"

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