team were a major focus. They found that psychologists are expected to communicate with other medical professionals based on their broad knowledge of cancer treatment and utilize their expertise in psychology to provide psychological support to patients and family members, as well as other medical professionals. Unfortunately, the number of psychologists who can actually perform these functions is limited, and this is becoming a challenge for psychologists in cancer care, in Japan.

Meanwhile, following specific recommendations by the National Council for Hospice and Specialist Palliative Care Services (2) to include a psychologist as a member of the hospital palliative care team, psychologist involvement is slowly increasing in Western countries (3). In many Western countries, particularly in the UK, the role of psychologists has developed as one of assessment, therapy and consulting, within their relatively new post in the hospice setting (4). Consequently, having a psychologist as part of the multidisciplinary team has enhanced the psychological component of palliative care within the hospice setting. This is not surprising, given that psychologists in the UK must complete academic and professional training (5). Psychologists in countries such as Sweden, Australia, Korea and China are certified by the national government, while psychologists with Ph.D. degrees and intern training experience in the USA are certified by each state (6,7). However, Japanese psychologists are not certified by the national government, and they receive only 2 years of post-baccalaureate education, which is much shorter than that required in other countries. They undergo a multidisciplinary, cross-sectional certification process first pioneered primarily in the field of education. For this reason, psychologists working not just in cancer treatment, but across multiple fields of medical treatment, are in a precarious position. Among them are many psychologists working in the field of mental health, where the demands are high. Physicians have indicated problems with awareness, expertise and educational background of psychologists, including the lack of knowledge of medical science and treatment (8–10).

Quite a few psychologists working in cancer care are unsure about their own roles. Furthermore, many psychologists involved in cancer care have not fully mastered the knowledge and skills of the field. According to Kodama et al. (11), ~70% of psychologists in cancer care are unsatisfied with limited training opportunities in/out of their hospitals, and ~80% are not supervised by faculty of certified graduate schools on clinical psychology. The education system for cancer care psychologists remains inadequate, and thus psychologists working in these circumstances are thought to face numerous difficulties. In June 2012, the Japanese Ministry of Health, Welfare and Labour emphasized the importance of education for psychologists in cancer and palliative care with the basic plan to promote cancer control programs. However, a few studies have examined psychologist troubles and hardships in the cancer care setting, and little qualitative and systematic studies exist on education programs for cancer care psychologists.

Given the above, we conducted a questionnaire survey of psychologists involved in cancer care and palliative care. We analyzed specific responses about troubles and hardships actually faced by psychologists working in cancer care, with the aim to identify problems experienced by psychologists involved in cancer and palliative care and consider an education system for psychologists.

PARTICIPANTS AND METHODS

PARTICIPANTS

Subjects were cancer care psychologists at a total of 1185 facilities as of June 2009 (the time the research was conducted). These included 315 cancer center hospitals and 834 other designated clinical teaching hospitals and university hospitals. Because it is not possible to identify the above psychologists specifically, we used a double-envelope system. Briefly, we sent one copy of the questionnaire form for facility representatives, a request for participation in the study, and an explanation of the study to representatives of the 1185 facilities. We also mailed five copies of the questionnaire form to psychologists involved in cancer care, a request for participation in the study, and an explanation of the study to psychologists.

First, we asked the institution representatives to note (on the questionnaire form for facility representatives) the affiliation and number of psychologists working at the facility, and the number and area of affiliation of psychologists to whom the psychologist questionnaire was actually distributed. Of the total of 1185 facilities, 403 facilities responded (response rate: 34%). Among the 403 facilities, 136 employed no psychologists, and 267 employed psychologists, of which 326 were full-time and 164 were part-time psychologists, for a total of 490 psychologists.

Furthermore, at these 267 facilities, 419 psychologists thought to be involved in cancer care were actually given the questionnaire. Psychologists who received the questionnaire were asked to fill it out anonymously and return it. The study was explained in writing to representatives and psychologists involved in cancer care, and replies were regarded as consent to participate. Of the 419 given the questionnaire, 401 psychologists replied (response rate: 95.7%). We analyzed the data received from these 401 psychologists (89 male, 310 female, 2 unspecified; average age 37.2 ± 9.5).

This study was approved by the ethics committee of the Kitasato University School of Medicine.

QUESTIONNAIRE

The questionnaire targeting psychologists involved in cancer care was designed according to a literature review and exchanges of opinion with psychologists with 5 or more years of experience in cancer care, professionals with experience in psycho-oncology and researchers. The questionnaire was divided into five main areas:

(i) Basic attributes: included questions about sex, age, educational background, years of clinical experience, current workplace, whether or not workplace has psychologists or psychiatrists, clinical psychology qualifications, annual income, etc.
(ii) Knowledge and skills related to the field of cancer care: subjects were asked to rate on a scale of 1–4, the degree of necessity for psychologists for 28 items.
(iii) Work duties related to cancer: subjects were asked to rate on a scale of 1–4, the degree that 22 items were demanded in the workplace.
(iv) Working conditions related to cancer care at present workplace: subjects were asked what percentage of their work duties in the past year were related to cancer care, the total number of cases, the subjects of care and breakdown of the types of work.
(v) Problems confronting psychologists working in cancer care: subjects were asked to write freely about troubles or hardships they experienced while working in cancer care.

We analyzed troubles and hardships experienced by psychologists working in cancer care based on their responses to questionnaire areas 1 ('basic attributes') and 5 ('problems confronting psychologists working in cancer care').

PROCEDURES

Participants were asked to fill out the questionnaire voluntarily following the written explanation. The returned questionnaire within 2 weeks was regarded as consent.

OVERVIEW OF ANALYSIS

In order to investigate the potential differences in basic attributes between those who filled out the free response section about troubles or hardships actually experienced while working in cancer care (hereafter, 'free response group') and those who did not (hereafter, 'no-response group'), we divided respondents into two groups, calculated the average ± SD of age and years of clinical experience for each group, and performed a *t*-test. Next, to examine whether the existence of free responses were affected by sex (male or female), form of employment (part- or full-time), existence of a palliative team (yes or no) and participation in the palliative team (yes or no), the χ^2 test was performed for each of these factors.

We performed qualitative content analysis of free responses about troubles or hardships actually experienced while working in cancer care by referencing methods used by Mayring (12). First, two of the five analysts each extracted the key expressions and content from the responses of 192 psychologists. Next, names (code names) were attached to expressions and content, and similar contents were coded. Based on this, similar codes were aggregated and categorized, and category names were given. Finally, two analysts and one researcher in psychology and two psychologists checked and discussed the codes and categories repeatedly until an agreement was reached, and content validity was examined.

RESULTS

BASIC ATTRIBUTES IN PARTICIPANTS

On the question of troubles or hardships actually experienced while working in cancer care, there were 107 people in the no-response group (28 male, 77 female, average age ± SD: 39.4 ± 9.5) and 294 people in the response group (61 male, 233 female, average age ± SD: 36.3 ± 9.4). Average number of years of clinical experience ± SD was 13.1 ± 10.1 in the no-response group and 10.2 ± 8.8 in the free response group. An average number of years of medical experience ± SD were 11.2 ± 9.6 in the no-response group and 9.1 ± 8.5 in the free response group. An average number of years in cancer care ± SD was 3.4 ± 4.3 in the no-response group and 3.1 ± 3.3 in the free response group. The *t*-test found no difference between the two groups with regard to these attributes. The χ^2 test was performed for sex as well between free response (no-response group and free response group) and sex (male, female), but no bias in incidence was found. The χ^2 test performed for free response (no-response group and free response group) and form of employment (part-time, full-time) found that there were 75 full-time psychologists and 30 part-time psychologists in the no-response group, and 213 full-time psychologists and 74 part-time psychologists in the free response group, but no bias between them in the incidence. In the no-response group, 76 psychologists had a palliative team and 27 did not. In the free response group, 265 psychologists had a palliative team and 25 did not. The χ^2 test results to examine the presence of responses (no-response group, free response group) and presence of a palliative team (no team group, team group) revealed a bias in the incidence. In the free response group, the incidence of workplaces with palliative care teams was high at roughly 90%, while the no-response group showed a low incidence of workplaces with palliative care teams, at slightly >70% ($P < 0.05$). Similarly, for participation in the palliative care team, the no-response group had 46 people who had not participated in a palliative care team, while 57 had. On the other hand, in the free response group, 77 people had not participated in a palliative care team, while 211 had. The χ^2 test performed for responses (no-response group, free response group) and palliative team participation (no participation group, participation group) revealed a bias in the incidence. While participation in a palliative care team was >70% in the free response group, that in the no-response group palliative care team was <50% ($P < 0.05$).

TROUBLES AND HARDSHIPS

The following five categories were obtained in qualitative analysis of the free responses: 'Hospital system',

Table 1. Hospital system

Subcategory	Examination
Problems related to the hospital organization	The hospital organization is not large enough, lack of manpower
	Poor hospital management
	Lack of recognition of team medicine
	No full-time psychiatrist
	No appropriate department to which psychologists can belong
Psychologist working arrangements	Psychologists cannot work properly due to the part-time status
	Work limitations because only one psychologist works there
	Preoccupation with work duties other than cancer care
	Lack of economic independence

Table 2. Psychologist role and specialization

Subcategory	Examination
Ambiguity of the role expected of psychologists	Other medical professionals do not understand the psychologist's specialty
	Other medical professionals have different expectations for the roles played by psychologists
	Other medical professionals expect psychologists to play the same role of psychiatrists
	Other medical professionals have excessive expectations of psychologists
Problems arising because psychologists are not nationally licensed	Work performed by psychologists is limited because it is not covered by the medical insurance system
	Inconsistent treatment of psychologists
Lack of clarity regarding psychologist specialization	Other medical professionals do not understand psychologist specialization in cancer treatment
	Psychologists do not know how to make other medical professionals understand their specialization
	Psychologist's work overlaps with nurses' work duties in some cases
	Difficulty of having psychologist's activities and results evaluated by other medical professionals

'Psychologist role and specialization', 'Collaboration with other medical professionals', 'Specialized support provided by psychologists' and 'Stress faced by psychologists'.

In the 'Hospital system' category, the following two subcategories were extracted: (i) hospital or organization problems and (ii) problems with working arrangements (Table 1).

In the second category 'Psychologist role and specialization', three subcategories were extracted: (i) ambiguity of the role expected of psychologists, (ii) problems arising because psychologists are not nationally licensed and (iii) lack of clarity regarding psychologist specialization (Table 2).

In the third category 'Collaboration with other medical professionals', four subcategories were extracted: (i) problems with the method of requesting psychologist cooperation, (ii) problems related to the palliative care team, (iii) problems of consultation and liaison work within the hospital and (iv) problems of communication between medical staffs (Table 3).

In the fourth category 'Specialized support provided by psychologists', five subcategories were extracted: (i) difficulty of interaction with patients and their families, (ii) inadequate provision of psychological support in cancer care, (iii) problems related to death care, (iv) lack of medical knowledge and (v) lack of psychiatric knowledge (Table 4).

In the last category 'Stress faced by psychologists', four subcategories were extracted: (i) psychologist isolation and anxiety, (ii) psychologist internal conflicts, (iii) psychologist burnout and helplessness and (iv) psychologist self-improvement (Table 5).

DISCUSSION

We extracted the following five categories from qualitative analysis of the difficulties faced by psychologists: 'Hospital system', 'Psychologist role and specialization', 'Collaboration with other medical professionals', 'Specialized support provided by psychologists' and 'Stress faced by psychologists'. We will discuss each of these categories and examine an educational program for psychologists aimed at addressing these issues.

First, the 'Hospital system' category includes subcategories encompassing difficulties associated with 'problems related to the hospital organization' (e.g. lack of manpower and a full-time psychiatrist position), and 'psychologist working arrangements' (e.g. psychologists cannot work properly due to the part-time status). In the 'Psychologist role and specialization' category, subcategories include the 'ambiguity of the role expected of psychologists', as other medical professionals do not understand or have different expectations for the roles played by psychologists; 'problems arising because psychologist are not nationally licensed', leading to the inconsistent manner in which psychologists are treated and 'the lack of clarity regarding psychologist specialization' because other medical professionals do not understand psychologist specialization in cancer treatment, or psychologists do not know how to make other medical professionals understand their specialization. In examining the causes of these problems, the lack of certification by the

Table 3. Collaboration with other medical professionals

Subcategory	Examination
Problems with the method of requesting psychologist cooperation	Few requests for psychologists
	Other medical professionals turn to psychologists only after the patient's physical symptoms and psychological condition worsen
Problems related to the palliative care team	Insufficient communication within the palliative care team
	The palliative care team is not active enough
	Inability to function as a psychologist within the palliative care team
	Inability to cooperate smoothly with nurses
Problems of consultation and liaison work within the hospital	A lack of adequate communication with professionals of other medical professionals
	Trouble relating to other ward staff
	Professionals of other job types do not fully understand the psychologist's position and role
	I cannot smoothly provide information to patients due to inadequate skills of the psychologist
	Insufficient relations to psychiatrist
Communication problems between other medical professionals	Lack of communication between medical practitioners other than psychologist

Table 4. Specialized support provided by psychologists

Subcategory	Examination
Difficulty of interaction with patients and their families	Difficulty of handling patient/family aggression and dissatisfaction
	Struggles with resistance by patient/ family toward interviews
	Difficulty interacting with patients suffering from severe physical pain
Inadequate provision of psychological support in cancer care	Difficulties in deciding how and when to provide this care
	Difficulties in setting the objectives and goals of psychological intervention
	Little knowledge about psychological changes in cancer patients
Problems related to death care	Mental shock towards patient death, inadequate death care
Lack of medical knowledge	Do not know how to enter information on medical charts
	Do not understand medical terminology
	Do not understand cancer treatment
Lack of psychiatric knowledge	Insufficient knowledge about drug therapy
	Insufficient knowledge about psychiatric symptoms
	I cannot perform assessment of psychiatric symptoms

national government has previously been identified as a contributing factor, alongside other weaknesses in the psychology education system (13). Due to the lack of state certification, psychologists participating in medical treatment are not fully covered by the medical insurance remuneration system (14). Consequently, psychologists working in the medical field are often left in a precarious position. It is likely that this lack of national certification also adds to the difficulty of other medical professionals understanding the area in which psychologists specialize. In fact, psychologists in countries such as Sweden, Australia, Korea and China are certified by the national government, while psychologists with Ph.D. degrees and intern training experience in the USA are certified by each state (6,7). Although these issues cannot be resolved immediately in Japan, we propose that a gradual resolution can be reached by clarifying the role psychologists play in medical treatment, particularly in cancer treatment. Furthermore, it was found that psychologists do not adequately understand their own area of specialization. In the present study, the average number of years (± SD) of clinical experience and medical experience in the free response group was 10.2 (± 8.8) and 9.1 (± 8.5), respectively, but the average number of years in cancer care was shorter, with 3.1 (± 3.3). Holland (15) reported that psychologists, traditionally trained to play a central role in the treatment of physically healthy individuals with psychological problems, faced the lack of a well-defined role in cancer care due to the absence of psychologically oriented peers, and a sense that 'one is an outsider working in someone else's specialty'. We think that psychologists who have less experience in cancer care confront similar situations in Japan. The 2012 Basic Plan for Cancer Control Measures states that psychooncologists and psychologists in cancer care should systematically receive education to provide psychological support for cancer patients and their families; however, no education system for psychologists in cancer care has yet been established in Japan. Furthermore, few studies have investigated the role of psychologists in hospices in Japan. Thus, the role and specialization of psychologist in cancer care is still unclear in Japan. In these scenarios, psychologists cannot expect other medical professionals to fully understand their field. This point also relates to the category of 'Psychologist's role and specialization' and 'Specialized support provided by psychologists', suggesting that specialized support provided by psychologists should be more firmly defined.

The 'Collaboration with other medical professionals' category includes four subcategories. The first subcategory concerns the 'problems with the method of requesting psychologist cooperation'. These problems arise because other medical

Table 5. Stress faced by psychologists

Subcategory	Examination
Psychologist's isolation and anxiety	An absence of people with whom the psychologist can consult at the workplace
	Discharging tasks alone put great strain on psychologists
	Insufficient support from professionals of other medical professionals
	Lack of complete confidence in duties performed as psychologist, no evidence for psychological treatment
Psychologist's internal conflicts	I cannot follow-up on patients who change hospitals or are discharged
	Struggle with aggression or dissatisfaction from patients
	I am unable to meet the demands of other medical professionals
Psychologist burnout and helplessness	I feel powerless and unrecognized by other medical professionals
	I feel powerless due to the inability to do anything for suffering patients
Psychologist self-improvement	Demand for study and training groups to be held in rural areas
	Demand for lectures tailored to participant's level (i.e. beginner or advanced)
	Demand to explore case studies in the cancer field
	Demand for a supervisor in cancer care and a place for psychologists to share information
	Demand for more reference materials about the role of psychologists in cancer care

professionals turn to psychologists only after the patient's physical symptoms and psychological condition worsen. The second subcategory includes 'problems related to the palliative care team' (e.g. problems due to insufficient communication within the palliative care team), and the third, the 'problems of consultation and liaison work within the hospital', which result from a lack of adequate communication with other medical professionals. The fourth category encompasses the 'problems of communication between other medical professionals', including the lack of communication between non-psychologist medical professionals. When considering communication problems in the medical treatment, the first issue is that psychologists must know a common language if communication is to be possible (16). Furthermore, psychologists' lack of medical knowledge has previously been identified by many physicians as contributing to problems in communication (9,10). An understanding of the content of other medical professionals' conversations and what they record in medical charts is necessary for communication between medical professionals in the medical field. In other words, psychologists should understand the specialization of other medical professionals, just as other medical professionals should understand the specialization of psychologists. Efforts to communicate with one another will lead to active and appropriate referrals to psychologists. Belar et al. (17) proposed that psychologists in the USA need to collaborate with other medical professionals in hospitals and must be knowledgeable regarding formal and informal medical cultures, norms, mores and practices in health-care settings. Similarly, we feel it necessary for psychologists in cancer care to gain the support of other medical professionals in order to acquire these skills and knowledge. To this end, psychologists should attend and actively participate in case conferences with other medical professionals. Other medical professionals should support their joining. There are also adverse effects that occur when psychologists insist on staying within the unique framework of psychology. For example, other medical professionals on palliative care teams have reported a problem in information sharing among psychologists working in cancer treatment, as they tend to keep information and cases to themselves (1). This may foster an image of psychologists as a secretive or solitary worker.

Matusno (18) has proposed the following five explanations for why psychologists cannot function effectively in the field of medical treatment, particularly in team-based medicine: (i) their lack of clinical experience in hospitals; (ii) their lack of basic medical education; (iii) their lack of being viewed as providers of therapy in the context of medical treatment; (iv) their lack of experience in team-based treatment and (v) their lack of knowledge on psychological techniques necessary in hospitals. The subcategories of problems listed under 'Collaboration with other medical professionals' are also linked to the points raised by Matusno (18). For these reasons, psychologists must acquire at least a minimal level of medical knowledge and understanding of cancer treatment. Furthermore, they require training through specific case studies in order to facilitate collaboration with other medical professionals.

In the 'Specialized support provided by psychologists' category, subcategories included the following: 'difficulty of interaction with patients and their families', which relates to how psychologists deal with emotions of aggression and dissatisfaction in patients and family members, as well as how they interact with patients suffering from severe physical pain; 'inadequate provision of psychological support in cancer care' (e.g. difficulties in setting the objectives and goals of psychological intervention, deciding how and when to provide this care); 'problems related to death care'; 'the lack of medical knowledge' and 'the lack of psychiatric knowledge'. The last two subcategories are related to the previously cited problems in collaboration with other medical professionals, but these issues are also fundamental in the specialized support that psychologists provide. Acquiring basic knowledge on medicine, cancer treatment and psychiatry is a necessary precondition for psychologists working in cancer treatment and is the major foundation of education programs for psychologists in cancer medicine (1).

On the other hand, the 'difficulty of interaction with patients and family', 'inadequate provision of psychological support in cancer care' and 'problems related to death care' are specific to the psychological support provided in cancer treatment. Furthermore, psychologists involved in cancer treatment feel that, because it is difficult to establish a framework for psychological interviews, there are major difficulties in establishing a psychological support method that flexibly responds to individual situations. In reality, there is very little training for psychologists specific to cancer treatment, and this field is rarely studied in graduate school (19). Recently, however, patients and family members have been using the Internet and books to acquire fairly detailed knowledge about their disease and treatment. The mental state of cancer patients changes as a result of physical condition, therapeutic course and treatment side effects. For these reasons, psychologists involved in cancer treatment must acquire knowledge about cancer treatment that they can then apply when providing psychological support (1). Furthermore, by acquiring psychiatric knowledge, the psychologist can begin to provide specialized psychological support. If psychologists are not able to flexibly provide patients and family members with psychological support while taking into consideration their physical state, the extent to which they have been informed about their illness, the state of their therapy, their personal character, their family composition, etc., it will be difficult to improve the cancer specialization field within psychology (20). According to Payne and Haynes (5), psychologists in palliative care are applied scientists, who are trained to work with individuals, couples and families, and provide a consultative service to healthcare staff, as well as bring a unique perspective to the assessment and treatment of patients. In the UK, all psychologists complete both academic and professional training, drawing on the knowledge of a wide range of psychological theories to explain and understand the cognitive, emotional and behavioral aspects of responses to illness-related issues. Some theories include specific psychological intervention, such as adjuvant psychological therapy for cancer patients (21). Psychologists with Ph.D. degrees in the USA experience intern training (6). In Japan, however, psychologists are trained in a university graduate school through poor educational curriculums in cancer care, etc., and are thus not fully prepared. In this regard, we think that concrete training through case studies in aspects of psychological support specifically tailored to cancer treatment would provide the foundation of educational programs for psychologists in cancer treatment in Japan. In other words, psychologists in Japan should acquire appropriate skills to provide psychological intervention suitable for cancer patient, as well as to offer accurate assessment of the mental state of cancer patients. To this end, the construction of an educational program geared toward improving psychologists' level of experience on a case-by-case basis will be necessary (e.g. clinical experience in medical treatment or in cancer treatment).

The last category, 'Stress faced by psychologists', includes the following four subcategories: 'psychologist's isolation and anxiety' for not having people to consult with at the workplace or receiving insufficient support from other medical professionals; 'psychologist's internal conflicts' (e.g. psychologists cannot be involved in the care of many patients, or are unable to meet the demands of other medical professionals); 'psychologist burnout and helplessness' (e.g. the powerless feeling of psychologists unrecognized by other professionals) and 'psychologist self-improvement' (e.g. the desire to explore case studies in the cancer field, desire for an increase in the number of study and training groups or for a place to share information among psychologists). The 'psychologist's isolation and anxiety' and 'psychologist burnout and helplessness' subcategories are connected to the 'lack of clarity about the role psychologists are expected to play' and 'lack of clarity regarding the psychologist's specialization' mentioned above. We think that these issues emerge because psychologists' area of specialization in medical treatment is often unclear, leading to a lack of understanding from other medical professionals. Rieger et al. (22) suggested that a cohesive team approach entailing mutual respect and support between other medical professionals would mitigate the difficulties experienced by psychologists. In Japan, some psychologists feel isolation and anxiety, and do not have other psychologists to consult with at workplace; therefore, it is essential that other medical professionals communicate actively and try to understand the specialization of psychologists, or try to support them. On the other hand, professional networking among psychologists in cancer care is less mature than in other medical fields with highly advanced technology (11), and 40% of psychologists in cancer care do not have seniors and associates in the field to consult with. Finally, we found that psychologists feel a need to engage in self-improvement activities, as reflected in the desire to receive more opportunities for learning and training, supervision and/or peer review on the regular basis. Although recognized standards for education and training in clinical health psychology exist for those new to the field, the needs of psychologists already in the field who wish to develop more expertise in selected areas of practice have not been sufficiently addressed in the USA (17,23). In Japan, however, recognized standards do not exist even for those at the entry level of practice. Belar et al. (17) proposed that psychologists in heath psychology including cancer care should self-assess their readiness to provide psychological professional services before working in health psychology (17). Along these lines, the National Cancer Institute and American Cancer Society websites provide information for self-assessing the readiness to deliver services to women with breast cancer. While a realistic option for a basic education program in Japan may involve creating an environment in which psychologists can study via E-learning based on their individual needs, the development of sorely needed systematic, sequential and comprehensive education programs is also essential.

There are some limitations to this study worth noting. First, we identified categories that represent troubles and hardships experienced by psychologist working in cancer care, but did not go further to examine what psychologists find challenging, or to what extent. In the future, we plan to perform quantitative analysis of the degree of challenges faced by psychologists based on the results of this study. Secondly, although we describe the employment status of psychologists and their participation in a palliative care team, no investigation was performed in the present study to address these points. Thus, the future study should focus on these points, as well as other factors such as psychologist personality, experience and mental state.

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Conflict of interest statement

None declared.

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CURRENT OPINION

Palliative care in Japan: a review focusing on care delivery system

Tatsuya Morita[a] *and Yoshiyuki Kizawa*[b]

Purpose of review

Providing palliative care in Japan is one of the most important health issues. Understanding palliative care delivery systems of other countries is useful when developing and modifying palliative care systems worldwide. This review summarizes the current status of palliative care in Japan, focusing on the structure and process development.

Recent findings

Palliative care units and hospital palliative care consultation teams are the two main specialized palliative care services in Japan. The number of palliative care units is 215 (involved in 8.4% of all cancer deaths), and there are approximately 500 hospital palliative care teams. Conversely, specialized home care services are one of the most undeveloped areas in Japan. However, the government has been trying to develop more efficient home care services through modifying laws, healthcare systems, and multiple educational and cooperative projects. The numbers of palliative care specialists are increasing across all disciplines: cancer pain nurses (1365), palliative care nurses (1100), palliative care physicians (646), and palliative care pharmacists (238). Postgraduate education for physicians is performed via the special nationwide efforts of the Palliative care Emphasis program on symptom management and Assessment for Continuous medical Education (PEACE) project – a 2-day program adopting a trainer–trainee strategy. Over 30 000 physicians have participated in the PEACE program. A total of 1298 and 544 physicians have completed a trainer course for palliative medicine and psycho-oncology, respectively. Multiple structure and process evaluation, bereaved family surveys in palliative care units, and patient and family evaluation in the regional palliative care program indicate many improvements.

Summary

Palliative care in Japan has progressed rapidly, and the Cancer Control Act has played a very important role in developing palliative medicine. Challenges include developing a structure for palliative care in the community or regional palliative care programs, establishing a method to measure and improve the quality of palliative care at a national level, developing evidence-based medicine and policy making, and palliative care for the noncancerous population.

Keywords

delivery, Japan, palliative care

INTRODUCTION

This brief review summarizes the current status of palliative care in Japan, focusing on the structure and process development.

GENERAL HEALTH SYSTEM

The medical system in Japan is characterized by free access, fully covered by national insurance, and lack of general practitioner (GP) system [1–3]. Patients can freely access all medical institutions, including university hospitals and cancer centers. Japan achieved universal health coverage in 1961, and all Japanese are insured. Every patient pays 30% of all medical cost, except for elderly people and children, and when the monthly co-payment exceeds a threshold amount (ranging 80 000–110 000 yen per month according to their income),

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KEY POINTS

- Palliative care in Japan has rapidly progressed in this decade, and the Cancer Control Act has played a very important role.
- Palliative care units and palliative care teams are two main specialized palliative care services.
- To improve home care service, the government is trying to develop more efficient home care services through modifying laws, healthcare systems, and multiple educational and cooperative projects.
- The numbers of palliative care specialists are increasing across all disciplines.
- Postgraduate education for physicians is performed via the special nationwide efforts of the PEACE project, and the total number of physician participants is over 30 000.

the co-payment is decreased to 1%. Physicians working at clinics are basically specialists (not trained GP); typically, specialists such as surgeons and cardiologists work in hospitals for 10 or more years, and then they establish a clinic and see patients with common diseases in addition to patients with diseases they specialize in.

HISTORY OF PALLIATIVE MEDICINE

The beginning of systematic palliative care in modern medicine in Japan was developed at the Yodogawa Christian Hospital, Osaka, in 1973. This was organized care for terminally ill cancer patients, led by Dr Kashiwagi, one of the pioneer hospice physicians in Japan. In the late 1970s to 1980s, the hospice movement was introduced and, initially, Christian hospitals developed the hospice care program. The first palliative care unit or inpatient hospice, the Seirei Hospice, was established in 1981 in Shizuoka. Almost palliative care units in Japan belong to a general hospital and are called as palliative care units or inpatient hospice. For approximately 10 years, the number of palliative care units gradually increased and, in 1990, palliative care units became covered by national insurance. To exchange information with healthcare professionals working in palliative care units, the Japanese Hospice Palliative Care Association was established in the following year, and representatives from almost all palliative care units participated in the association. In the 1990s, palliative care was gradually disseminated to general hospital wards, outpatient services, and the community. Home care nursing services (1992), hospital palliative care teams (2002), clinics with a home hospice function (2006), and day care hospices (2006) became covered by national insurance. In 2007, the Cancer Control Act was legalized with a special focus on improving palliative care, chemotherapy, and radiation therapy. Under the national policy led by the Cancer Control Act, many projects started, including the Palliative care Emphasis program on symptom management and Assessment for Continuous medical Education (PEACE) program to ensure all physicians had an opportunity to receive a 2-day palliative care education. The Orange Balloon Project was developed to provide information to the general public about palliative care, and the Outreach Palliative care Trial of Integrated Regional Model (OPTIM) study was conducted in order to measure the effects of a regional palliative care program on a variety of outcomes. Palliative care is rapidly progressing in Japan, especially in the oncology field since the Cancer Control Act, and the evaluation and modification of these programs are ongoing.

CANCER CONTROL POLICY AND PALLIATIVE CARE

The Cancer Control Act has played a very important role in developing palliative medicine in oncology. The Cancer Control Act promotes a national network of hospitals treating cancer patients, consisting of a national cancer center, 47 prefectural cancer hospitals, and 397 designated cancer hospitals. All designated cancer hospitals should fulfill the requirement of structural and process evaluation for palliative care. A series of nationwide surveys has clarified the structural and process aspects of palliative care in a designated cancer hospital network, which has led to a marked improvement in care (Fig. 1).

PALLIATIVE CARE UNITS (INPATIENT HOSPICES)

Palliative care units (inpatient hospices) have been the mainstream of specialized palliative care services in Japan. The number of palliative care units is now 215 and they are involved in 8.4% of all cancer deaths (Fig. 2). Typical palliative care units belong to general hospitals and have an average of 20 inpatient beds to provide end-of-life care for cancer patients (Table 1). They should fulfill the criteria for certification: space, private rooms, availability of attending physicians, and rooms and equipment for families. They are designed to accommodate terminally ill patients so they can stay for several weeks or months in a home-like environment in their last period of life. Recently, however, the

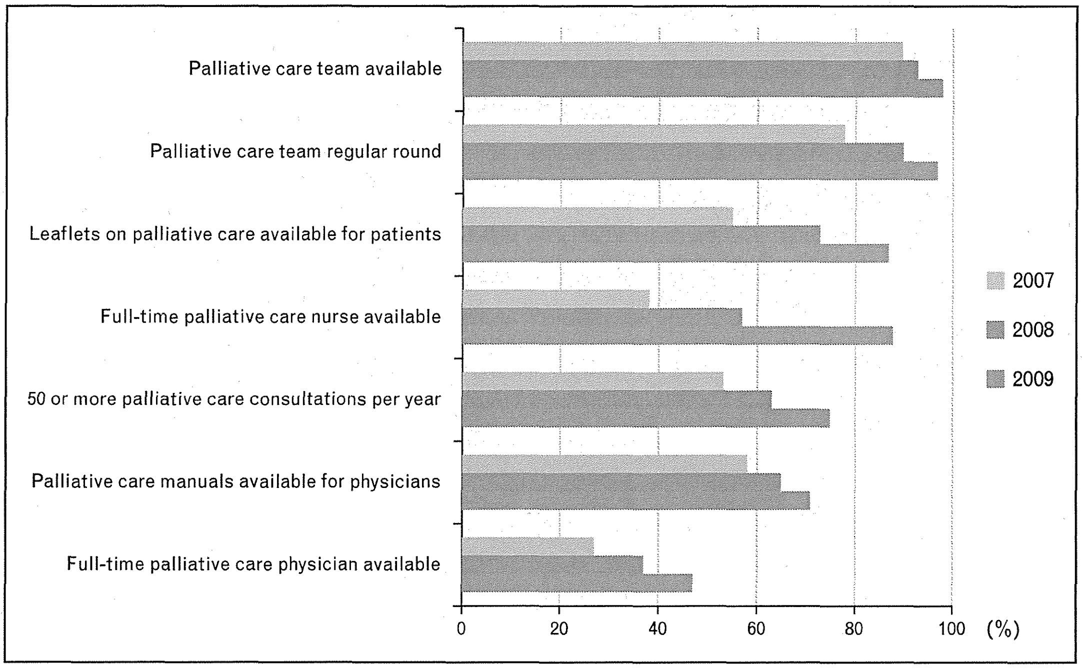

FIGURE 1. Improvement in palliative care in 500 cancer hospitals.

increased availability of home care services and increased use of anticancer treatment have resulted in a shorter duration of use of palliative care units. Most palliative care units provide outpatient services and half provide home care services as a decision of the belonging hospitals. One important achievement of the palliative care unit network is the Japan HOspice and Palliative Care Evaluation (J-HOPE) survey [4–6]. Through the nationwide palliative care unit network, a family bereavement survey involving more than 8000 participants was performed, and the results were fed back to all institutions every 3 years [4–6]. Clinical studies to obtain insights in the challenging areas were successfully completed.

HOSPITAL PALLIATIVE CARE TEAMS AND OUTPATIENT PALLIATIVE CARE SERVICES

In contrast to palliative care units where active cancer treatment is not usually performed, hospital palliative care teams and outpatient palliative care services provide specialized palliative care for any patient irrespective of their treatment status. Two nationwide surveys are available, and both indicated there are about 500 hospital palliative care teams in Japan [7]. The Cancer Control Act obliges all designated cancer hospitals to establish hospital palliative care teams and to obtain payment from national insurance. The hospital palliative care team should meet the following criteria: at least one full-time physician, at least one full-time nurse, and a

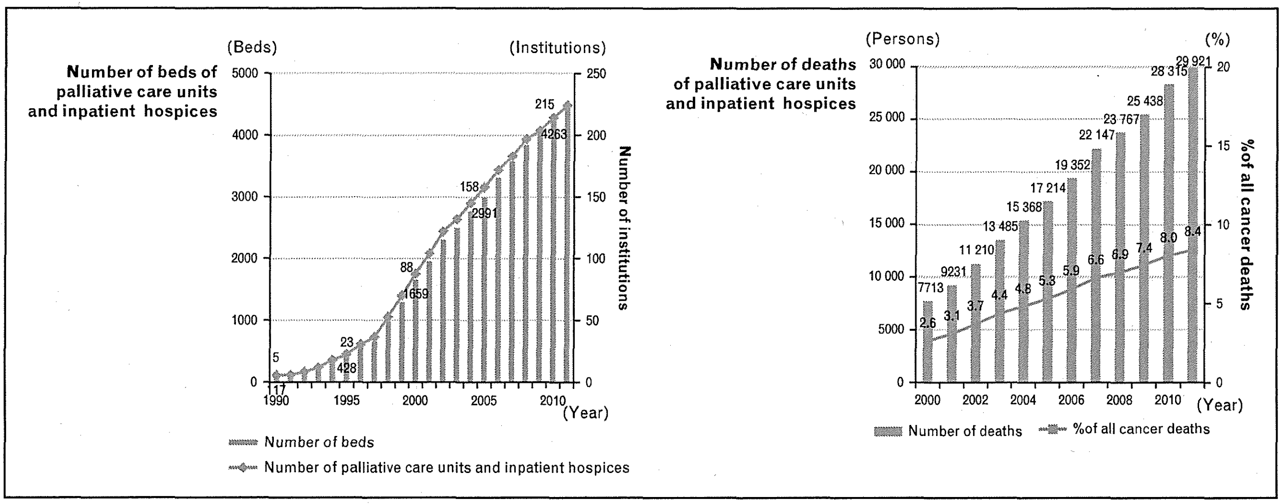

FIGURE 2. Development of palliative care units and inpatient hospices.

Table 1. Activity of palliative care units and inpatient hospices ($n = 195$)

		%	*n*
Types	Palliative care units	98	191
	Inpatient hospices	2	4
Number of admitted patients per year			
	Mean (25–75‰)		134 (100, 178)
	≤100	26	51
	101–200	57	113
	>201	18	36
Duration of admission			
	Median (25–75‰)		39 (31, 52)
	<30	23	47
	30–59	67	134
	≥60	10	19
Percentages of patients who died during the admission			
	Median (25–75‰)		89 (83, 95)
	<75	11	22
	75–89	41	81
	≥90	48	97
Availability of outpatient service		92	180
Availability of home care service		40	78

Data are from the report of Hospice Palliative Care Japan, 2009.

psychiatrist should be available. Many hospital palliative care teams have a full-time nurse, and half have a full-time physician (Table 2). The activity of palliative care teams shows a large variation among institutions with a median number of patients from 0 to over 1000 per year. On average, a hospital palliative care team sees about 100 patients per year, and reasons for referrals are pain in 70% of patients and other physical symptoms and psychological problems in 30–40% of patients.

HOME CARE SERVICES

Specialized home care services are one of the most undeveloped areas in Japan. Because of the lack of a GP system, there are three types of provider of home care services for terminally ill patients: physicians working at clinics, specialized home care clinics (focusing on home care rather than outpatient care), and home care divisions of hospitals. The number of community palliative care teams is small, with only 74 nationwide and they are usually working as part of hospital palliative care teams. Specialized palliative care nurses who can prescribe essential medications and perform death certification are still unavailable in Japan, such as McMillan nurses in the UK and the hospice care program in the USA. Very recently, the government has been trying to develop more efficient home care services through modifying laws, healthcare systems, and multiple educational and cooperative projects. One of them is establishing 'clinics with a home hospice function', in which high payment is assured if a physician provides a 24-h 7-day home care. Unfortunately, although the number of clinics with a home hospice function has rapidly increased over the last 5 years, the effect is limited and thus the home death rate of cancer patients has not markedly increased (Fig. 3).

ORGANIZATION OF REGIONAL PALLIATIVE CARE RESOURCES

Similar to home care services, there is also a wide variation in the organization of palliative care resources in the region. This is mainly because of free access and no GP system. In typical cases, patients receive anticancer treatment in cancer centers, university hospitals, or acute general hospitals. As the disease progresses, cancer and university hospitals typically refer patients to community hospitals (usually small and palliative care specialists unavailable), and some patients additionally receive general medical management from clinic physicians. In their terminal stage, a patient average of approximately 10% die at home, another 10% die in palliative care units or inpatient hospices, and the remaining a majority of patients die in hospitals. To measure the effect of a regional palliative care program and understand how to improve palliative

Table 2. Activity of palliative care teams and outpatient palliative care services

	Hospital palliative care teams		Outpatient service
	National survey (2010)	JSPM registry (2010)[a]	National survey (2010)
Number of services	541	371	401
Number of patients (/year)			
Mean (SD)	99 (104)	119	27
Median (ranges)	70	89 (0, 1532)	9
≤49	186 (34%)		
50–99	151 (28%)		
100–199	115 (21%)		
≥>=200	63 (12%)		
Full-time physicians	214 (40%)		
Full-time nurses	374 (69%)		
Reasons for referral[a]			
Pain		67%	
Other physical symptoms		37%	
Psychological problems		33%	
Care coordination		14%	
Family care		9.3%	
Ethics		2.5%	
Performance status on referral			
0, 1		24%	
2		24%	
3		29%	
4		22%	
Outcomes			
Discharge and follow-up as outpatient		38%	
Discharge to home care services		10%	
Discharge to palliative care units		10%	
Discharge to other institutions		8.1%	
Death		35%	
Ending follow-up		16%	

JSPM, Japanese Society of Palliative Medicine.

[a] For all 22 101 consultations. Data are available from 192 palliative care teams. Some data do not add up 100% because of missing data.

care at a regional level, the OPTIM study was completed [8••,9]. The main results are promising that comprehensive regional palliative care program has improved length of stay at home, patient-perceived and family-perceived quality of care and quality of life, and physician-reported and nurse-reported difficulties [8••,9]. A process analyses identified improving networking among multiple healthcare professionals as a core element of successful palliative care program in the region.

SPECIALTY AND NATIONAL ASSOCIATIONS

There are certification systems for palliative care physicians, nurses, and pharmacists (Fig. 4). The numbers of each specialist have all increased during this 5-year period. For certification, physicians should have at least 2-year clinical activity in the palliative care specialized services, and accomplishment of academic and education activity.

Regarding the nationwide organization, Hospice Palliative Care Japan was originally an association of palliative care units and inpatient hospices, and almost all certified palliative care units participated. In addition, the Japanese Society of Palliative Medicine is the most noteworthy academic association for palliative care, to which more than 4000 physicians are members. Regarding home care services, there are again various associations with different backgrounds and policies.

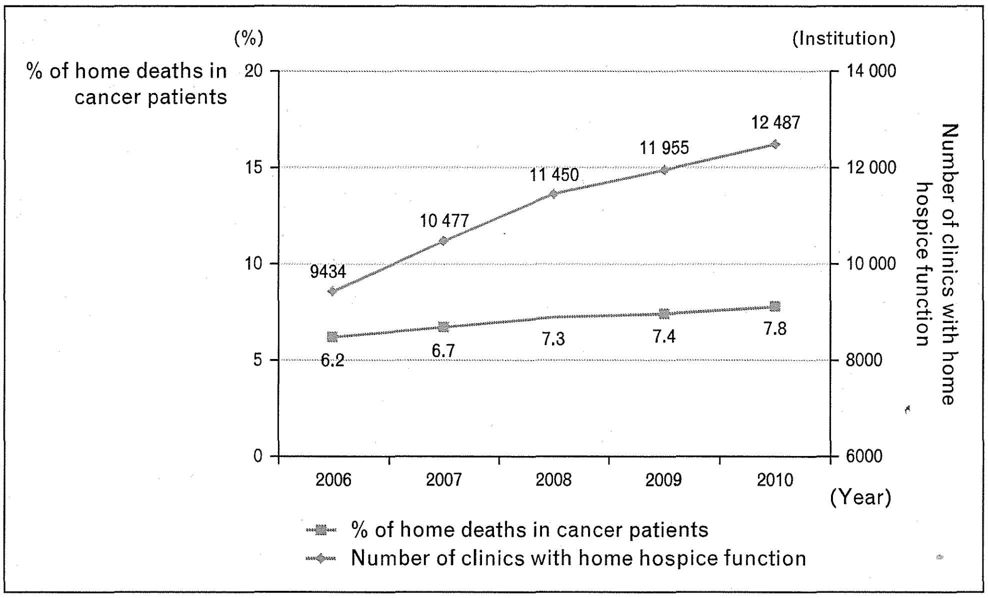

FIGURE 3. Trends in home deaths.

UNDERGRADUATE, POSTGRADUATE, AND CONTINUING MEDICAL EDUCATION

A 2009 nationwide survey demonstrated that many medical universities provide undergraduate education (Table 3), although bedside teaching and palliative care specialists are not frequently involved. This is because many medical universities still have no faculties specialized in palliative medicine.

Postgraduate and continuing medical education is performed via the special nationwide efforts of the PEACE project (Fig. 5). This 2-day interactive education program adopts a trainer–trainee strategy using original manuals, and the

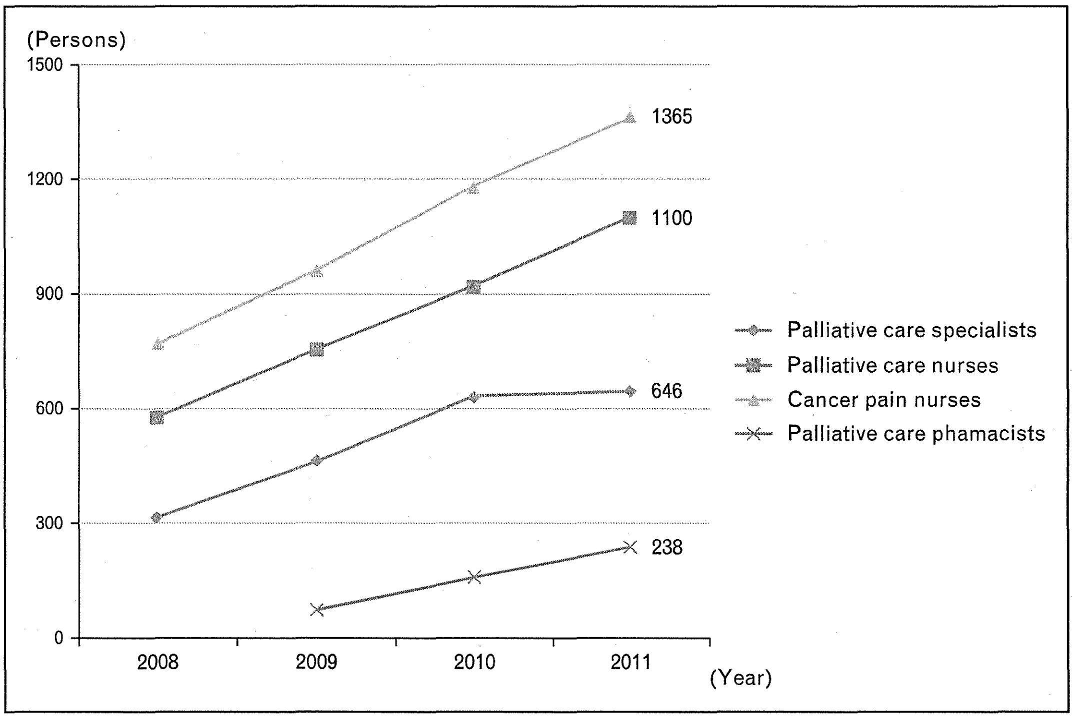

FIGURE 4. Certified specialties in palliative care.

Table 3. Undergraduate education (*n* = 60, 2009)

	n	%
Educational opportunity in palliative medicine	65	99
Mean school hours per 6 years (SD)	5.5 (3.9)	
Faculty responsible for education[a]		
Anesthesiology	45	68
Internal medicine	20	56
Surgery	17	30
Psychiatry	14	26
Pediatrics	3	21
Gynecology	1	4.5
Contents[a]		
Pain control	62	94
Symptom control	52	79
Informed consent	35	53
Team collaboration	34	52
Hospice	32	49
Giving bad news	29	44
Family support	29	44
Methods[a]		
Lecture	65	99
Case discussion	17	26
Group work	12	18
Role play	11	17
Bedside teaching	5	7.6

[a] Duplicated answers.

total number of physicians who have participated in the PEACE program is over 30 000. A total of 1298 and 544 physicians have completed a trainer course for palliative medicine and psycho-oncology, respectively.

FUNDING AND POLICY SUPPORT

In principle, all activities are funded by the national insurance and national project. Some private funding has provided small grants for research or trial activities. Each palliative care service usually has volunteers to provide broader services for patients and families.

ACCESS TO PALLIATIVE CARE ACROSS THE COUNTRY

Figure 6 details the number of palliative care units/inpatient hospices and clinics with home hospice functions in regions throughout Japan. Recently, the disparities among regions, that is, among prefectures and among towns/cities within a prefecture, are becoming wider in Japan, not only in palliative care, but also in general areas. Resolving the discrepancies among the regions in one country is regarded as one of the high-priority issues.

CONCLUSION

Palliative care in Japan is being rapidly disseminated, especially since the Cancer Control Act. Multiple structure and process evaluation, bereaved family surveys in palliative care units, and patient and family evaluation in the regional palliative care program indicate many improvements observed in this period.

The next challenges include developing a structure for palliative care in the community or regional palliative care programs, establishing a method to measure and improve the quality of palliative care at a national level, developing evidence-based

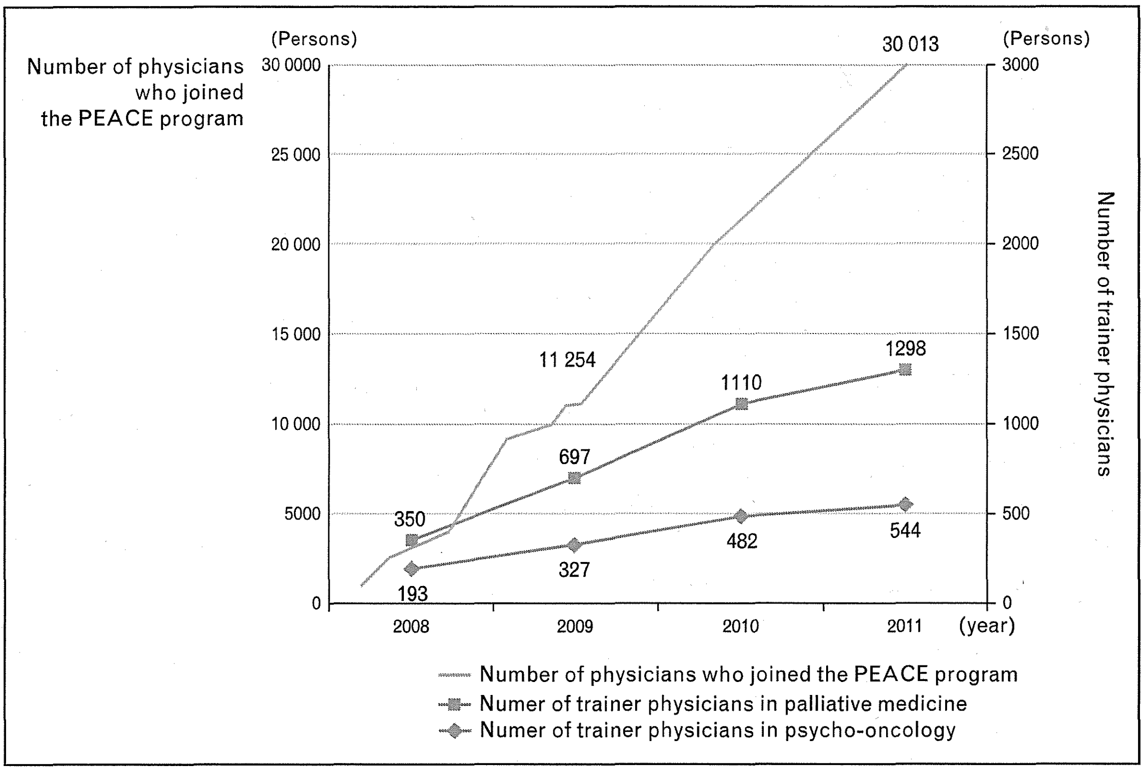

FIGURE 5. Continuing education in palliative medicine.

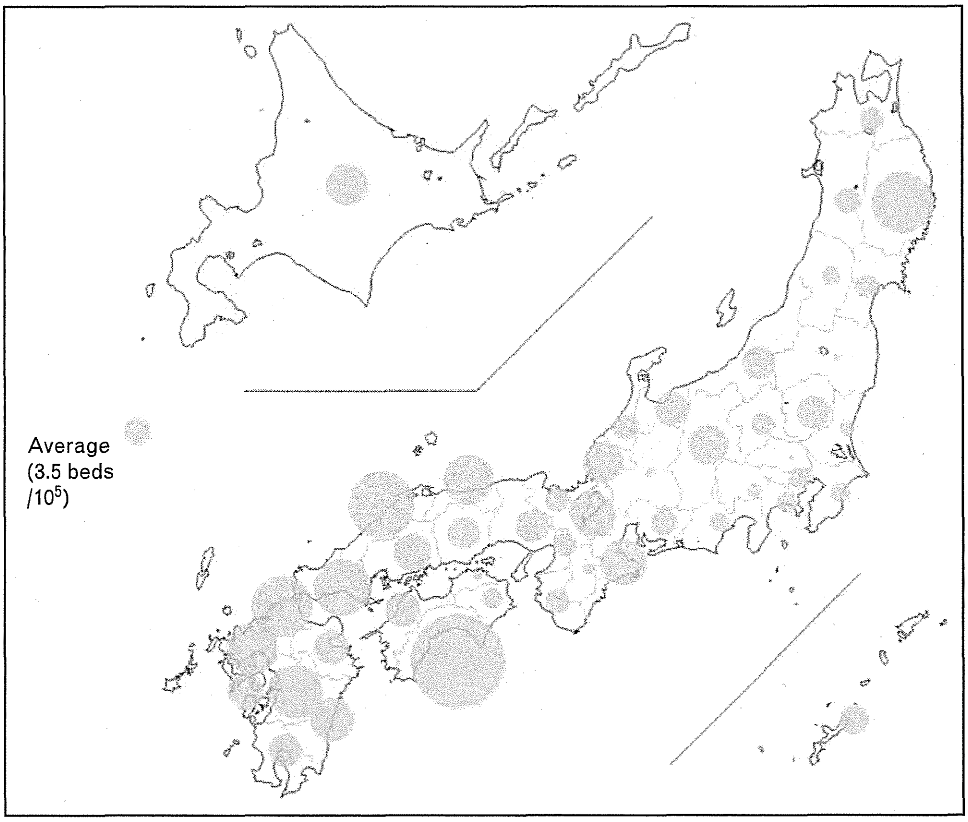

FIGURE 6. Availability of palliative care units and inpatient hospices among prefectures.

medicine and policy making, and palliative care for the noncancerous population.

Acknowledgements

None.

Conflicts of interest

The authors have no conflicts of interests for completing this study.

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■ of special interest
■■ of outstanding interest

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Usefulness of Palliative Prognostic Index for Patient With Advanced Cancer in Home Care Setting

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Abstract

Aims: This study aimed to clarify the accuracy of the Palliative Prognostic Index (PPI) for advanced cancer patients in home care settings. **Method**: The study included 65 advanced cancer patients who received home visiting services between April 2007 and June 2009, and who died at home or in the hospital. Using the medical records from initial home visits, we retrospectively calculated PPI scores along with sensitivity and specificity. **Results**: For 3- and 6-week survival, prognostic prediction demonstrated respective sensitivities of 55% and 63%, and specificities of 79% and 77%. **Conclusion**: The sensitivity of the PPI for advanced cancer patients in home care settings was lower than reported for those in palliative care units. Development of prognostic tools suitable for home care settings is needed.

Keywords

patient with advanced cancer, home care setting, prognostic prediction, palliative prognostic index, retrospective study, palliative care, home visiting service

Introduction

Prognostic prediction is necessary for patients with advanced cancer, especially those in the home care setting, in order to determine the treatment goals, the content and location of provided care, and indications for hospital referral.[1] An appropriate prognostic prediction tool is therefore essential not only for patients and their families but also for the health care professionals who support their decision making.[2] Previous studies have examined several prognostic prediction tools for patients with cancer, for example, the Palliative Prognostic Index (PPI),[3] Palliative Performance Scale (PPS),[3] Cancer Prognostic Scale,[3] Palliative Prognostic Scale,[4] Japan Palliative Oncology Study–Prognostic Index,[5] and Prognosis in Palliative Care Study model,[6] and each was properly validated. These tools are intended for use in assessing inpatient and ambulatory patients, and the appropriateness of their application to patients with advanced cancer in the home care setting is uncertain. Only Stone et al prospectively studied the usefulness of the PPI in 194 patients with cancer, in a variety of settings: 73.7% of patients were hospitalized, 25.8% were in the home care setting, and 0.5% were in hospice.[7]

The PPI was defined based on performance status assessment using the PPS, oral intake, and the presence or absence of dyspnea, edema, and delirium (Table 1). The PPI does not require blood tests or radiological evaluation and would therefore be very useful for patients with cancer in the home care setting as compared to other validated prognostic prediction tools. Each PPI component is assigned an individual score, and these are added to derive the overall score. The final PPI score classifies patients into 1 of 3 groups: those with survival predicted to be shorter than 3 weeks (PPI ≥ 6), shorter than 6 weeks (PPI ≥ 4), or more than 6 weeks (PPI < 4).

The PPI was developed and successfully validated for patients with cancer in palliative care units by Morita et al, in Japan,[8] but the usefulness of the PPI for patients with advanced cancer in the home care setting has not been established. The aims of this study were thus to clarify the sensitivity and specificity of the PPI for this particular population.

Methods

Our study population included all patients with advanced cancer who received home visiting services regularly from Yamato

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Table 1. Palliative Prognostic Index.[a]

	Score
Palliative Performance Scale	
10%–20%	4
30%–50%	2.5
60%	0
Oral intake	
Severely reduced	2.5
Moderately reduced	1
Normal	0
Edema	
Present	1
Absent	0
Dyspnea at rest	
Present	3.5
Absent	0
Delirium	
Present	4
Absent	0

[a] Overall Palliative Prognostic Index (PPI) score was calculated by adding each component score.

Table 2. Patient Background Information (n = 65).

	n (%)
Gender	
Male	41 (63.0)
Female	24 (37.0)
Mean age (years)[a]	73.5 (35–96)
Mean survival duration (days)[a]	55.0 (1–344)
Age distribution	
35–49	2 (3.1)
50–59	7 (10.8)
60–69	11 (16.9)
70–79	25 (38.4)
80–89	14 (21.5)
90 and above	6 (9.2)
Primary cancer site	
Stomach/esophagus	12 (18.4)
Lung	11 (16.9)
Colon/rectum/anus	11 (16.9)
Pancreas	7 (10.8)
Prostate	4 (6.2)
Kidney/bladder	4 (6.2)
Liver	3 (4.6)
Breast	3 (4.6)
Biliary system	3 (4.6)
Unknown	3 (4.6)
Others	4 (6.2)
Survival duration	
$0 \leq$ week < 1	11 (16.9)
$1 \leq$ week < 2	8 (12.3)
$2 \leq$ week < 3	3 (4.6)
$3 \leq$ week < 4	7 (10.8)
$4 \leq$ week < 5	2 (3.0)
$5 \leq$ week < 6	4 (6.2)
$6 \leq$ week < 7	7 (10.8)
$7 \leq$ week < 8	0 (0.0)
$8 \leq$ week < 9	3 (4.6)
$9 \leq$ week	20 (30.7)

[a] Mean (range).

Table 3. Distribution of PPI Scores (n = 65).

Score	n (%)
0	3 (4.6)
$1 \leq$ PPI ≤ 2	4 (6.2)
PPI = 2.5	6 (9.2)
$3.5 \leq$ PPI < 4	23 (35.4)
$4 \leq$ PPI < 6	8 (12.3)
$6 \leq$ PPI ≤ 8	13 (20.0)
$8.5 \leq$ PPI ≤ 10	3 (4.6)
$10.5 \leq$ PPI ≤ 12	5 (7.7)
PPI ≥ 12.5	0 (0.0)

Clinic between April 2007 and June 2009 and who died at home or in the hospital. Yamato Clinic provides ambulatory care and home-visiting services for community residents with 3 doctors specialized in family medicine and palliative care. We assessed the components of the PPI during the first home visit, as is our usual practice. In June 2010, one researcher (J.H.) then used medical records from patients' first home visits to determine actual survival time as well as each component of the PPI: PPS score, oral intake, and the presence or absence of dyspnea, edema, and delirium. The PPI score was calculated for each patient, along with overall sensitivity and specificity. Survival predictions were defined as mentioned above: less than 3 weeks for PPI ≥ 6 and less than 6 weeks for PPI ≥ 4. This study was conducted in conformity with the Declaration of Helsinki and was carried out with special regard for the protection of individual data.

Results

Sixty-five patients (41 males) were included in this study. Table 2 shows patient background information in detail. The mean patient age was 73.5 years, with 25 patients (38.4%) in their 70s and 14 patients (21.5%) in their 80s. The primary cancer site was the stomach/esophagus in 12 (18.4%) patients, the lung in 11 (16.9%) patients, and the colon/rectum/anus in 11 (16.9%) patients. The mean survival time after the first home visit was 55 days. Survival time was shorter than 3 weeks in 22 patients (33.8%) and shorter than 6 weeks in 35 patients (53.8%; Table 2).

Twenty-one (32.3%) patients had PPI scores ≥ 6, while 29 (44.6%) had PPI scores ≥ 4 (Table 3). The distribution of performance status and clinical symptoms is indicated in Table 4. Twelve patients with PPI scores ≥ 6 survived for less than 3 weeks, while 22 patients with PPI scores ≥ 4 survived for less than 6 weeks (Tables 5 and 6). Three-week survival was predicted with a sensitivity of 55% (95% confidence interval [CI]: 33-75), a specificity of 79% (95% CI: 66-91), a positive predictive value of 57%, and a negative predictive value of 77%. Six-week survival was predicted with a sensitivity of 63% (95% CI: 46-78), a specificity of 77% (95% CI: 61-91), a positive predictive value of 77%, and a negative predictive value of 64% (Table 7).

Table 4. Patient Performance Status and Symptoms (n = 65).

	n (%)
Palliative Performance Scale	
10%–20%	6 (9.2)
30%–50%	51 (78.5)
60%	8 (12.3)
Oral intake	
Severely reduced	11 (16.9)
Moderately reduced	36 (60)
Normal	15 (23.1)
Edema	
Present	22 (33.8)
Absent	43 (66.2)
Dyspnea at rest	
Present	14 (21.5)
Absent	51 (78.5)
Delirium	
Present	6 (9.2)
Absent	59 (90.8)

Table 5. PPI Score and 3-Week Survival.

	<3-Week survival	≥3-Week survival	Total
PPI ≥ 6	12[a]	9	21
PPI < 6	10	34	44
Total	22	43	65

Abbreviation: PPI, Palliative Prognostic Index.
[a] Number of patients surviving <3 weeks with PPI scores >6.

Table 6. PPI Score and 6-Week Survival.

	<6-Week survival	≥6-Week survival	Total
PPI ≥ 4	22[a]	7	29
PPI < 4	13	23	36
Total	35	30	65

Abbreviation: PPI, Palliative Prognostic Index.
[a] Number of patients surviving <6 weeks with PPI scores >4.

Table 7. Accuracy of the PPI for Advanced Patients With Cancer in the Home Care Setting.

	<3 Weeks (%)	<6 Weeks (%)
Sensitivity	54.5	62.8
Specificity	79.0	76.6
Positive predictive value	57.1	75.8
Negative predictive value	77.2	63.8

Abbreviation: PPI, Palliative Prognostic Index.

Discussion

The most important finding of this study was that the sensitivity of the PPI for patients with advanced cancer in the home care setting was lower than for patients with advanced cancer in palliative care units as previously reported.[8] To the best of our knowledge, this study is the first to clarify the usefulness of the PPI for patients with advanced cancer in the home care setting. It demonstrated the sensitivity and specificity of the PPI as a prognostic prediction tool for 3- and 6-week survival. Our findings suggest limitations of the PPI in this population and setting.

One possible reason for the discrepancy in PPI sensitivity between patients with advanced cancer in palliative care units and those in the home care setting is the differential prevalence of delirium, which is the most heavily weighted score in the PPI scoring system. In our study, the prevalence of delirium in the home care setting was 9.2%, whereas Morita et al[8] reported a prevalence of 23% in the hospice setting. This discrepancy suggests 2 possibilities: (1) The prevalence of delirium in the hospice setting may in fact be higher than that in the home care setting[9,10] or (2) we might have underestimated the prevalence of delirium because we diagnosed it only by retrospective chart review.

In addition to the results above, we found the specificity of PPI for patients with advanced cancer in the home care setting to be nearly 80% in our study for both 3- and 6-week survival. These results suggest that the PPI might not be useful as a screening tool for poor prognosis in the home care setting because of its low sensitivity but might be useful with PPI scores <4, predicting survival longer than 6 weeks, and with PPI scores <6, predicting survival longer than 3 weeks.

This study has several limitations. First, it was carried out in one institution and the study population was small, restricting the generalizability of our results. Second, one researcher (J.H.) was aware of each patient's prognosis before performing the medical chart review, making it impossible to confirm the absence of bias during data collection. However, because the PPI score is defined based on objective indicators, this limitation most likely had only a relatively small effect on the study outcome. Third, since this study was carried out retrospectively, we cannot be certain that patients' symptoms and signs were recorded correctly at the first home visit.

In conclusion, this study showed that the PPI had a lower sensitivity for patients with advanced cancer in the home care setting than for those in palliative care units. Further research is needed to develop more accurate prognostic prediction tools for use in the home care setting.

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Declaration of Conflicting Interests

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