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Article

Development of an Evaluation Scale for the Care of Cancer Patients' Families in General Wards[1)]

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The purpose of this study was to develop an evaluation scale for the care of cancer patients' families in general wards. This study was performed based on a 3-step study plan. As a result of tests of the discrimination power of scale items and factor analysis, 4 factors and 29 items were adopted. The 1st–4th factors were termed "Evaluation of the family's problems and consideration for their burden", "Involvement with a consideration of family function", "Support for families in the preparatory stage of acceptance of the patient's death", and "Adjustment of team medicine and provision of information for an effective care life", respectively. Concerning scale reliability, internal consistency was confirmed. Concerning construct validity, confirmatory factor analysis using covariance structure analysis showed acceptable goodness of fit. Regarding criterion-related validity, analysis of concurrent validity showed significant positive correlations between this scale and external criterion scales. These results confirmed the reliability and validity of this scale.

key words: cancer patient, care for families, general ward, evaluation of care, scale

Problems and objectives

With recent progress in cancer research and treatment, recovery and survival rates have improved depending on the cancer types or stages of the disease. On the other hand, they are now forced to continue treatment while suffering from the impact of the cancer, such as the threat or fear of death arising from symptoms which are associated with the progression of cancer-specific stages.

In addition, cancer is progressive, and shows a malignant course, and patients should receive treatment and nursing care while repeating admission and discharge. Although patients who wish to receive care at home for as long as possible are increasing, patients and their families tend to choose treatment/care in hospitals because of worries such as over the family's burden and difficulty in coping in an emergency (Kinoshita, 2006). Many patients are still receiving treatment and care mainly in hospitals.

A Dynamic Survey of Medical Institutions and Hospital Report (as of the end of December 2011) performed by the Ministry of Health, Labour and Welfare (2012) , and Hospice Palliative Care Japan (2012) showed a total of 177,063 medical institutions, a total of 1,714,676 beds, and a low percentage of beds in palliative care wards (4,473 beds; 0.26% of all beds). Considering the characteristics of cancer, in a series of stages from the stage of informing the patient of the diagnosis to the terminal stage, most cancer patients, who require admission, special treatment such as the control of symptoms, and nursing care, may receive care in general wards of hospitals at present.

Therefore, in general wards where many cancer patients receive care, improvement in cancer nursing is indispensable.

Since cancer not only affects patients but also influences their families, importance has also been

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placed on nursing care for cancer patients' families in recent years (Kristjanson & Ashcroft, 1999; Cho, Kawamoto, Nagamatsu, Anan, Takeyama, & Kanayama, 2008; Nakagawa, Kotani, & Sasagawa, 2008). However, care for cancer patients' families in general wards is not adequately provided because intervention methods are difficult to determine, and there is inadequate time for intervention (Ogawa, 2000). In general wards, priority is given to the care of patients with various disease stages, presuming that interventions for patients' families may not be performed. When considering the impact of cancer, families are also a target of nursing; however, in reality, care for patients' families has been considered a secondary issue.

To the present, there have been some studies on the development and utilization of measurement scales for the care of families (Simpson & Tarrant, 2006; Sasahara, Miyashita, Kawa, & Kazuma, 2005; Yoshioka, Ogasawara, Nakahashi, Ito, Ikeuchi, & Kawachi, 2009), but no tools for the evaluation of care for cancer patients' families according to the series of cancer stages in general wards.

Thus, there is no tool for the evaluation of care for cancer patients' families according to each stage of cancer in general wards. Nurses who provide care are uncertain about care methods for families, and provide care in their own way based on their own experience. In addition, there is perplexity in the setting of care for families. Development of an evaluation scale for the care of cancer patients' families may resolve such nurses' perplexity and contribute to the spread of nursing care and improvement in its quality. There is a great demand for such an evaluation scale, and its development may be of marked value.

The purpose of this study was to develop a scale for the evaluation of care for cancer patients' families in general wards with high relevance, reliability, and validity that allow straightforward evaluation of clinical care for cancer patients' families in general wards.

Methods

To develop a scale, a 3-step study was performed based on the study process shown in next.

In this study, "A general ward" was defined as a ward for patients during adulthood/senium in various disease stages such as the acute, chronic, and terminal stages. "A family" was defined as a group consisting of 2 or more members who have a common bond and are tied to each other by emotional closeness and aware of being family members.

Step 1 "Extraction of scale items"

Purpose

The purpose of step 1 was to clarify the family care needs of cancer inpatients' families in general wards, and extract scale items.

Methods

As preliminary studies for the extraction of scale items, we reviewed the literature (Cho et al., 2008), and performed a questionnaire survey in 77 nurses working in general wards accommodating cancer patients (Cho, Kawamoto, & Nakano, 2009). This questionnaire survey was conducted as nursing care items that are considered important for cancer patients' families were extracted from a literature review, and the evaluation of care was statistically confirmed. Regarding the care for families other than that stated in the questionnaire items, a free description space was prepared to incorporate qualitative data.

Subsequently, an interview survey of bereaved families of cancer patients was planned as follows.

Subjects of survey The subjects consisted of 6 bereaved family members of cancer patients with experience of hospitalization in general wards in a series of cancer stages. All of them belonged to the association of bereaved families of cancer patients, and gave consent to participate in this study.

Methods of survey For data collection, the focus group interview method was used.

The contents of the survey included problems and worries during the patient's hospitalization, nursing care provided for the families, and care they wished that they had received.

During interviewing to obtain accurate verbatim records of extracted opinions, video recording and IC recorder recording were performed with the subjects' consent.

Concerning the selection of bereaved families of cancer patients and interview methods, the purpose of developing this scale was not to provide nursing care for families of cancer patients at a certain stage of cancer, but to extract nursing care for families of cancer patients in a series of cancer stages; therefore, this study involved bereaved families of cancer pa-

tients who experienced hospitalization in each stage of cancer. In addition, another study reported that patients' families do not recognize themselves as a care target or do not become aware of nursing care they can receive (Sanjo, Hirose, Yanagisawa, Miyashita, Kazuma, 2008). Therefore, this study employed the focus group interview method, in consideration of the fact that the members of the association of bereaved families that holds meetings at a regular basis are a group of people who had a similar experience, and the possibility of extracting potential ideas of the families through discussions with other members.

Ethical consideration This study was performed with the approval of the Ethical Committee of University of Occupational and Environmental Health.

Analysis Verbatim records were produced, and parts corresponding to the contents associated with the family care needs of the bereaved families of cancer patients were extracted, and inductive analysis was performed.

Results

Outline of subjects The subjects consisted of 6 family members (1 male and 5 females), with a mean age of 56.3 years (range, 43–65). One subject was a child of the patient, and the other 5 were spouses. The mean period after the patient's death ranged from 10–111 months. The primary site of cancer was the esophagus in 2 patient, large intestine in 2, liver in 1, and lung in 1. The interview time was 2 hours.

Inductive analysis Care needs of the families of cancer inpatients in general wards consisted of 6 categories: [Provision of appropriate and accurate information for families], [Adjustments within the team, mainly mediation among other types of occupation], [Consideration for the psychological burden of families who know patients' pain], [A direct nursing intervention to families], [Involvement with consideration for family function], and [Support when making changes for discharge].

Based on these results in addition to those of the preliminary studies, 64 scale items concerning the meaning and contents and expression methods of family care were extracted.

The 2nd step "Preparation of a scale draft"

Purpose

The purpose of the 2nd step was to evaluate the face/content validity and appropriateness of the scale items extracted in the 1st step, and prepares a scale draft.

1. Evaluation of scale items

The surface/content validity and appropriateness of the scale items were qualitatively evaluated.

Methods

Subjects of survey The subjects consisted of 5 nurses working in university hospital a whom frequently contact families of cancer patients, and have ≥10 years of nursing experience and experience of participating in cancer nursing training sessions and 2 researchers in the cancer nursing field as supervisors (total, 7 subjects). The subject selection criteria for evaluation of the content validity of the scale items was as follows based on the results of the preliminary study: nurses who showed significantly higher results on the evaluation of care they provided for cancer patients' families (Cho & Kawamoto, 2010).

Methods of survey The group discussion method was used. Based on the family care contents of the 64 items extracted in the 1st step, responses regarding the validity of expressions and contents and the appropriateness of the number of items were obtained. To obtain accurate verbatim records, recording using an IC recorder was performed with consent obtained from all participants.

Results

A verbatim record was obtained, and revisions suggested by the subjects of survey such as changes in the positions of items according to the disease stage, standardization of terms, and subclassification of items were made. After this reconstruction of the scale items, 63 items were determined.

2. Pilot study

The surface/content validity and appropriateness of the scale items were quantitatively evaluated.

Methods

Subjects of survey The subjects consisted of 133 nurses working in the general wards accommodating cancer patients in university hospital A.

Methods of survey A self-administered questionnaire survey was performed. This questionnaire consisted of the 63 scale items obtained after recon-

struction and a free description space. As choices, a 5-grade interval scale using frequency adverbs (5. Always–1. Never) was used.

Results

Responses were obtained from 97 (72.9%) of the 133 subjects. The necessity of scale item revisions was evaluated based on items showing many missing values and opinions in the free description space, and the 63 scale items were reconstructed.

3. Survey for item selection

The scale items were carefully selected, and a scale draft was prepared.

Methods

Subjects of survey The subjects consisted of 1,015 nurses who were selected using the random sampling method from the Directory of Hospitals (edited by the Health Policy Research Committee), and gave consent.

Methods of survey An anonymous self-administered questionnaire survey was performed using a face sheet, which asks about basic attributes, nursing attributes, affiliated division, and the frequency of contact with cancer patients, and the 63 scale items after reconstruction.

Methods of analysis Item analysis (ceiling effect, floor effect, and inter-item correlation analysis, I-T correlation analysis, and GP analysis, confirmation of missing values, skewness, and kurtosis) was performed. In factor analysis, items showing a factor loading ≤0.40 were regarded as candidates for deletion. For the analysis of reliability, Cronbach's a coefficient was calculated.

Results

Responses were obtained from 582 (57.3%) of the 1,015 subjects. There were 503 valid responses (49.6%). Of the 63 scale items, 1 showing ceiling effects was excluded. There was no item showing floor effects. I-T correlation analysis revealed no item showing a correlation coefficient ≤0.30. GP analysis was performed after selecting the high- and low-score groups (25% each), but there was no item for exclusion. Items showing many missing values and those showing marked homogeneity identified by item correlation analysis were excluded.

Subsequently, factor analysis (major factor method, Promax rotation) was performed to confirm the factor structure.

Based on the above results, a scale draft consisting of 37 items for the evaluation of care for cancer patients' families in general wards was prepared.

3rd step "Evaluation of reliability and validity of the scale"

Purpose

The reliability and validity of the scale draft consisting of 37 items was evaluated for the development of a scale.

Methods

Subjects of survey About 60 institutions were randomly sampled from the Directory of Hospitals (edited by the Health Policy Research Committee) after exclusion of the institutions evaluated in the survey for item selection. We requested the director of the nursing department in each institution by telephone to cooperate in our study. In institutions that gave consent, 1,944 nurses working in general wards accommodating cancer patients were included as the subjects.

Methods of survey An anonymous self-administered questionnaire survey was performed using a face sheet (age and sex as basic attributes, years of nursing experience, type of occupation, duty position, affiliated division/affiliation period, frequency of contact with cancer patients during work, and frequency of contact with cancer patients' families during work), scale draft, and the following 2 scales as external criteria.

1. Terminal Care Scale: This scale was developed by Yoshioka et al. (2009), and consists of the following 5 subscales (22 items): "Care for death without regret", "Healing and spiritual care", "Guarantee of pain-relieving care", "Information provision and care for decision-making", and "Adjustment for effective care". Five choices from "5. Always practice" to "1. Rarely practice" were used.
2. Self Evaluation Scale of Oriented Problem Solving Behavior in Nursing Practice (OPSN): This scale was developed by Sadahiro & Yamashita (2002), and consists of the following 5 subscales (25 items): "Search for and identification of problems by organization and utilization of information", "Assistance in patient's activities of daily living and treatment, alleviation of symptoms, and maintenance/enhancement of functions of daily living to solve and avoid problems and their individualization", "Smoothing of mutual behavioral interactions to overcome problems", "Provision of psychological support for patients to overcome problems", and "Self-evaluation

of problem-solving implementation". Five choices from "5. Always practice" to "1. Rarely practice" were used.

Analytic methods Normality was confirmed by the normal probability plot, skewness, and kurtosis. Item analysis (the ceiling effect, floor effect, correlation analysis among items, I-T analysis, and GP analysis) was performed. Subsequently, exploratory factor analysis (major factor method and Promax rotation) was performed. For confirmation of the concurrent validity using external criterion scales, Pearson's coefficient was calculated. To confirm construct and factorial validity, the goodness of fit of the model was evaluated using high-order factor analysis. Reliability was analyzed by calculation of Cronbach's α correlation and using the split-half method.

For analysis, statistical software SPSS19.0J, Amos 20.0 was used.

Ethical consideration This study was performed with the approval of the Ethical Committee of Kyushu University.

Results

Background of the subjects Responses were obtained from 773 (39.8%) of the 1,944 subjects. There were 741 valid responses (38.1%). The mean age of the 741 subjects was 35.61 years (*SD*, 9.73; range, 21–61). There were 28 males (3.8%) and 713 females (96.2%). The mean duration of nursing experience was 13.30 years (*SD*, 9.45; range, 0–40).

Concerning the type of occupation, there were 706 nurses (95.3%), 20 certified nurses (2.7%) and 13 subjects with other types of occupation (1.7%). The duty position was the head nurse/assistant head nurse/chief nurse class in 144 subjects (19.4%), staff nurse in 588 (79.4%), and others in 5 (0.7%). The affiliated division was the Department of Internal Medicine in 269 subjects (36.3%), that of surgery in 255 (34.4%), a mixture of the Department of Internal Medicine and that of surgery in 137 (18.5%), and others in 76 (10.3%). The mean affiliation duration was 3.60 years (*SD*, 3.26; range, 0–30).

Concerning the frequency of contact with cancer patients during work, "always" was observed in 333 subjects (45.0%), "mostly" in 313 (42.2%), "rarely" in 85 (11.5%), and others in 10 (1.3%). Concerning the frequency of contact with families of cancer patients, "always" was observed in 104 subjects (14.0%), "mostly" in 412 (55.6%), "rarely" in 180 (24.3%), "no contact" in 8 (1.1%), and others in 36 (4.9%).

Item analysis Each of the 37 items showed a unimodal, normal distribution. There was no item showing a ceiling or floor effect. I-T correlation analysis revealed no item showing a correlation coefficient ≤0.30. GP analysis was performed after selecting the high- and low-score groups (25% each), but there was no item impairing discrimination.

Inter-item correlation analysis showed homogeneity between items 2 and 4 ($r=0.704^{**}$), between items 9 and 10 ($r=0.747^{**}$), between items 15 and 16 ($r=0.735^{**}$), between items 22 and 24 ($r=0.713^{**}$), and between items 34 and 35 ($r=0.736^{**}$). Therefore, items 2, 10, 15, 24, and 34 were deleted.

Exploratory factor analysis Table 1 shows the results of factor analysis. As a result of the above item analysis, 5 items were deleted, and principle component analysis of the other 32 items was performed. As a result, the factor loading of the first principle component was ≥0.40 for all 32 items. With an eigenvalue ≥1.00, 4 factors were extracted. In factor analysis (major factor method, Promax rotation), a factor loading ≥0.40 was used as an adoption criterion. Based on items showing high loading for multiple factors, communality, and the α coefficient, 4 factors and 29 items were extracted. Based on these results, an evaluation scale for the care of cancer patients' families in general wards was developed.

The 1st–4th factors were termed "Evaluation of the family's problems and consideration for their burden", "Involvement with a consideration of family function", "Support for families in the preparatory stage of acceptance of the patient's death", and "Adjustment of team medicine and provision of information for an effective care life", respectively.

Evaluation of reliability Cronbach's α coefficient was 0.956 for the entire scale, and 0.881–0.921 for each factor.

Analysis using the split-half method showed a mean value of 50.18 (*SD*, 9.87) for odd numbers and that of 46.50 (*SD*, 9.23) for even numbers, showing a strong positive correlation (correlation coefficient, 0.944^{**}).

Construct validity A high order factor model was assumed using the 4 factors extracted as a result of the above exploratory analysis as the 1st factor and

family care as the 2nd factor. These results are shown in Figure 1. Confirmatory factor analysis performed using the maximum likelihood estimation method showed a GFI of 0.830, AGFI of 0.816, CFI of 0.873, and RMSEA of 0.076. The GFI, AGFI, and CFI were slightly lower than the statistical levels, but the criteria GFI＞AGFI and RMSEA ≤0.080 were fulfilled, showing that the goodness of fit of the model is acceptable. The path coefficient for each item was ≥0.40 (p＜0.001).

Criterion-related validity The results of analysis of concurrent validity are shown in Table 2. Pearson's correlation coefficient showed a significant positive correlation between all factor scores on the developed evaluation scale for the care of cancer patients' families in general wards and the total scores on the 2 scales as external criteria (r=0.362***～0.831***).

Discussion

Evaluation of development methods

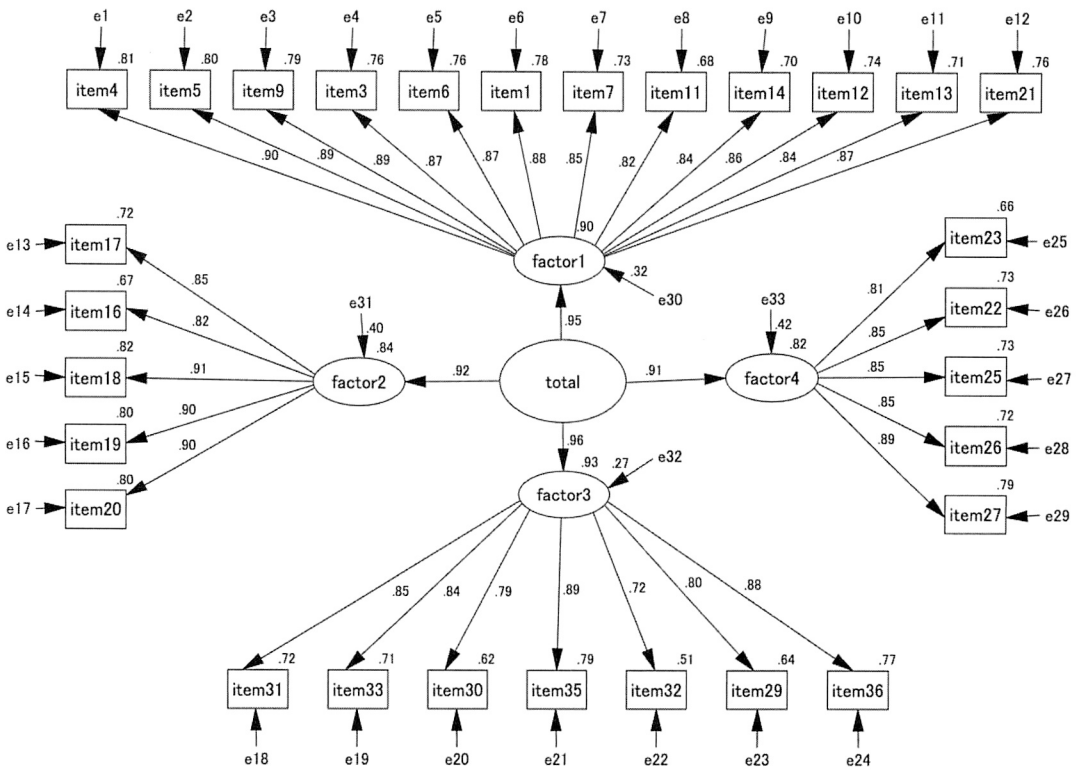
The process of the development of measurement scales consists of the selection of scale items, evaluation of content validity, preparation of a scale draft, and confirmation of scale accuracy. Each step of this study process should be accurately followed (Murakami, 2008; Streiner & Norman, 2008; Devellis, 2011). In the survey for the selection of items of the scale draft and the survey for evaluation of the reliability and validity of the scale, to prevent the bias of sample data, random sampling was considered to be desirable and used.

In the study and development of this scale, each step and method of development were appropriately followed, and the number of samples for statistical methods was considered to be adequate.

Reliability and validity of the developed scale

As a result of exploratory and confirmatory factor analyses in the 3rd step, an evaluation scale for the care of cancer patients' families in general wards consisting of 4 factors and 29 items was developed. The reliability of measurement instruments is evaluated based on internal consistency as a criterion.

Usually, when Cronbach's α coefficient is ≥0.700,



Notes: GFI=.830, AGFI=.816, CFI=.873, RMSEA=.076, p<.001

Figure 1 The result of the above exploratory analysis

Table 1 The results of factor analysis (major factor method, promax rotation)

$N=741$

No	Item	Factor 1	Factor 2	Factor3	Factor 4	α	Communality
Factor 1 "Evaluation of the family's problems and consideration for their burden"							
4	I attentively listen to the family's feelings.	**.895**	−.075	.032	−.152	.921	.533
5	I interact with families so as to find solutions to their questions.	**.758**	.033	.012	−.013		.527
9	I attentively listen to the family's feelings about treatment principles.	**.746**	.130	−.115	.087		.637
3	I interact with families, providing opportunities to ask questions.	**.716**	.140	−.154	.054		.605
6	I interact with families, also regarding them as subjects of nursing.	**.708**	.042	.125	−.126		.570
1	I make efforts to communicate with patients' families.	**.671**	.140	.003	−.052		.517
7	I explain to families that I make efforts to provide safe and comfortable care.	**.660**	.055	−.052	.100		.637
11	I give consideration to privacy in multi-bed rooms.	**.627**	−.007	−.045	−.059		.313
14	Irrespective of the patient's condition, I equally deal with families.	**.617**	−.304	.142	.078		.530
12	I support care given by families themselves.	**.609**	.213	−.032	.000		.474
13	At the request of families, I make adjustments so that families can talk with primary care physicians.	**.515**	−.255	.149	.262		.404
21	I take care to promote smooth communication between the patient and family.	**.440**	.237	.149	.028		.554
Factor 2 "Involvement with a consideration of family function"							
17	When there are pubescent children in the family, I interact with the family with a consideration of the psychological effects on them.	−.075	**.922**	.018	−.106	.888	.694
16	I provide information on consultation services providing psychological support for families.	−.009	**.782**	−.187	.121		.707
18	I have a grasp of changes in family roles due to the presence of a cancer patient.	.112	**.767**	.056	−.053		.621
19	When a gap is formed in the patient-family relationship, I speak for them.	−.045	**.593**	.226	.113		.563
20	I make efforts to comprehend the process of the family's decision-making.	.160	**.475**	.149	.123		.679
Factor 3 "Support for families in the preparatory stage of acceptance of the patient's death"							
31	I provide psychological support for families encountering with patient's death.	.040	.047	**.792**	−.088	.881	.664
33	I perform intervention for families with nursing fatigue.	.025	.137	**.731**	−.063		.649
30	I provide death education to families such as the preparation of clothes and mental preparation for the patient's last moments.	−.161	.099	**.725**	.079		.545
35	I give consideration to the family's anticipatory grief about the patient's death.	.108	.108	**.693**	−.044		.657
32	I confirm decisions made by families on whether they will perform postmortem procedures with nurses when saying goodbye to the deceased.	.005	−.093	**.640**	−.014		.456
29	I make efforts to confirm the family's decision on whether resuscitation will be performed during the period close to death.	.244	−.222	**.505**	.129		.543
36	I provide information on the pain control state in patients to their families.	.297	−.045	**.440**	.154		.625
Factor 4 "Adjustment of team medicine and provision of information for an effective care life"							
23	I introduce medical social workers to alleviate the family's worries.	−.042	.015	−.153	**.933**	.886	.336
22	I make adjustments to allow cooperation with other types of occupation in hospital transfer.	.060	−.067	.024	**.809**		.636
25	Concerning economic problems, I provide information on medical systems to families.	−.135	.344	.010	**.626**		.668
26	I give instructions to families in care skills for patients who will receive home care.	.013	.005	.179	**.586**		.604
27	I play the role of a coordinator to prevent gaps regarding the understanding of treatment principles among patients, families, physicians, and nurses in the team.	.020	.086	.234	**.550**		.652
						.956	
	Contribution rate (%)	44.558	6.236	4.047	2.406		
	Cumulative proportion (%)	44.558	50.794	54.841	57.247		
			II	III	IV		
	Inter-Factor Correlations	I	.574	.741	.601		
		II		.628	.610		
		III			.724		
		IV					

Table 2 The results of analysis of concurrent validity

	Evaluation scale for the care of cancer patients' families in general wards				
	Factor 1	Factor 2	Factor 3	Factor 4	Total
OPSN total score	.713***	.448***	.580***	.478***	.665***
1 Search for and identification of problems by organization and utilization of information	.603***	.362***	.517***	.424***	.572***
2 Assistance in patient's activities of daily living and treatment, alleviation of symptoms, and maintenance/enhancement of functions of daily living to solve and avoid problems and their individualization	.577***	.407***	.496***	.418***	.566***
3 Smoothing of mutual behavioral interactions to overcome problems	.664***	.384***	.517***	.415***	.595***
4 Provision of psychological support for patients to overcome problems	.668***	.362***	.512***	.399***	.586***
5 Self-evaluation of problem-solving implementation	.619***	.447***	.504***	.443***	.601***
Terminal Care Scale total score	.732***	.635***	.791***	.677***	.831***
1 Care for death without regret	.720***	.545***	.768***	.634***	.782***
2 Healing and spiritual care	.507***	.659***	.580***	.526***	.659***
3 Guarantee of pain-relieving care	.624***	.414***	.624***	.523***	.650***
4 Information provision and care for decision-making	.655***	.582***	.735***	.625***	.762***
5 Adjustment for effective care	.633***	.457***	.673***	.591***	.691***

Notes: Pearson's correlation coefficient ***: $p<.001$

the reliability of the instrument is regarded as acceptable (Polit & Hungler, 2010).

Cronbach's α coefficient for this scale was 0.956 for the entire scale and 0.881～0.921 for each factor. Analysis using the split-half method also confirmed adequate internal consistency.

Confidence in the validity of a measurement instrument is considered to rise with an increase in its evidence. In this study, validity was evaluated from various aspects such as the surface and content validity, appropriateness, construct validity, and criterion-related validity. In the 1st and 2nd steps of the study process, the surface validity, content validity, and appropriateness were confirmed not only qualitatively but also quantitatively to ensure validity.

Criterion-related validity was confirmed using 2 external criterion scales that are similar in construct to this scale. There was a significant positive correlation between our scale and each criterion scale, particularly the Terminal Care Scale that uses care for families as a measurement concept, which supported the concurrent validity. Concerning construct validity, the goodness of fit of the model was regarded as acceptable. Thus, the clinical use of this scale is considered to be possible.

Based on these results, this is a useful scale, fulfilling the reliability and validity criteria.

Factor structure of the scale

This scale consisted of 4 factors.

The 1st factor "Evaluation of the family's problems and consideration for their burden" contained items such as care contents focusing on the family's problems, regarding not only patients but also families as the subjects of care. Moreover, it was clarified that not only direct interventions in families themselves but also appropriate and sincere dealing with and consideration for patients lead to care for families.

The 2nd factor "Involvement with a consideration of family function" included items such as care with a consideration of the family function as a family system was extracted. Studies on family care in recent years have shown the importance of involvement with a consideration of the family system associated with changes in the future health care environment or involvement regarding the family as a system (Cooley & Moriarty, 1997; Suzuki & Watanabe, 2006; and Hanson & Boyd, 2001). Thus, as care contents constituting the 2nd factor, important items with a consideration of family function for supporting cancer patients' families were extracted.

The 3rd factor "Support for families in the preparatory stage of acceptance of the patient's death" included care contents for families of patients with terminal cancer. As terminal care, grief care was proposed as support initiated before the patient's

death, not after death (Deeken & Yanagida, 2005). Since the 3rd factor includes items associated with grief care initiated before death, this factor is appropriate as a subscale focusing on terminal care. The subscales of the terminal care scale developed by Yoshioka et al. (2009), focusing on support for families of patients with terminal cancer, are "Care for death without regret", "Healing and spiritual care", "Guarantee for pain-relieving care", "Information provision and care for decision-making", and "Adjustment for effective care". The results of analysis of concurrent validity also showed that the contents of the 3rd factor are in agreement with these subscales as terminal care items.

The 4th factor "Adjustment of team medicine and provision of information for effective care life" included items such as the role of nurses in team medicine was extracted as care for cancer patients and their families. As a role of nurses in team medicine, the importance of coordination for integrating each function of multiple specialists has been suggested (Kawashima, 2011). With a decrease in the length of hospital stay in recent years, families of cancer patients have many worries about care at home and hospital transfer. Nurses are expected to provide support for such families, and should also play their role in team medicine in care for families.

In addition, concerning nurses' care contents based on the needs of cancer patients' families, Groenwald, Frogge, Goodman, & Yarbro (1995) suggested the importance of the provision of information on social resources, promotion of communication among family members, support associated with roles within the family, and adjustment of the support system the family wishes for. Many such care contents are similar to the subscales and items of our scale, suggesting that this scale adequately meets the needs of cancer patients' families.

On the other hand, attention should be paid to the result that the needs regarding family care, involved in changes in the place of care, were also focused on and extracted in the scale; this may be explained by the fact that the scale was developed for families of all patients hospitalized in general wards, extracting the details of family care for each cancer stage.

This scale may show originality in the following respects.

First, it is based on the characteristics of family care, focusing on cancer diseases. Secondly, the scale also reflects the characteristics of places of care for cancer patients. With the characteristics of cancer diseases and details of family care for various cancer stages extracted, the scale may also sufficiently represent the characteristics of care for families of patients in general wards.

Overall discussion

This study aimed to develop a simple scale for the evaluation of nursing care for families of cancer patients in general wards. Due to the progressive and malignant characteristics of cancer diseases, families tend to suffer from total pain consisting of physical, mental, social, and spiritual distress in their lives after the patient's death.

Over a long period of time, the author has conducted studies to determine appropriate methods to support families with such an experience at present or in the future, and promote family care in the field of cancer nursing, considering that, up to the present, nursing care has been regarded as difficult to provide in general wards.

First, the nurses provided care based on their experience and perspectives, suggesting the possibility that the care does not meet cancer patients' needs. In addition, especially in general wards, nurses have problems in performing nursing care for cancer patients' families, such as having no time to get involved. As one of the factors causing such a phenomenon, problems in nursing education are considered. Moreover, Kamiyama (2007) pointed out that shortages in absolute numbers of nurses are also a negative factor for the promotion of family care.

Care for cancer patients' families in general wards has yet to be developed, so it is urgently required to establish a care system for cancer patients' families in the field of nursing education and clinical practice based on the results of this study.

Future issues and prospects

There were some issues in each step of this study. In the 1st step, the following issues were observed regarding the control of the subject criteria in the process of selecting subjects to perform an interview. We consider the fact that we could not control the subject criteria as a limitation of this study.

In the 3nd step, the number of items varied (5～

12) among the factors. When straightforward use of the scale is considered, this variation in the number of items among the subscales is a problem that should be evaluated in the future. And, this scale is not a checklist for care for families but a tool for the evaluation of care practice, which should be paid attention to as important. Initially, 64 care items were extracted. However, in each study stage, as a result of statistical processing of discrimination and factor loading, many items were deleted. Therefore, we should add the description that this scale should be utilized with awareness that practice of only the items of this scale does not mean the provision of adequate care for cancer patients' families in general wards.

In addition, it is necessary to perform further surveys to confirm the reproducibility of the factor structure and stability of the scale, evaluate the usefulness of the scale, and perform empirical studies using this scale for improvement in and diffusion of care for cancer patients' families.

The scale developed in the present study may contribute to the promotion of care for families of cancer patients in general wards. Further, its simple design facilitating flexible use may be significant.

In the future, it will be necessary to perform empirical studies from various perspectives to investigate changes in nursing practice after adopting study outcomes, its effects on cancer patients and their families, and changes in the treatment process for them, for the improvement in and diffusion of care for cancer patients' families.

Finally, although the establishment of nursing care for cancer, which is the leading cause of death in Japan, is important and responsible for the lives of cancer patients and their families, many problems remain to be overcome. We hope that the results of this study will contribute to care for cancer patients' families in the fields of nursing education and clinical practice.

References

Cho, S., Kawamoto, R., Nagamatsu, Y., Anan, A., Takeyama, Y., & Kanayama, M. 2008 Trend and problems of nursing studies on cancer patients' families. *Journal of University of Occupational and Environmental Health,* **30**(2), 197–213.

Cho, S., Kawamoto, R., & Nakano, M. 2009 The development of a method to evaluate general ward nursing care practices targeted at families of cancer patients: Identification and selection of items for evaluation. *Journal of University of Occupational and Environmental Health,* **31**(1), 37–49.

Cho, S. & Kawamoto, R. 2010 The evaluation of nursing care for cancer patients' families in general hospital wards and associations with individual factors in nurses. *A master's thesis written at Kyoshu University in 2008 FY.*

Cooley, M. E. & Moriarty, H. J. 1997 An analysis of empirical studies examining the impact of the cancer diagnosis and treatment of an adult on family functioning. *Journal of family nursing,* **3**(4), 318–347

Deeken, A., edited by Yanagida K. 2012 〈*Sudden Death*〉 *and Grief Care.* Shunjusha Publishing Co.

Devellis, R. F. 2011 *Scale Development Theory and Applications Third edition.* SAGE Publications, Inc.

Groenwald, S. L., Frogge M. H., Goodman, M., & Yarbro, C. 1995 *A Clinical Guide to Cancer Nursing, Third edition.* Jones and Bartlett publishers, Boston.

Hanson, S. M. & Boyd, S. T., translation supervised by Murata K., et al. 2001 *Family Nursing.* Tokyo: Igaku-Shoin Ltd.

Hospice Palliative Care Japan 2012 Beds in palliative care wards. (Approximate figures at 2011). 〈http://www.hpcj.org/what/pcu_sii. html〉

Kamiyama, C. 2007 Terminal care nurses talk about "A Good End of Life". *The Journal of the Japanese Society of Cancer Nursing,* **27**(3), 75–83.

Kawashima, M. 2011 *Team Medicine and Nursing Question about Specialty and Independence.* Kango-no-Kagaku Sha, Ltd.

Kinoshita, Y. (Written and edited) 2006 Understanding of people receiving care in the community: *Home Nursing, 5th edition.* Ishiyaku Publishers, Inc.: 106–112.

Kristjanson, L. J. & Ashcroft, T., translated by Kawano, A. et al. 1999 The family's cancer journey: A literature review. *Cancer Nursing,* **4**(4), 335–349.

Ministry of Health, Labour and Welfare 2012 Dynamic Survey of Medical Institutions. (Approximate figures at the end of December 2011). 〈http://www.mhlw.go.jp/toukei/saikin /hw/iryosd/m11/dl/is1112_01.pdf〉

Murakami, Y. 2008 *How to Construct Psychological Scales.* Kitaoji-Shobo.

Nakagawa, M., Kotani, A., & Sasagawa, H. 2008 A literature review of care for families of patients with terminal cancer in Japan. *Bulletin of Kyoto Prefectural University of Medicine,* **17**: 11–21.

Ogawa, T. 2000 Status of nursing for families supporting patients with terminal cancer and awareness of nurses, Reports of Nursing Research. *Nursing Teacher's Course of Kanagawa Prefectural School for Advanced Nursing Education,* **25**: 490–496.

Polit, D. F. & Hungler, B. P. 2002 *Nursing Research: Principles and Methods.* Igaku-Shoin Ltd.

Sadahiro, W. & Yamashita, N. 2002 Development of an instrument "self-evaluation scale of oriented problem solving behavior in nursing practice (OPSN)". *Japanese Journal of Nursing Research,* **35**(6), 483–494.

Sanjo, M., Hirose, H., Yanagisawa, H., Miyashita, M., & Kazuma, K. 2008 Families' experience regarding the transition of terminal cancer patients to home-based care and needs of health care professionals to support patients' families - through qualitative research involving bereaved families of cancer patients who were treated in general hospital wards during the terminal phase. *Japanese Journal of Cancer Care,* **13**(5), 580–588.

Sasahara, T., Miyashita, M., Kawa, K., & Kazuma, K. 2005 Factors associated with difficulties encountered by nurses in the care of terminally ill cancer patients in hospitals in Japan. *Palliative & Supportive Care,* **3**(1), 15–22.

Simpson, P. & Tarrant, M. 2006 Development of the family nursing practice scale. *Journal of family nursing,* **12**(4), 413–425.

Streiner, D. L. & Norman, G. R. 2008 *Health Measurement Scales a Practical Guide to Their Development and Use Fourth edition.* Oxford university press.

Suzuki, K. & Watanabe, H. 2006 *Family Nursing Theory and Practice 3rd edition.* Japanese Nursing Association Publishing Co., Ltd.

Yoshioka, S., Ogasawara, C., Nakahashi, N., Ito, A., Ikeuchi, K., & Kawachi, A. 2009 Development of a terminal care nursing scale focusing on support for families of terminal cancer patients. *Japan Journal of Nursing Science,* **29**(2), 11–20.

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