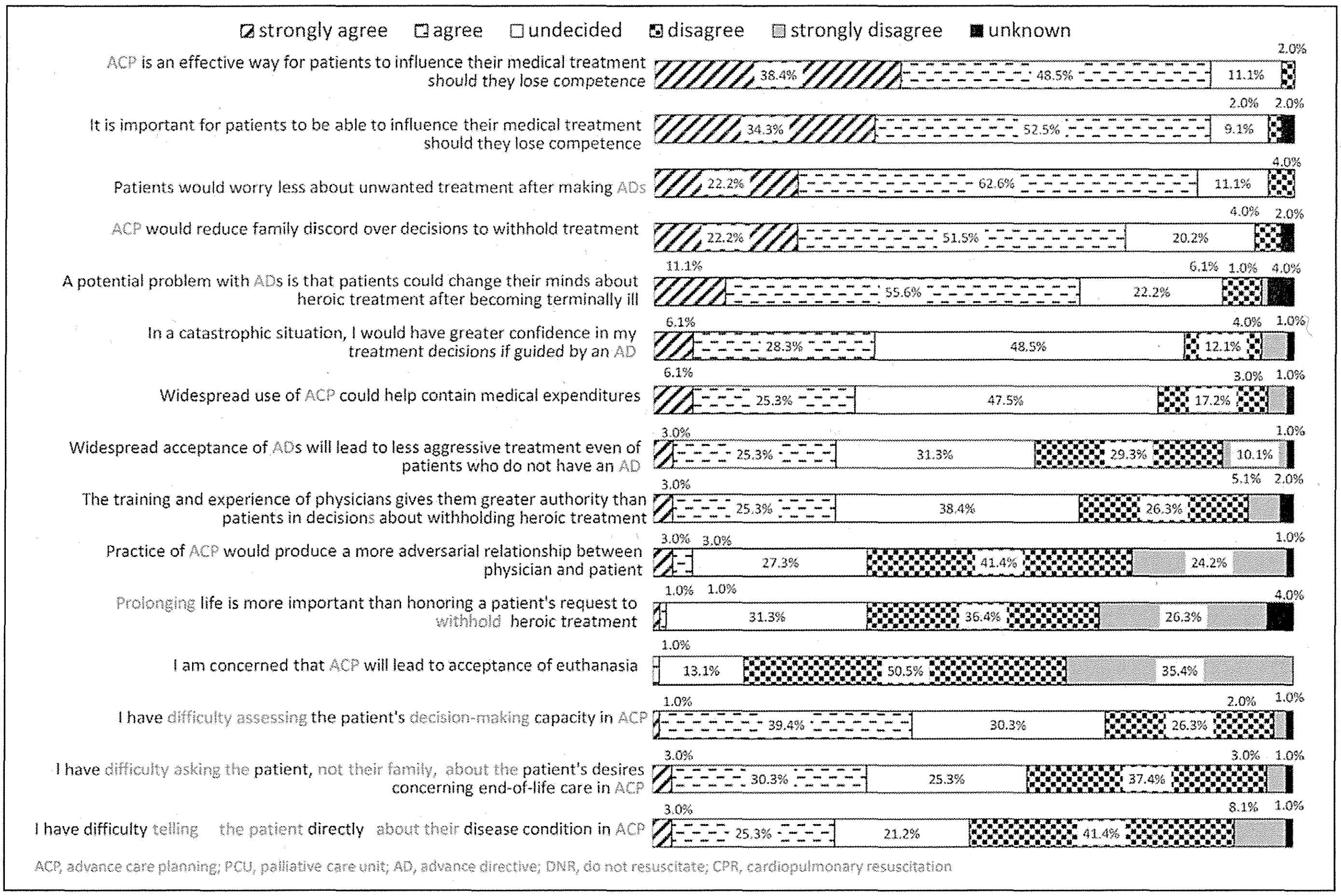


ACP, advance care planning; PCU, palliative care unit; AD, advance directive; DNR, do not resuscitate; CPR, cardiopulmonary resuscitation

Figure 3. Physicians' attitude toward ACP and ADs (N = 99). ACP indicates advance care planning; AD, advance directive.

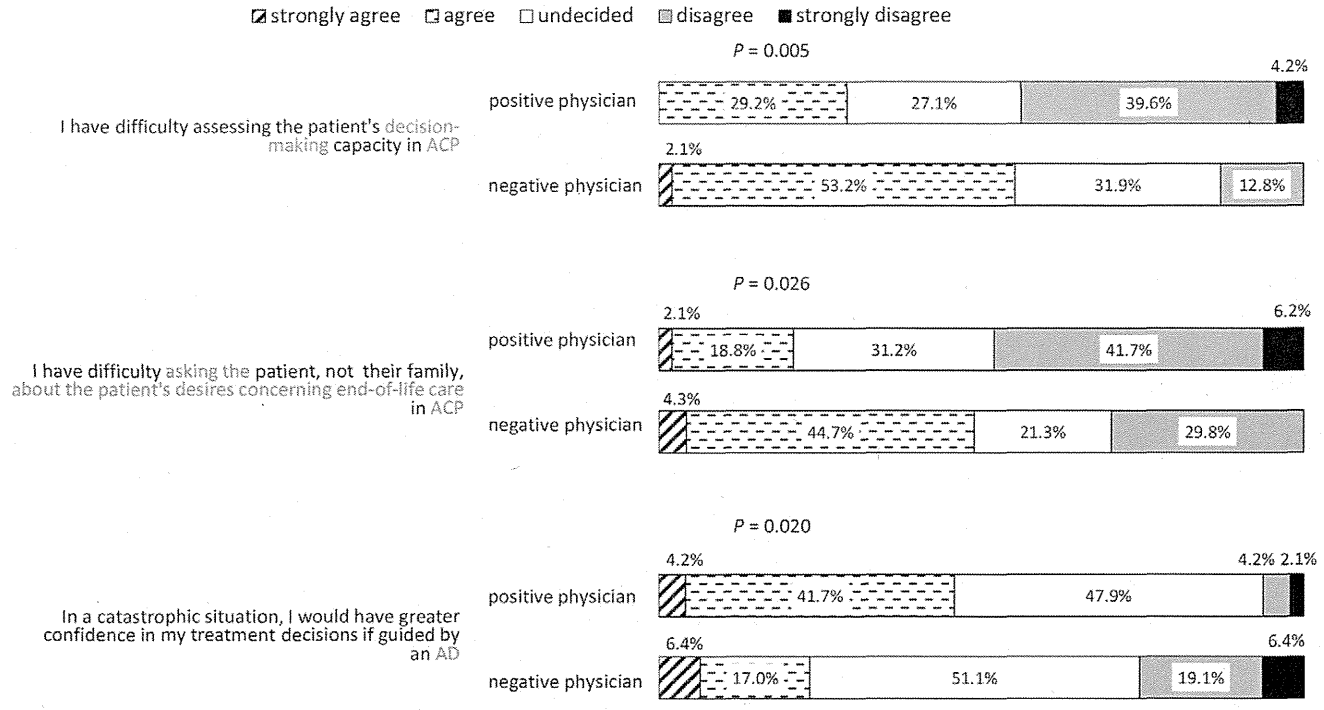
Table 1. Characteristics of palliative care physicians.

Variable	N = 99 n (%)
Gender	
Female	12 (12.1)
Male	87 (87.8)
Age, years	
20-29	1 (1.0)
30-39	13 (13.1)
40-49	38 (39.4)
50-59	36 (36.4)
60-69	10 (10.1)
70-79	1 (1.0)
Clinical experience, years	
<10	3 (3.0)
10-19	31 (31.3)
20-29	36 (37.4)
30-39	28 (28.3)
40-49	1 (1.0)
Palliative care experience, years	
<4	30 (30.3)
5-9	37 (37.4)
10-14	21 (21.2)
15-19	10 (10.1)
20-24	1 (1.0)
Type of medical facility	
Cancer hospital	25 (25.3)
Other hospital	72 (72.7)
Clinic	0 (0.0)
Others	1 (1.0)
Unknown	1 (1.0)

Physicians' Attitudes Toward ACP and ADs

Figure 3 shows the results for physicians' attitudes toward ACP and ADs.

The percentages of physicians who answered "strongly agree" or "agree" to the following statements: "ACP is an effective way for patients to influence their medical treatment should they lose competence"; "It is important for patients to be able to influence their medical treatment should they lose competence"; and "Patients would worry less about unwanted treatment after making an AD" were 86.9%, 86.8%, and 84.8%, respectively.



P values are from a χ^2 test or Fisher exact test

A negative physician (N = 48) was defined as a physician who responded "sometimes", "rarely", or "never" for the following practice items: "Do you recommend that the patient complete an AD in the event that they lose their decision-making capacity?", "Do you ask the patient to designate a health care proxy in case they lose their decision-making capacity?", and "Do you order DNR if you determine that the patient wishes for no CPR in the event of cardiopulmonary arrest?".

A positive physician (N = 48) was a physician who did not satisfy the criteria for a negative physician.

ACP, advance care planning; AD, advance directive

Figure 4. Self-assessment of skill and confidence with respect to ACP and AD among physicians with positive practices regarding ACP compared to physicians with negative practices. ACP indicates advance care planning; AD, advance directive.

The percentages of physicians who answered "strongly agree" or "agree" that they have difficulties assessing the patient's decision-making capacity in ACP, asking the patient, not their family, about the patient's desires concerning end-of-life care in ACP, and telling the patient directly about their disease conditions in ACP were 40.4%, 33.3%, and 28.3%, respectively.

Characteristics of Palliative Care Physicians Who Have Positive or Negative Practices Regarding ACP

Of the 99 physicians, 48 had negative practices regarding ACP and 48 had positive practices regarding ACP; 3 physicians were eliminated from the comparison of physicians with positive or negative practices because of missing data. No demographic data were significantly different between physicians who had positive practices regarding ACP and those who had negative practices.

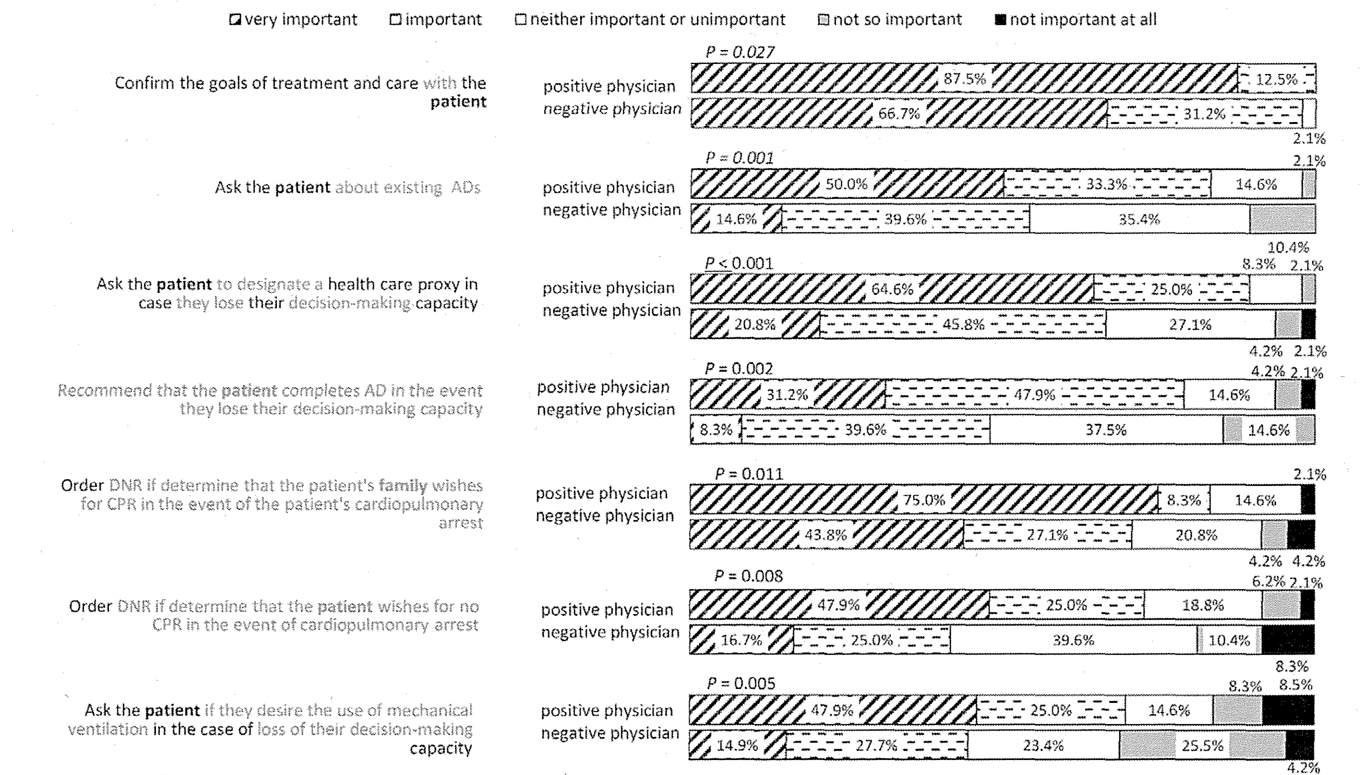
Figure 4 shows the results of the self-assessment of skill and confidence with respect to ACP and AD among physicians with positive practices regarding ACP compared to physicians with negative practices. Physicians who had negative practices experienced significantly more difficulties in assessing the patient's decision-making capacity ($P = .005$) and asking the patient about their wishes for end-of-life care ($P = .026$). In addition, the physicians who had negative practices showed significantly lower confidence in treatment decisions guided by an AD in a catastrophic situation ($P = .020$).

Among the items concerning the physicians' attitude toward ACP and ADs, significantly more physicians with positive practices gave a favorable response to "ACP would reduce family discord over decisions to withhold treatment" ($P = .036$) compared to physicians with negative responses. Items pertaining to the recognition of the importance of ACP items that were significantly different between physicians with positive practices and those with negative practices are shown in Figure 5.

Discussion

Here, we report the results of a multicenter and systematic survey of palliative care physicians' practices and attitudes regarding ACP in Japan. In addition, we reveal the characteristics of physicians who have positive practices regarding ACP and compare them to those who have negative practices regarding ACP. We revealed the following 2 important findings.

First, the results showed that there were discrepancies between the physicians' practices and their recognition of the importance of ACP (Figures 1 and 2). The largest discrepancies were found in ordering DNR after asking the patient (75.8% of



P values are from a χ^2 test or Fisher exact test

A negative physician (N = 48) was defined as a physician who responded "sometimes", "rarely", or "never" for the following practice items: "Do you recommend that the patient complete an AD in the event that they lose their decision-making capacity?", "Do you ask the patient to designate a health care proxy in case they lose their decision-making capacity?", and "Do you order DNR if you determine that the patient wishes for no CPR in the event of cardiopulmonary arrest?".

A positive physician (N = 48) was a physician who did not satisfy the criteria for a negative physician.

ACP, advance care planning; AD, advance directive; DNR, do not resuscitate; CPR, cardiopulmonary resuscitation

Figure 5. Comparison between the physicians who had positive or negative practices regarding ACP in terms of their recognition of the importance of ACP items. ACP indicates advance care planning.

physicians recognized its importance but only 33.3% practiced it) and in recommending that the patient complete an AD (62.6% of the physicians recognized its importance but only 30.3% practiced it). By contrast, there was relatively less difference in asking the patient to designate a health care proxy (56.5% of physicians recognized its importance but 40.4% practiced it), and the relationship was reversed for ordering DNR after asking the patient's family (56.6% of physicians recognized its importance but 70.7% practiced it). We consider that these findings might reflect a cultural preference for family-centered decision making near the end of life. These findings were expected in view of the results of Sanjo et al[12] who reported that unawareness of death is one of the major contributors to good death in Japan and that there is a significant correlation between unawareness of death and traditional Japanese style of death. Other previous studies also indicated cultural differences in end-of-life care preferences between Western countries and Japan.[9,13-15] More specifically, Japanese patients may be more likely to feel free from the burden of difficult decision making by trusting their family[9] to use nonverbal communication[13] and to cope with their distress by denying their terminal condition.[14,15] However, it is important that we develop improved communication skills focusing on the daily concerns and short-term goals required for a patient's good death, because many Japanese palliative care physicians appear to have a dilemma between the patient's right to self-determination and unawareness of death.

Second, although 86.9% (86 of 99) of the physicians answered that ACP is an effective way for patients to influence their medical treatment should they lose competence (Figure 3), approximately 50% (48 of 99) of the Japanese palliative care physicians have negative practices regarding ACP, that is, they don't recommend that patients complete an AD in the event they lose their decision-making capacity, ask the patient to designate a health care proxy in case they lose their decision-making capacity, or order DNR if they determine that the patient wishes for no CPR in the event of cardiopulmonary arrest. Furthermore, physicians who had negative practices regarding ACP had more difficulties in assessing the patient's decision-making capacity and in asking the patient about their desires concerning end-of-life care, and they had low confidence in treatment decisions guided by ADs in catastrophic situations (Figure 4). Difficulties in assessing the patient's decision-making capacity and in conducting end-of-life communication, and low confidence in having their clinical practices guided by ACP, may be the reasons for the gap between the Japanese palliative care physicians' practices and their attitude regarding ACP. From our results, education focusing on patient-centered ACP, especially in regard to communication and assessment of decision-making capacity, may be an effective way to disseminate ACP practices in Japan.

The study has several limitations. First, the response rate of 49% was slightly lower than that achieved in previous studies (56%-71.8%),[4,7,8,11] and response bias would exist. Second, we proposed an original definition for physicians who have positive or negative practices regarding ACP, because a gold standard definition has not been established. We reviewed this definition many times and gave higher importance to basic practices regarding ACP. Third, the reliability of the translated part of the questionnaire about physicians' attitudes toward ACP and ADs was low. We consider that this problem may be derived from the difficulty to answer for the physicians in understanding the original concept and the English–Japanese translation. Fourth, because this survey was a cross-sectional survey, the results do not prove a causal relationship.

In conclusion, among Japanese palliative care physicians, noteworthy discrepancies were found between the ACP practices and attitudes toward ACP. These findings may reflect the Japanese cultural preference for family-centered as opposed to patient-centered ACP. Approximately 50% of the physicians had negative practices regarding ACP, and these physicians experienced more difficulty and lower confidence regarding ACP than those who had positive practices. To disseminate ACP practices in Japan, education focusing on patient-centered ACP, especially end-of-life communication and assessment of decision-making capacity, may be effective. Further study is required to determine whether training in ACP principles and practices positively affects perceptions of ACP and increases the performance of patient-centered ACP among Japanese palliative care physicians.

Appendix A

The Survey for Advance Care Planning in Hospices and Palliative Care Units

I. First, Please Answer the Following Questions About Yourself.

1. Age	( ) age	
2. Gender	1) man	2) woman
3. Clinical experience	( ) years	
4. Palliative care experience※	( ) years	

※Palliative care experience is defined as working in a palliative care unit or palliative care team (full time service over 50%)

5. Please answer the following questions about your institute.
1: Cancer hospital 2: Other hospital (200 or more beds)
3: Other hospital (Less than 200 beds) 4: clinic
5: Others(   )

II. Please Answer the Following Questions About Your Practices Before a Patient's Admission to Your Hospice or Palliative Care Unit. Please Select the Most Appropriate Number (1 to 5).

	Always	Very often	Sometimes	Rarely	Never
Confirm the patient's understanding of their disease conditions	1	2	3	4	5
Confirm the patient's family's understanding of the patient's disease conditions	1	2	3	4	5
Confirm the goals of treatment and care with the patient	1	2	3	4	5
Confirm the goals of treatment and care with the patient's family	1	2	3	4	5
Confirm the place of treatment or rest desired by the patient	1	2	3	4	5
Ask the patient about existing advance directives	1	2	3	4	5
Recommend that the patients complete an advance directive in the event they lose their decision-making capacity	1	2	3	4	5
Ask the patient to designate a health care proxy in case they lose their decision-making capacity	1	2	3	4	5

III. Please Answer the Following Questions About Your Practices After a Patient's Admission in Your Hospice or Palliative Care Unit. Please Select the Most Appropriate Number (1 to 5).

	Always	Very often	Sometimes	Rarely	Never
Confirm the patient's understanding of their disease conditions	1	2	3	4	5
Confirm the patient's family's understanding of the patient's disease conditions	1	2	3	4	5
Confirm the goals of treatment and care with the patient	1	2	3	4	5
Confirm the goals of treatment and care with the patient's family	1	2	3	4	5
Encourage sharing of the goals of treatment and care between the patient and family	1	2	3	4	5
Confirm the place of treatment or rest desired by the patient	1	2	3	4	5
Ask the patient about existing advance directives	1	2	3	4	5
Recommend that the patient complete an advance directive in the event they lose their decision-making capacity	1	2	3	4	5
Ask the patient to designate a health care proxy in case they lose their decision-making capacity	1	2	3	4	5
Order do not resuscitate if determine that the patient wishes for no cardiopulmonary resuscitation in the event of the patient's cardiopulmonary arrest	1	2	3	4	5
Order do not resuscitate if determine that the patient's family wish for no cardiopulmonary resuscitation in the event of the patient's cardiopulmonary arrest	1	2	3	4	5

IV. Please Answer the Following Questions About Your Recognition of the Importance of Advance Care Planning. Please Select the Most Appropriate Number (1 to 5).

	Very important	Important	Neither important or unimportant	Not so important	Not important at all
Confirm the patient's understanding of the patient's disease conditions	1	2	3	4	5
Confirm the patient's family's understanding of the patient's disease conditions	1	2	3	4	5
Confirm the goals of treatment and care with the patient	1	2	3	4	5
Confirm the goals of treatment and care with the patient's family	1	2	3	4	5
Encourage sharing of the goals of treatment and care between the patient and family	1	2	3	4	5
Confirm the place of treatment or rest desired by the patient	1	2	3	4	5
Ask the patient about existing advance directives	1	2	3	4	5
Recommend that the patient complete an advance directive in the event they lose their decision-making capacity	1	2	3	4	5
Order do not resuscitate if determine that the patient wishes for no cardiopulmonary resuscitation in the event of the patient's cardiopulmonary arrest	1	2	3	4	5
Order do not resuscitate if determine that the patient's family wish for no cardiopulmonary resuscitation in the event of the patient's cardiopulmonary arrest	1	2	3	4	5

	Very important	Important	Neither important or unimportant	Not so important	Not important at all
Ask the patient if they desire the use of mechanical ventilation in case they lose of their decision-making capacity	1	2	3	4	5
Ask the patient if they desire the use of antibiotics in case they lose their decision-making capacity	1	2	3	4	5
Ask the patient if they desire the use of tube feeding in case they lose their decision-making capacity	1	2	3	4	5
Ask the patient if they desire the use of transfusion in case they lose their decision-making capacity	1	2	3	4	5
Ask the patient to designate a health care proxy in case they lose their decision-making capacity	1	2	3	4	5

V. Please Answer the Following Questions About Your Attitude Toward Advance Care Planning and Advance directives. Please Select the Most Appropriate Number (1 to 5).

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Advance care planning is an effective way for patients to influence their medical treatment should they lose competence	1	2	3	4	5
Practice of advance care planning would produce a more adversarial relationship between physician and patient	1	2	3	4	5
Advance care planning would reduce family discord over decisions to withhold treatment	1	2	3	4	5
I am concerned that advance care planning will lead to acceptance of euthanasia	1	2	3	4	5
Widespread use of advance care planning could help contain medical expenditures	1	2	3	4	5
It is important for patients to be able to influence their medical treatment should they lose competence	1	2	3	4	5
Widespread acceptance of advance directives will lead to less aggressive treatment even of patients who do not have an advance directive	1	2	3	4	5
Patients would worry less about unwanted treatment after making advance directives	1	2	3	4	5
Prolonging life is more important than honoring a patient's request to withhold heroic treatment	1	2	3	4	5
A potential problem with advance directives is that patients could change their minds about heroic treatment after becoming terminally ill	1	2	3	4	5
The training and experience of physicians gives them greater authority than patients in decisions about withholding heroic treatment	1	2	3	4	5
In a catastrophic situation, I would have greater confidence in my treatment decisions if guided by an advance directive	1	2	3	4	5
I have difficulty telling the patient directly about their disease conditions in advance care planning	1	2	3	4	5
I have difficulty assessing the patient's decision-making capacity in advance care planning	1	2	3	4	5
I have difficulty asking the patient, not their family, about the patient's desire concerning end-of-life care in advance care planning	1	2	3	4	5

Acknowledgments

We would like to express our gratitude to Ryo Yamamoto, MD, Reina Ozeki, MD, Yasuo Shima, MD, Yukari Kuroiwa, MD, PhD, Tetsumi Sato, MD, PhD, Megumi Kishino, RN, MN, Takayuki Hisanaga, MD, Tatsuya Morita, MD, Hiroka Nagaoka, MD, and Reiko Baba, RN for examining the questionnaire's content and face validity.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This survey was supported by the Health and Labor Sciences Research Grant for Clinical Cancer Research from the Ministry of Health, Labor and Welfare, Japan.

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Original Article

The Activity of Palliative Care Team Pharmacists in Designated Cancer Hospitals: A Nationwide Survey in Japan

Yuya Ise, PhD, Tatsuya Morita, MD, Shirou Katayama, PhD, and
Yoshiyuki Kizawa, MD, PhD, FJSIM
Department of Pharmaceutical Services (Y.I., S.K.), Nippon Medical School Hospital, Tokyo; Department of Palliative and Supportive Care, Palliative Care Team and Seirei Hospice (T.M.), Seirei Mikatahara General Hospital, Hamamatsu; and Department of Palliative Medicine (Y.K.), Kobe University Graduate School of Medicine, Kobe, Japan

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Abstract

Context. The role of pharmacists in palliative care has become more important now that they are able to provide medication review, patient education, and advice to physicians about a patient's pharmacotherapy. However, there is little known about pharmacists' activity on palliative care teams.

Objectives. The present study aimed to examine the clinical, educational, and research activities of pharmacists on palliative care teams and pharmacist-perceived contributions to a palliative care team or why they could not contribute.

Methods. We sent 397 questionnaires to designated cancer hospitals, and 304 responses were analyzed (response rate 77%).

Results. Of the pharmacists surveyed, 79% and 94% reported attending ward rounds and conferences, respectively. Half of the pharmacists provided information/suggestions to the team about pharmacology, pharmaceutical production, managing adverse effects, drug interactions, and/or rotation of drugs. In addition, 80% of the pharmacists organized a multidisciplinary conference on palliative care education. Furthermore, 60% of the pharmacists reported on palliative care research to a scientific society. Seventy percent of the pharmacists reported some level of contribution to a palliative care team, whereas 16% reported that they did not contribute, with the main perceived reasons for no contribution listed as insufficient time (90%) and/or staff (68%).

Conclusion. In Japan, pharmacists exercise a moderate level of clinical activity on palliative care teams. Many pharmacists believe that they contribute to such a team and generally place more emphasis on their educational and research roles compared with clinical work. J Pain Symptom Manage 2013;■:■—■. © *2013 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.*

Address correspondence to: Yuya Ise, PhD, Department of Pharmaceutical Services, Nippon Medical School Hospital, 1-1-5 Sendagi, Bunkyo-ku, Tokyo 113-8603, Japan. E-mail: yuyaise@nms.ac.jp

Accepted for publication: May 4, 2013.

0885-3924/$ - see front matter
http://dx.doi.org/10.1016/j.jpainsymman.2013.05.008

Key Words
Palliative care team, pharmacists, designated cancer hospital, questionnaire, nationwide survey, Japan

Introduction

Pharmacists can now provide medication review, patient education, and suggestions to physicians about patient pharmacotherapy.[1–4] These altered responsibilities have made the role of pharmacists in palliative care even more important. However, few nationwide investigations have examined pharmacists' activities on a palliative care team.

In preliminary surveys from Australia and Canada, approximately 70% of hospital pharmacists provided specific advice on pharmacotherapy, drug administration, patient treatment, adverse effects of therapies, and drug incompatibilities as part of a palliative care team;[1] however, this study involved only a small sample size. In Sweden, pharmacists' expertise was used on palliative care teams to contribute valuable advice regarding drug-related problems and stock management, although only one institution was involved and thus the results could not be generalized.[2] Therefore, it remains worthwhile to investigate pharmacists' roles on palliative care teams nationwide, including their clinical, educational, and research activities.

In Japan, the Ministry of Health, Labour, and Welfare[5] has strongly supported the dissemination of specialized palliative care as part of the National Cancer Program. Consequently, palliative care consultation services have been covered by National Medical Insurance since 2002, and designated cancer hospitals (currently numbering 397) were required to establish palliative care teams.[6] In addition, standards for hospital-based palliative care teams were recently developed, including the involvement of pharmacists in the team's care provision.[7] Nevertheless, few nationwide investigations have focused on the pharmacist's role on a palliative care team.

Thus, the aims of the present study were to examine the clinical, educational, and research activities of pharmacists on a palliative care team and pharmacist-perceived contributions to a palliative care team and why pharmacists believed that they could not contribute to such a team.

Methods

This study used an anonymous, questionnaire-based, postal survey, which was approved by the Ethical Review Board of the Nippon Medical School Hospital. We identified all 397 designated cancer hospitals across the country, and questionnaires were mailed to all these centers from November 2012 to January 2013. No reminders were sent, and no compensation was offered.

Questionnaire

Owing to the lack of validated instruments, the questionnaire used in the present study was developed after a systematic literature review and discussions among the authors.[1,2] The face validity of the questionnaire was confirmed in a pilot study involving 10 palliative care team pharmacists (convenience sample). The survey included queries about clinical activity on a palliative care team, educational and research activities about palliative care, pharmacist-perceived contributions to a palliative care team or the reasons why pharmacists believed that they could not contribute, and personal background information.

Clinical Activity of Pharmacists on a Palliative Care Team. We asked pharmacists to comment on their clinical experience on a palliative care team, for example, direct counseling to patients, provision of information/suggestions to palliative care team staff, and the team's primary physician, nurse, and pharmacist. Clinical activity was rated on a five-point Likert-type scale as not at all, rarely (one day per month), sometimes (one day per week), often (three to five days per week), or always (every day).

Educational and Research Activities of Pharmacists About Palliative Care. We asked pharmacists to 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 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.

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.

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

	Sometimes	Often or Always
Activity	*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.

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.

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 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.

Disclosures and Acknowledgments

This work was supported by a Health and Labor Sciences Research Grant for Clinical Cancer Research. The authors declare no conflicts of interest.

The authors thank Ko hisahara, Sachiko Komiya, Mitsunori Miyashita, Tetsumi Sato, Junji Otaki, and Asao Ogawa for their helpful discussion and critical review of this article.

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American Journal of Hospice
& Palliative Medicine®
30(6) 552-555

DOI: 10.1177/1049909112457874
ajhpm.sagepub.com
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Specialized Palliative Care Services in Japan: A Nationwide Survey of Resources and Utilization by Patients With Cancer

Yoshiyuki Kizawa, MD[1], Tatsuya Morita, MD[2], Jun Hamano, MD[3], Hiroka Nagaoka, MD[4], Mitsunori Miyashita, RN, PhD[5], and Satoru Tsuneto, MD, PhD[6]

Abstract

Objective: The aim of this study was to investigate the availability and utilization of specialized palliative care services among patients with cancer in Japan. **Methods:** We conducted a nationwide cross-sectional survey of 828 institutions predicted to provide specialized palliative care services. **Results:** Responses were received from 751 institutions (response rate, 91%); of these, 541 had specialized palliative care services. Adding the census data of palliative care units, the total estimated number of institutions with specialized palliative care services was 659. Of all the patients with cancer who died in the period from April 2009 to May 2010 in Japan, the estimated proportion who utilized specialized palliative care services was 24%. **Conclusions:** Usage of specialized palliative care services in Japan have increased explosively in the past decade.

Keywords

nationwide survey, Japan, specialized palliative care, neoplasms

Introduction

Palliative care has become an essential part of medical services, mainly among patients with cancer, in the past 30 years in Japan. In 2006, the Cancer Control Act was approved to improve the quality of life of all the patients with cancer, and one of the most important policies was the dissemination of palliative care throughout the country.[1] The number of palliative care units increased dramatically from 5 in 1990 to 235 in 2010.[2] In 2000, 7366 patients with cancer died in palliative care units,[3] and this increased to 25 529 in 2009,[2] comprising 7.4% of all cancer deaths in Japan. To further disseminate palliative care, the activities of palliative care teams were approved by the National Healthcare Insurance system in 2002. In 2007, the Ministry of Health, Welfare, and Labor obliged each regional cancer center to establish a palliative care team. In 2010, Japan had 377 regional cancer centers and 133 centers (35%) had a palliative care team that was certified by the National Healthcare Insurance system.[2] Because of this rapid expansion of specialized palliative care services in Japan, we conducted a nationwide survey to investigate the resources and utilization of specialized palliative care services in Japan.

Methods

Design

In this survey, a service was defined as specialized palliative care if it fulfilled all of the following 4 criteria: (1) use of palliative care specialists to provide management of pain, physical symptoms, psychosocial issues, and spiritual issues based on comprehensive assessment of patients and their families; (2) use of a palliative care team including at least a specialized palliative care physician and a specialized palliative care nurse; (3) at least 1 physician within the palliative care team to be a full-time employee; and (4) public notice of a specialized palliative care service to be given by the institution. Types of specialized palliative care services were classified as follows: (1) palliative care unit, (2) hospital-based palliative care team, (3) community palliative care consultation, (4) palliative care

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[1] Division of Clinical Medicine, Faculty of Medicine, University of Tsukuba, Ibaraki, Japan
[2] Department of Palliative and Supportive Care, Palliative Care Team and Seirei Hospice, Seirei Mikatahara Hospital, Shizuoka, Japan
[3] Yamato Clinic, Ibaraki, Japan
[4] Center for Palliative and Supportive Care, University of Tsukuba Hospital, Ibaraki, Japan
[5] Department of Palliative Nursing, Health Science, Tohoku University Graduate School of Medicine, Miyagi, Japan
[6] Department of Palliative Medicine, Osaka University Graduate School of Medicine, Osaka, Japan

Corresponding Author:
Yoshiyuki Kizawa, MD, Division of Clinical Medicine, Faculty of Medicine, University of Tsukuba, 1-1-1 Tennoudai, Tsukuba, Ibaraki, 305-8575, Japan.
Email: kizawa-ysyk@umin.org

Table 1. Characteristics of Participating Institutions (n = 751).

Characteristics	n (%[a])
Types of institution[b]	
Regional cancer center	272 (36%)
University hospital	84 (11%)
Other hospital	370 (49%)
Clinic	47 (6%)
Others	3 (0.4%)
Total number of beds[c]	
<250	173 (23%)
250-499	244 (32%)
500-749	190 (25%)
≤750	72 (10%)
Providing specialized palliative care service	
Yes	541 (72%)
No	210 (28%)

[a] Percentage of all participating institutions.
[b] The total of the percentages is not 100% due to duplicated counts.
[c] The total of the percentages is not 100% due to missing values.

outpatient clinic, (5) home palliative care, and (6) day care service. We surveyed all service types, with the exception of home palliative services and day care services, for which no definitions or nationwide organizations were available. We assume that day care service is currently rare in Japan.

The number of patients with cancer who utilized specialized palliative care services was defined as the total number of patients with cancer listed in specialized palliative care services, according to our previous study.[4] If 1 patient received 2 types of specialized palliative care services, the number of the patients who received specialized palliative care service would be classed as 2. Although avoiding duplicates would be ideal, we were unable to do so because it could cause privacy issues in participating institutions. The estimated proportion of patients with cancer who utilized specialized palliative care services was calculated relative to the number of all cancer deaths listed in the statistics database of the Ministry of Health, Welfare, and Labor in Japan.[5]

To estimate the number of patients with cancer who utilized a hospital-based palliative care team, community palliative care consultation, or palliative care outpatient clinic in the 1-year period from April 2009 to March 2010, we conducted a nationwide cross-sectional survey. We mailed a survey questionnaire to a responsible member of the specialized palliative care services in 828 medical institutions that we predicted might provide these services because they met 1 or more of the following criteria: (1) having a certified palliative care unit; (2) being a certified regional cancer center; (3) having a certified palliative care team; (4) being a training institution certified by the Japanese Society for Palliative Medicine (JSPM); (5) employing a specialized palliative care physician (diplomate or tentative faculty member of the specialty board of palliative medicine) certified by the JSPM; or (6) employing a trainer who has completed a 2-day faculty development program of fundamental palliative care education called Palliative Care Emphasis Program on Symptom management and Assessment for Continuous Medical Education (PEACE) conducted by the JSPM or National Cancer Center from September 2008 to September 2010. We mailed a reminder letter to nonrespondents 4 weeks after mailing the survey questionnaires, followed by a telephone or e-mail reminder at 8 weeks.

To estimate the number of patients with cancer who utilized a palliative care unit, we accessed data in the census database from April 2009 to March 2010 through the annual survey of this database conducted by the Association for Hospice Palliative Care Japan in July 2010.[2] The census database covered 201 (93%) of the 217 certified palliative care units.

Measurements

Survey questionnaire. An envelope containing a cover letter stating that the survey was anonymous, instructions for the survey, a copy of the survey questionnaire about specialized palliative care service, and a self-addressed stamped envelope for returning the questionnaire was mailed to each institute. The questionnaire was organized into 3 parts: (1) characteristics of the institution such as total number of hospital beds and types of specialized palliative care services (if any); (2) numbers of patients with cancer who received specialized palliative care by a hospital-based palliative care team, palliative care outpatient clinic, or community palliative care consultation in the period from April 2009 to March 2010; and (3) structure, process, and staffing of specialized palliative care services (results not reported here). Survey questions were generated based on a literature review and discussions among researchers. The face validity of the draft survey was confirmed by 10 palliative care physicians, 2 oncologists, and 3 specialized palliative care nurses in September 2009, and the survey was revised by researchers. The survey was conducted from September 2010 to January 2011. The protocol was approved by the institutional review board of the Graduate School of Comprehensive Human Sciences, University of Tsukuba.

Data extraction from the census database of palliative care units. We accessed the census database of the Association of Hospice Palliative Care Japan regarding the statistics for palliative care units from April 2009 to March 2010. We obtained data such as the annual number of admitted patients, the annual number of deaths, the total number of beds, and the average length of stay in the units.

Descriptive statistics were used to summarize the data. Analyses were performed using IBM SPSS19.0–J software (IBM, Tokyo, Japan).

Results

Of the 828 institutions targeted, 751 responded to the questionnaire (response rate, 91%): these comprised 686 institutions that returned the questionnaire and 65 institutions that provided data via telephone or e-mail. The characteristics of the 751 participating institutions are listed in Table 1: 417 (55%) had less than 500 beds and 541 (72%) provided specialized palliative care.

Table 2. Number of Institutions Providing Each Type of Specialized Palliative Care Service in Participating Institutions.

Types	n	%[a]	95% Confidence Interval
Hospital-based palliative care team	538	99	(99, 100)
Palliative care outpatient clinic	410	76	(72, 79)
Palliative care units	109	20	(17, 24)
Certified[b]	99	18	(15, 22)
Noncertified[b]	10	2	(1, 3)
Community palliative care consultation	74	14	(11, 17)

[a] Number of institutes expressed as a percentage of the number of participating institutions providing specialized palliative care services (n = 541).
[b] Certification status according to National Health Insurance system in Japan.

Number of Institutions Providing Specialized Palliative Care Services

Table 2 lists the numbers of participating institutions providing each type of specialized palliative care service. A hospital-based palliative care team, palliative care outpatient clinic, palliative care unit, and community palliative care consultation were available in 538, 410, 109, and 74 institutions, respectively, of those participating institutions that provided specialized palliative care services.

From the census database of the Association of Hospice Palliative Care Japan, 217 certified palliative care units were available in 2009.[2] Thus, we assumed that 118 nonparticipating institutions (217 − 99 = 118) provided specialized palliative care services in a certified palliative care unit. The total estimated number of institutions providing specialized palliative care service was 659 (541 + 118 = 659) in 2009 in Japan.

Estimated Total Number of Patients With Cancer Who Utilized Specialized Palliative Care Services

In the participating institutions, the annual numbers of patients who used hospital-based palliative care team, palliative care outpatient clinic, or community palliative care consultation service were 43 716, 10 216, and 519, respectively, in the period from April 2009 to March 2010 (Table 3, upper section). The annual numbers of new patients who were admitted to or died in a palliative care unit were 29 794 and 25 438, respectively, according to the data from the census database of Hospice Palliative Care Japan for the same period (Table 3, lower section). According to the census database, 3934 beds were available for a total of all palliative care units (average 18 beds/palliative care unit) and the average length of stay in a palliative care unit was 41.8 ± 15.2 (standard deviation) days. The estimated total number of patients with cancer who utilized specialized palliative care services in 2009 in Japan was 84 295 (43 716 + 10 216 + 519 + 29 844 = 84 295). According to the national death statistics database of the Ministry of Health, Welfare, and Labor in Japan, the number of patients with cancer that died during the period April 2009 to March 2010 was 344 105.[5] Therefore, an estimated 24% (confidence interval, 24%-25%) of patients with cancer who died in Japan in 2009 used specialized palliative care services.

Table 3. Numbers of Patients With Cancer Who Utilized Specialist Palliative Care Services in Japan in the 1-Year Period (April 2009-March 2010).

Types	n	Institution, Mean ± SD, Median
Annual number of patients with cancer who utilized		
Hospital-based palliative care team	43 716	86 ± 87, 62
Palliative care outpatient clinic	10 216	21 ± 50, 5
Community palliative care consultation	519	8 ± 17, 2
Total	54 451	101 ± 116, 67
Annual number of patients with cancer		
Who were admitted to palliative care units[a]	29 844	148 ± 73, 133
Who died in palliative care units[a]	25 529	127 ± 57, 118

Abbreviation: SD, standard deviation.
[a] Data extracted from the census database of Hospice Palliative Care Japan.

Discussion

We conducted a nationwide survey for the 1-year period from April 2009 to March 2010 in Japan to clarify the number of institutions that provided a specialized palliative care service and to estimate the number of patients with cancer who utilized such services. Three of the most important findings of this survey were that (1) the number of palliative care teams was approximately 540; (2) approximately 660 institutions provided specialized palliative care services; and (3) an estimated 24% of patients with cancer who died during the period utilized a specialized palliative care service.

In the early 2000s in Japan, there were few specialized palliative care services exists except for palliative care units. The results of our survey indicate that the types and quantity of specialized palliative care services have increased explosively in the past decade. Multiple studies have revealed the beneficial effects of specialized palliative care services on patient outcomes.[6,7] Thus, if the trend of increased usage of specialized palliative care continues, we expect that there will be great improvements in patient outcomes as well as the quality of life of patients and their families in the future.[8]

Although the utilization of specialized palliative care services by patients with cancer has greatly increased, as described above, the usage is still lower than the 50% rate observed in some other developed countries. For example, the annual cancer deaths were 140 497 in 2009 in the United Kingdom,[9] and 19% (27 257) of these patients with cancer utilized palliative care units, 37% (51 644) utilized palliative care teams, 17% (24 138) utilized palliative care outpatient clinics, 8% (10 958) utilized day care services, and 37% (51 744) utilized home palliative care.[10] Sixty-eight percent of patients with cancer who died between July 1, 2000, and December 31, 2002, utilized specialized palliative care in Western

Australia,[11] and this value was 66% for Singapore.[12] Sixty-five percent of patients with cancer utilized hospice care in the United States in 2002.[13] We note that it is difficult to compare these data directly because the definitions and ways of providing the services were different among the countries.

Another important finding of this survey was that utilization of hospital-based palliative care teams was much more common than utilization of specialized palliative care services, palliative care outpatient clinics, or community palliative care. This situation has most likely arisen because the government policy for specialized palliative care service has been hospital oriented in Japan. In contrast, in the UK survey,[10] described above, almost the same proportion of patients with cancer utilized home palliative care as that which utilized a hospital-based palliative care team. We suggest that it would be beneficial to facilitate an intensive transition toward outpatient clinic and home care in Japan to provide continuity in the specialized palliative care service from the early stage of the disease.

This study had some limitations. First, the survey was conducted using a self-reporting questionnaire and, therefore, self-reporting bias would be present. Second, we might have overestimated the number of patients with cancer who utilized a specialized palliative care service because we could not avoid duplicates in this survey. Third, we might have underestimated the number of institutions providing specialized palliative care service and the utilization of specialized palliative care services among patients with cancer due to following reasons: (1) this survey did not cover home palliative care because of the lack of a definition or nationwide organization for this type of service and (2) this survey might not cover all institutions that provided specialized palliative care service although we made every effort to mail the survey questionnaire to as many institutions as possible.

In conclusion, the results of this first nationwide survey of specialized palliative care services in Japan suggest that about one-quarter of patients with cancer utilized a specialized palliative care service, and the types and quantity of specialized palliative care service have increased explosively in the past decade.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: the Health and Labor Sciences Research Grant for Clinical Cancer Research (H22-Ganrinsyo-ippan-004) from the Ministry of Health, Labor and Welfare, Japan.

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Vol. ■ No. ■ ■ 2013 Journal of Pain and Symptom Management 1

Original Article

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

Isseki Maeda, MD, PhD, Satoru Tsuneto, MD, PhD, Mitsunori Miyashita, RN, PhD, Tatsuya Morita, MD, Megumi Umeda, RN, PHN, MSN, OCNS, Miwa Motoyama, MD, Fumie Kosako, RN, OCNS, Yoshihisa Hama, MD, Yoshiyuki Kizawa, MD, Tomoyo Sasahara, RN, PhD, and Kenji Eguchi, MD

Department of Palliative Medicine (I.M., S.T.), Osaka University Graduate School of Medicine, Suita, Osaka; Division of Palliative Nursing (M.Mi.), Health Sciences, Tohoku University Graduate School of Medicine, Sendai, Miyagi; Department of Palliative and Supportive Care, Palliative Care Team, and Seirei Hospice (T.M.), Seirei Mikatahara General Hospital, Hamamatsu, Shizuoka; Palliative Care Partners Co., Ltd. (M.U.), Minato-ku, Tokyo; Department of Palliative Care (M.Mo.), Yamanashi Prefectural Central Hospital, Kofu, Yamanashi; Yokohama Municipal Citizen's Hospital (F.K.), Yokohama, Kanagawa; Department of Surgery (Y.H.), Nagano Red Cross Hospital, Nagano, Nagano; Department of Palliative Medicine (Y.K.), Kobe University Graduate School of Medicine, Kobe, Hyogo; Faculty of Medicine (T.S.), Division of Health Innovation and Nursing, University of Tsukuba, Ibaraki; and Division of Medical Oncology (K.E.), Teikyo University School of Medicine, Itabashi-ku, Tokyo, Japan

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 ≥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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Address correspondence to: Isseki Maeda, MD, PhD, Department of Palliative Medicine, Osaka University Graduate School of Medicine, 2-2, Yamadaoka, Suita, Osaka 565-0871, Japan. E-mail: maeda@pm.med.osaka-u.ac.jp

Accepted for publication: September 15, 2013.

0885-3924/$ - see front matter
http://dx.doi.org/10.1016/j.jpainsymman.2013.09.017

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;■:■–■.

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 Ministry[11] 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