

comment on their educational experience (e.g., participation in an educational conference about palliative care with other pharmacists, professionals from other disciplines, and/or medical and pharmacy students) and research experience (e.g., clinical research in palliative care, presentation of research results to a scientific society or journal) on a palliative care team. Educational and research activities were evaluated by “yes” or “no.” Unlike the medical residency system, the pharmacist’s residency system in Japan has not been established, and no formal training in educational and research activities has been conducted for resident pharmacists. Our study aimed to ascertain the current status of training among pharmacists regarding education and research.

Pharmacist-Perceived Contributions to a Palliative Care Team, and the Reasons Why Pharmacists Believed That They Could Not Contribute. We sought to determine the pharmacist’s perception about their contribution to the palliative care team (yes/no). In addition, we examined why pharmacists believed that they could not contribute. Each reason was rated on a five-point Likert-type scale as strongly disagree to strongly agree.

Background Information. We asked respondents to provide background information about themselves, including how long they had held a pharmacist’s license, worked in a designated cancer hospital and on a palliative care team, and whether they had acquired a certification license. We also asked for background information regarding their designated cancer hospitals.

Results

A total of 304 questionnaires were returned (response rate 77%).

Background Information

The average number of beds of the designated cancer hospitals surveyed was 595 (SD 249). The average number of patients and inpatients with cancer in 2011 was 76,135 (99,022) and 9296 (25,242), respectively. The average number of hospital stays in 2011 was 15 days (2.6). The average number of pharmacists was

Table 1
Pharmacist Characteristics (n = 304)

Characteristic	n (%)
Sex	
Male	151 (50)
Female	152 (50)
Mean (SD) years of holding a pharmacist’s license	7.6 (16)
Mean (SD) years working in a designated cancer hospital	7.5 (14)
Mean (SD) years working on a palliative care team	2.6 (4.6)
Acquisition of certification license	
Board Certified Pharmacist in Palliative Pharmacy	71 (23)
Board Certified Pharmacist in Oncology Pharmacy	88 (28)
Board Certified Oncology Pharmacy Specialist	26 (8.6)
Board Certified Senior Oncology Pharmacy Specialist	19 (6.3)
Other	41 (13)
None	124 (41)

Percentages do not add up to 100% because of missing data.

27 (17), and of these, 67% (n = 203) began their role on a palliative care team between 2003 and 2007. The average number of patients consulted in 2011 was 173 (373), and the average number of palliative care physicians, psychiatrists, nurses, and pharmacists on a palliative care team was 2.7 (1.9), 1.2 (0.9), 3.6 (3.4), and 1.8 (1.0), respectively.

Pharmacists’ background information is summarized in Table 1. The average length that pharmacists had held a pharmacist’s license was 16 years. The average time that pharmacists had worked in a designated cancer hospital and on a palliative care team was 14 and 4.6 years, respectively. Furthermore, approximately 60% of pharmacists had acquired a certification license (i.e., Board Certified Pharmacist in Palliative Pharmacy, Board Certified Pharmacist in Oncology Pharmacy, and Board Certified Oncology Pharmacy Specialist; this information was important for selection of the designated cancer hospital) and had been certified by an academic body (i.e., Japanese Society for Pharmaceutical Palliative Care and Sciences, Japanese Society of Hospital Pharmacists, and Japanese Society of Pharmaceutical Health Care and Sciences).

Clinical Activity of Pharmacists on a Palliative Care Team

Of the palliative care team pharmacists, 76% reported counseling more than 30 patients

Table 2
Clinical Activity of Pharmacists on Palliative Care Team

Activity	Sometimes	Often or Always
	n (%)	n (%)
Direct counseling of patients		
Patient education about drugs used to control adverse opioid effects	84 (28)	57 (19)
Patient education about opioids	87 (29)	54 (18)
Patient education about drugs other than opioids used to alleviate pain (e.g., acetaminophen or NSAIDs)	84 (28)	53 (17)
Patient education about drugs used to alleviate symptoms other than pain	80 (26)	51 (17)
Patient education about anticancer agents	52 (17)	40 (13)
Provision of information/suggestions to palliative care team staff		
Efficacy, adverse effects, and interactions of drugs used to alleviate symptoms other than pain	99 (33)	67 (22)
Managing adverse effect of opioids	106 (35)	65 (21)
Pharmaceutical production of opioids	98 (33)	64 (21)
Pharmacology of opioids	102 (34)	60 (20)
Rotation methods for opioids	102 (34)	58 (19)
Titration methods for opioids	95 (31)	57 (19)
Choice of opioids when patient has liver/renal failure	95 (31)	59 (19)
Drug interactions of opioids	100 (33)	55 (18)
Efficacy, adverse effects, and drug interactions of analgesics (other than opioids)	106 (35)	48 (16)
Efficacy, adverse effects, and interactions of drugs used for psychiatric or psychological symptoms	96 (32)	46 (15)
Managing adverse effects of anticancer agents	95 (31)	33 (11)
Efficacy, adverse effects, and drug interactions of anticancer agents	94 (31)	31 (10)
Information about physiological changes with drug mixtures (i.e., incompatibilities of parenteral injections)	73 (24)	29 (9.6)
Legal regulations concerning opioids	63 (21)	27 (9.0)
Economic issues of pharmacotherapy	48 (16)	16 (5.3)
Provision of information/suggestion to team's primary physician, nurse, and pharmacist		
Information on pharmacotherapy to primary pharmacist	107 (35)	72 (24)
Information on pharmacotherapy to primary nurse	90 (30)	59 (19)
Information on pharmacotherapy to physician	83 (27)	44 (14)

NSAIDs = nonsteroidal anti-inflammatory drugs.

Some percentages do not add up to 100% because of missing data.

over the course of a year. As a whole, 79% and 94% of the pharmacists surveyed reported attending ward rounds and conferences, respectively. About half of the pharmacists provided information/suggestions to patients on how to take the prescribed drugs and to the team about pharmacology, pharmaceutical production, managing adverse drug effects, drug

interactions, strategies for titration and rotation of drugs, and choice of opioids for a patient with liver/renal failure. Furthermore, pharmacists provided information/suggestions about the efficacy, adverse effects, and interactions of drugs used to alleviate symptoms. More than half (59%) of palliative care team pharmacists also informed the primary pharmacists about patient pharmacotherapy requests (Table 2).

Table 3
Educational Activity of Pharmacists About Palliative Care

Activity	n (%)
Educational conference about palliative care	
for other disciplines in own designated cancer hospital	239 (79)
for pharmacists in own designated cancer hospital	185 (61)
for medical and pharmacy students	154 (51)
for other disciplines in another hospital	124 (41)
for other hospital pharmacists	111 (37)
for community pharmacists	109 (36)

Some percentages do not add up to 100% because of missing data.

Education and Research Activity of Pharmacists About Palliative Care

Approximately 80% of the pharmacists organized a conference on palliative care education with other disciplines in their designated cancer hospital (Table 3). Furthermore, approximately 60% of the palliative care team pharmacists reported presenting research results on palliative care to a scientific society (Table 4).

Table 4
Activity of Pharmacists in Palliative Care Research

Activity	n (%)
Presentation of research results	
Presentation of research results concerning palliative care to scientific society:	
main speaker	181 (60)
cospeaker	181 (60)
Contribution of research results concerning palliative care to scientific journal:	
main author	21 (6.9)
coauthor	41 (14)
Classification of research	
Clinical research concerned with palliative care currently	102 (34)
Basic research (pharmacology, pharmacodynamics, and pharmaceuticals) concerning drugs used in palliative care	23 (7.6)

Some percentages do not add up to 100% because of missing data.

Pharmacist-Perceived Contributions to a Palliative Care Team, and the Reasons Why Pharmacists Believed That They Could Not Contribute

Although 70% of the pharmacists reported some level of contribution to a palliative care team, 16% reported that they could not contribute (Table 5). The main perceived reasons for no contribution were insufficient time (90%) and/or staff (68%).

Discussion

This study is, to our knowledge, the first nationwide survey to clarify the pharmacist's clinical, educational, and research activities on a palliative care team. The first important finding of this study was clarification of pharmacists' clinical activity on the palliative care

team of a designated cancer hospital, with 79% and 94% of them attending ward rounds and conferences, respectively. Similar data from a previous study in Japan indicated that the percentage of such activity was 61% and 78%, respectively, in designated cancer hospitals.⁸ In the present study, half of the palliative care team pharmacists surveyed provided information/suggestions about opioids to team staff more than once per week. In Australia and Canada, approximately 70% of pharmacists were involved in the administration, adverse effects, and interactions of drugs as part of a palliative care team.¹ Taken together, these findings suggest that an individual pharmacist's clinical activity appears increased by the dissemination of palliative care in Japan, and these results are similar to those from elsewhere.

The second important finding was clarifying pharmacists' educational and research activities on a palliative care team. Approximately 80% of pharmacists had organized a conference to educate other disciplines about palliative care in their own hospital, and approximately 60% of pharmacists had presented research results on palliative care to a scientific society. These activity rates are higher than those found in the previous study in Australia and Canada,¹ suggesting that Japanese pharmacists may place more emphasis on their educational and research roles compared with clinical work.

A third important finding indicated that 70% of the pharmacists reported some level of contribution to a palliative care team. However, 16% of pharmacists reported that they could not contribute, with the main reason

Table 5
Reasons Given by Pharmacists Who Believed They Could Not Contribute

Reasons	Agree or Strongly Agree n (%)
Insufficient time	44 (90)
Insufficient staff	32 (68)
Insufficient knowledge of cancer pathology	24 (49)
Insufficient knowledge of medical equipment used in palliative care	23 (47)
Lack of experience in caring for palliative care patients	22 (45)
Insufficient knowledge of drugs used in palliative care	15 (31)
Lack of communication among palliative care team members	7 (14)

Some percentages do not add up to 100% because of missing data.

given as lack of sufficient time (90%) and/or staff (68%). More time and human resources might improve pharmacist-perceived contributions to a palliative care team and, what is more, better patient management.

Limitations

This study had several limitations. First, the response rate of this survey was 77%, and thus the role of the remaining nonresponding pharmacists was unclear. The current status of pharmacists' activities on palliative consultation teams nationwide, therefore, might be overestimated. However, this response rate is comparable to other investigations of designated cancer hospitals,⁹ and thus we believe it is an acceptable limitation. Second, the study did not investigate an individual pharmacist's work time on the palliative care team; instead, we evaluated the frequency of clinical activity per week. Third, we did not examine the stock management of opioids because in Japan pharmacists working in the dispensary, not on the palliative consultation team, perform this role.

Conclusion

In Japan, pharmacists have a moderate level of clinical activity on the palliative care team. Many perceive that they contribute to the team, and, in general, place more emphasis on their educational and research roles compared with clinical work. Future studies should focus on the effects of pharmacist intervention on patient outcomes and/or usefulness for physicians and nurses.

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Original Article

Progressive Development and Enhancement of Palliative Care Services in Japan: Nationwide Surveys of Designated Cancer Care Hospitals for Three Consecutive Years

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Abstract

Context. Policymaking plays an important role in national palliative care services. The Japanese Cancer Control Act was implemented in 2006.

Objectives. To evaluate changes in the structure and processes of palliative care services after implementation of the Cancer Control Act.

Methods. We conducted annual nationwide surveys in designated cancer care hospitals (DCCHs, $n = 349$) between 2008 and 2010. The 65-item questionnaire was divided into seven domains: institutional framework, information to patient and family, practice of palliative care, activities of the palliative care teams (PCTs), members of PCTs, regional medical cooperation, and education. Increasing trends were tested using generalized estimating equation models.

Results. The response rates were $\geq 99\%$. All domains showed an increasing trend ($P < 0.001$). There were significant increases in full-time PCT physicians (27.4%–45.7%, $P_{trend} < 0.001$), full-time PCT nurses (38.9%–88.0%, $P_{trend} < 0.001$), and the median number of annual referrals to PCTs (60–80 patients, $P < 0.001$). Essential drugs were available in most DCCHs from baseline. Although outpatient clinics increased significantly (27.0%–58.9%, $P_{trend} < 0.001$),

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community outreach programs did not (9.0%–12.6%, $P = 0.05$). Basic education was actively introduced for in-hospital physicians and nurses (78.2% and 91.4% in 2010), but often unavailable for regional health care providers (basic education for regional physicians and nurses: 63.9% and 71.1% in 2010).

Conclusion. The Cancer Control Act promoted the development and enhancement of palliative care services in DCCHs. Regional medical cooperation and education are the future challenges of palliative care in Japan. J Pain Symptom Manage 2013;■:■–■. © 2014 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.

Key Words

Palliative care services, nationwide survey, designated cancer care hospital, palliative care education, regional medical cooperation

Introduction

Palliative care is specialized care designed to relieve suffering and improve the quality of life of patients with life-threatening illness and their caregivers.¹ It is considered an indispensable part of public health care.^{2,3} Many organizations and investigators have identified several areas important to the development of national palliative care services.^{4–8} Key issues are 1) adequate policymaking, 2) access to palliative care services and essential drugs, 3) coordination of medical care, and 4) education for general health care providers and specialists.^{4–8}

The Japanese government implemented the Cancer Control Act in 2006 to provide comprehensive cancer care across the country.⁹ It addressed the provision of palliative care from an earlier stage and throughout the course of the disease as one of the highest priority issues in cancer care. Designated cancer care hospitals (DCCHs) have played a central role in the development of standardized and high-quality comprehensive cancer care in Japan. DCCHs are required to staff specialist physicians, such as oncologists, radiotherapists, and palliative care physicians, and to play the role of regional hub in cancer care. In 2008, the government revised the certification requirements for DCCHs, requiring them to 1) set up a palliative care team (PCT) comprising a full-time physician, a psychiatrist, a full-time nurse, and a pharmacist; 2) operate an outpatient clinic; 3) convene a PCT conference weekly; 4) provide information to patients and families; 5) organize discharge support

for patients; and 6) provide palliative care consultation to regional health care providers. This revision caused an increase in the number of DCCHs. There were 51 prefectural (Japan's administrative units) DCCHs, 344 regional DCCHs, and two National Cancer Centers in Japan (a total of 397) as of April 2013.¹⁰ As of 2013, there were at least three DCCHs in each prefecture. These hospitals cover approximately 67% of incident cancer cases in Japan.¹⁰

We conducted three annual nationwide surveys from 2008 to 2010, covering all types of DCCHs to clarify 1) the current status of palliative care in Japan, 2) the effect of policymaking on national palliative care services, and 3) the future challenges. Here, we present the results of these surveys, highlight key issues that have improved over the study period, and identify important areas in which improvement is still necessary.

Methods

Design, Participants, and Procedures

We conducted three annual nationwide surveys from 2008 to 2010, commissioned by the Ministry of Health, Labour and Welfare. We mailed self-report questionnaires to all DCCHs identified in publications from the Ministry¹¹ each year (353 DCCHs in 2008, 378 in 2009, and 377 in 2010). If a response was not returned within a month, we sent a reminder to DCCH. The 349 DCCHs that completed all three annual surveys were eligible for the present study.

Questionnaire

Items for the questionnaire were generated in two steps. First, a draft was prepared based on the Cancer Control Act,⁹ the Basic Plan to Promote Cancer Control Programs,¹² the revised certification requirements for DCCHs, and the previously established Japanese guideline for hospital-based PCTs.¹³ Second, items were selected through an experts' discussion among two palliative care physicians (T. M., M. Mo.), one general practitioner (Y. H.), two certified nurse specialists (M. U., F. K.), and one researcher (M. Mi.). The final questionnaire consisted of 65 items and was divided into seven domains: I. Institutional Framework, II. Information to Patient and Family, III. Practice of Palliative Care, IV. Members of PCTs, V. Activities of PCTs, VI. Regional Medical Cooperation, and VII. Education. We asked hospital administrators, directors of palliative care divisions, and directors of regional medical cooperation divisions to answer the questionnaires. All items were designed to require "yes" or "no" answers. In addition, we collected data about hospital size, annual number of cancer patients admitted, number of in-hospital physicians, presence or absence of PCTs and palliative care units, and annual consultations by PCTs.

The Palliative Care System in Japan

PCT and Financial Base. Setting up a PCT consisting of a full-time PCT physician, a psychiatrist, a full-time PCT nurse, and a pharmacist is one of the certification requirements for DCCHs and institutions certified to receive an additional fee for palliative care (4000 Yen [approximately US\$40] per patient per day) from the national insurance. This additional fee for palliative care is the financial base for palliative care in general wards. As of February 2012, 158 institutions (124 DCCHs and 34 others) were certified for the additional fee.^{14,15} Full-time PCT physicians and full-time PCT nurses were defined as those who dedicate more than 80% of their time to PCT activities.

The Education Program of Basic Palliative Care

The Japanese Society for Palliative Medicine developed the "Palliative care Emphasis program on symptom management and Assessment for Continuous medical Education" (PEACE) with support from the Ministry of

Health, Labour and Welfare in 2008. PEACE was designed to teach basic palliative care techniques, such as symptom management and communication skills, to all health care providers who engage in cancer care. As of October 2012, 34,309 physicians had completed the program.^{14,15}

Statistical Analysis

We used descriptive statistics to summarize the characteristics of DCCHs surveyed. Values are expressed as *n* (%) or median (interquartile range). For the longitudinal data, the proportions of DCCHs that satisfied each item of palliative care service are described in percentages. We also calculated the changes in sufficiency levels of the items from 2008 to 2010. Increasing trends in the items over three years were assessed using general estimating equation models with binomial logit links and unstructured working correlations and described as P_{trend} . In the general estimating equation models, we entered the presence or absence of each item (dichotomous values) as a dependent variable and year of survey (continuous values) as an independent variable to adjust for intra-institutional correlations in the three-year survey. Improvement was defined as a 20% or more increase in the item from 2008 to 2010. An item was considered sufficient if it had an 80% or greater satisfaction rating in the 2010 survey. To compare the improvement and sufficiency levels among the seven domains, we calculated the average sufficiency levels of the items in each domain. The three-year difference in the averaged levels was tested using analysis of variance for repeated measurements. Statistical analyses were performed using PASW Statistics 18.0 (SPSS Inc., Chicago, IL).

Results

Response Rates

The survey response rates were excellent for the three consecutive years (100% in 2008, 100% in 2009, and 99% in 2010). A few institutions did not participate in the 2010 survey because their certification as a DCCH would be revoked in the next year.

Characteristics of the Surveyed DCCHs

The characteristics of the surveyed DCCHs are presented in Table 1. The average DCCH

Table 1
Characteristics of the Surveyed DCCHs in 2010
(n = 349)

Hospital Characteristics	Values
Hospital size (total beds of hospital)	
<400 Beds	60 (17.2)
400–599 Beds	135 (38.7)
600–799 Beds	95 (27.2)
≥800 Beds	59 (16.9)
Median	566 (430–700)
Annual number of admitted cancer patients	
<1000 Persons	45 (12.9)
1000–1999 Persons	111 (31.8)
2000–2999 Persons	83 (23.8)
3000–3999 Persons	48 (13.8)
≥4000 Persons	62 (17.8)
Median	2257 (1407–3468)
Number of in-hospital physician	103 (64–177)
Type of DCCH	
National Cancer Center	2 (0.6)
Prefectural DCCH	49 (14.0)
Regional DCCH	298 (85.4)
Type of hospital	
General hospital	250 (71.6)
University hospital	69 (19.8)
Specialized cancer center	30 (8.6)
Palliative care unit in the hospital,	62 (17.8)
yes	
Palliative care team in the	349 (100.0)
hospital, yes	
Annual referrals to palliative care	80 (40–137)
team, persons	
Certification for the additional	83 (23.8)
fee-for-palliative care, yes	

DCCH = designated cancer care hospital.

Values are expressed as median (interquartile range) or n (%).

was a large hospital with more than 500 beds and 100 in-hospital physicians that admitted more than 2000 cancer patients per year. A majority of DCCHs were regional DCCHs (85.4%) and general hospitals (71.6%). Palliative care units were available in 17.8%. All DCCHs had PCTs because setting up a PCT is one of the certification requirements. The proportion of DCCHs certified for the “additional fee for palliative care” was 23.8%.

Changes in Structure and Processes of Palliative Care Services Over the Three Years

The longitudinal data, arranged according to the seven major domains, are presented in Table 2.

Domain I: Institutional Framework. Declaration of PCT activity (I-3) and clarification of the division (I-5) was sufficient from baseline. Declaration of philosophy and goals of in-hospital (I-1) and regional (I-2) palliative

care significantly improved but were not sufficient in 2010. All items in this domain revealed an increasing trend except for the item “meeting between hospital administrator and palliative care director” (I-7).

Domain II: Information to Patient and Family. Information services through Web site and newsletter (II-1), public notice (II-2), and booklet (II-3) were available in most DCCHs. However, provision of library service and Internet access (II-4) was not enough to satisfy. Disclosure of the achievement of palliative care service to the public (II-5) was available in less than one-quarter of DCCHs. All items of this domain showed a significant improvement over the three years.

Domain III: Palliative Care Practice. The proportion of physicians engaging in cancer care and licensed for opioid prescription (III-3) was high throughout the surveys. Essential drugs for palliative care, including opioids (III-4), adjuvant analgesics (III-5), octreotide (III-6), and atypical antipsychotics (III-7), were available in almost all DCCHs. At the start of opioid therapy, pharmacists instructed (III-13) in most DCCHs. Self-management of opioids by the patient (III-14) became common in Japan; however, it was not available in nearly 30% of DCCHs. Radiotherapy for bone metastasis (III-8) could be performed in most DCCHs (95.1% in 2010). However, consultation by a psychiatrist (III-11, 60.7%–64.5%, $P_{\text{trend}} = 0.10$) or interventional pain management by a pain clinician (III-9, 62.1%–61.5%, $P_{\text{trend}} = 0.80$) did not improve over the three years.

Domain IV: Members of PCTs. Placement of a full-time PCT physician (IV-1) increased (27.4%–45.7%, $P_{\text{trend}} < 0.001$) but needed further improvement. Full-time PCT nurses (IV-4) increased significantly and became sufficient over the three years (38.9%–88.0%, $P_{\text{trend}} < 0.001$). At least one pharmacist belonged to the PCT in most DCCHs (IV-6, 93.4%–97.7%, $P_{\text{trend}} = 0.004$). Implementation of the Cancer Control Act might have promoted these trends. In 50%–70% of surveyed DCCHs, various medical experts such as social workers (VI-7), managerial dieticians (VI-8), rehabilitation specialists (VI-9), and clinical

Table 2
Changes in Structure and Processes of Palliative Care Services in the Surveyed DCCHs From 2008 to 2010 ($n = 349$)

Questionnaire Items	Year			Change ^a	P_{trend}^b
	2008	2009	2010		
I. Institutional framework					
I-1: Official declaration of philosophy and goals of in-hospital palliative care	45.7	55.5	68.0	22.3	<0.001
I-2: Official declaration of philosophy and goals of regional palliative care	27.2	35.5	49.1	21.9	<0.001
I-3: Official declaration of principles of PCT activity	90.0	94.0	96.3	6.3	<0.001
I-4: Written procedure of consultation of PCT	89.7	93.7	97.1	7.4	<0.001
I-5: Clarification of division of palliative care and PCT in the hospital	89.9	93.1	98.3	8.4	<0.001
I-6: Documentation of annual plan for palliative care service	41.6	48.1	54.6	13.0	<0.001
I-7: Meeting between hospital administrator and palliative care director	73.6	74.4	76.5	2.9	0.29
II. Information to patient and family					
II-1: Information via Web site and newsletter	54.3	69.8	89.4	35.1	<0.001
II-2: Public notice for palliative care counseling counter in the hospital	59.1	85.4	95.4	36.3	<0.001
II-3: Distribution of information booklet	55.3	76.4	87.6	32.3	<0.001
II-4: Provision of in-hospital library service and Internet access	34.6	49.6	55.2	20.6	<0.001
II-5: Disclosure of achievements of palliative care service to the public	11.3	19.5	24.6	13.3	<0.001
II-6: Disclosure of achievements of palliative care service to hospital staff	55.9	62.7	67.6	11.7	<0.001
II-7: Consultation for palliative care at the patient counseling counter	81.9	90.1	94.8	12.9	<0.001
III. Practice of palliative care					
III-1: Adoption of a standard pain rating scale in the hospital	78.2	87.9	90.8	12.6	<0.001
III-2: Preparing a palliative care manual in the hospital	58.2	65.6	71.3	13.1	<0.001
III-3: Possessing a license to prescribe opioids for all in-hospital physicians engaging in cancer care	92.2	92.5	91.5	-0.7	0.76
III-4: Availability of essential opioid formulations	92.8	98.0	98.6	5.8	<0.001
III-5: Availability of adjuvant analgesics (anticonvulsants, antidepressants, and ketamine)	94.0	96.0	98.0	4.0	0.003
III-6: Availability of octreotide	96.8	99.7	99.7	2.9	0.01
III-7: Availability of atypical antipsychotics	98.8	99.4	99.7	0.9	0.18
III-8: Radiotherapy for bone metastases	91.6	93.7	95.1	3.5	0.01
III-9: Interventional pain management (nerve block) by a pain clinician	62.1	63.2	61.5	-0.6	0.80
III-10: Placement of at least one psychiatrist in the hospital	63.2	66.5	69.3	6.1	0.003
III-11: Provision of face-to-face consultation for psychological symptoms by a psychiatrist	60.7	63.0	64.5	3.8	0.10
III-12: Nutritional support by nutrition support team	82.4	87.1	88.5	6.1	0.01
III-13: Instruction on the new use of opioid by a pharmacist	88.1	93.7	95.9	7.8	<0.001
III-14: Self-management of opioid by a patient	64.2	65.5	72.0	7.8	0.01
III-15: Placement of at least one social worker responsible for palliative care	68.7	71.1	74.6	5.9	0.03
IV. Members of PCTs					
IV-1: Placement of one full-time PCT physician	27.4	36.7	45.7	18.3	<0.001
IV-2: Placement of at least one physician in PCT completed train-the-trainer program of palliative care	N/A	78.5	96.6	N/A	<0.001
IV-3: Placement of at least one psychiatrist in PCT completed train-the-trainer program of psycho-oncology	N/A	44.7	60.2	N/A	<0.001
IV-4: Placement of one full-time PCT nurse	38.9	56.8	88.0	49.1	<0.001

(Continued)

Table 2
Continued

Questionnaire Items	Year			Change ^a	P _{trend} ^b
	2008	2009	2010		
IV-5: Placement of at least one certified nurse in PCT	57.0	70.5	80.2	23.2	<0.001
IV-6: Placement of at least one pharmacist in PCT	93.4	96.0	97.7	4.3	0.004
IV-7: Placement of at least one social worker in PCT	72.5	76.2	78.2	5.7	0.02
IV-8: Placement of at least one managerial dietician in PCT	54.0	57.3	60.6	6.6	0.01
IV-9: Placement of at least one rehabilitation specialist in PCT	42.9	49.3	52.7	9.8	<0.001
IV-10: Rehabilitation specialist completed training course of cancer rehabilitation	37.3	43.1	52.2	14.9	<0.001
IV-11: Placement of at least one clinical psychologist in PCT	49.9	55.5	58.9	9.0	0.001
V. Activities of PCTs					
V-1: Annual referral to the PCT greater than 50 patients	53.9	65.0	76.4	22.5	<0.001
V-2: Direct medical care by PCT at least once a week and by any member of PCT on day shift	75.6	82.8	89.7	14.1	<0.001
V-3: Direct medical care by any member of PCT at least 3 times a week	55.9	61.0	75.6	19.7	<0.001
V-4: Consultation contents of physical and psychological symptoms except cancer pain greater than 20%	66.0	73.3	82.8	16.8	<0.001
V-5: Ward round and conference by PCT at least once a week	78.8	89.7	96.3	17.5	<0.001
V-6: Recording of consultation service by PCT	93.7	98.0	98.0	4.3	0.01
V-7: Management of patient database by PCT	88.8	92.0	96.0	7.2	<0.001
VI. Regional medical cooperation					
VI-1: Discharge meetings with clinics and home-visit nursing stations in the region	48.7	56.2	65.6	16.9	<0.001
VI-2: Consultation service for clinics and home-visit nursing stations in the region	79.8	85.4	93.1	13.3	<0.001
VI-3: Community outreach by PCT member	9.0	9.5	12.6	3.6	0.05
VI-4: Outpatient clinic open to the region	27.0	39.5	58.9	31.9	<0.001
VI-5: Annual meeting with clinics and home-visit nursing stations in the region	47.7	51.3	53.2	5.5	0.10
VII. Education					
VII-1: Financial support of palliative care training for staff	65.0	72.0	78.1	13.1	<0.001
VII-2: Annual budget to conduct a workshop	56.8	71.5	95.1	38.3	<0.001
VII-3: Educational activities for in-hospital physicians with PEACE	N/A	35.3	78.2	N/A	<0.001
VII-4: Educational activities for in-hospital physicians without PEACE	N/A	57.5	58.0	N/A	0.86
VII-5: Educational activities for regional physicians with PEACE	N/A	33.4	63.9	N/A	<0.001
VII-6: Educational activities for regional physicians without PEACE	N/A	42.9	45.0	N/A	0.54
VII-7: Provision of on-the-job training for regional physicians	7.2	8.1	6.9	-0.3	0.94
VII-8: Educational activities for in-hospital nurses	94.2	90.2	91.4	-2.8	0.17
VII-9: Educational activities for regional nurses	68.1	66.1	71.1	3.0	0.36
VII-10: Provision of on-the-job training for regional nurses	15.6	19.9	19.5	3.9	0.09
VII-11: Training course of communication skills in the hospital	19.5	25.9	39.8	20.3	<0.001
VII-12: Training course of cancer rehabilitation in the hospital	14.7	19.6	21.9	7.2	0.004
VII-13: Dispatch of instructors for palliative care training courses in the region	72.2	81.0	90.2	18.0	<0.001

DCCH = designated cancer care hospital; PCTs = palliative care teams; N/A = not available; PEACE = Palliative care Emphasis program on symptom management and Assessment for Continuous medical Education.

Values are expressed in %.

^aChanges between the 2008 and 2010 surveys.

^bP_{trends} were calculated using general estimating equation models adjusted for the year of the survey.