

[ ORIGINAL ARTICLE ]

## Benefits of a Nationwide Palliative Care Education Program on Lung Cancer Physicians

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### Abstract:

**Objective** The early integration of palliative care into standard cancer treatment has become a global standard. The Palliative care Emphasis program on symptom management and Assessment for Continuous medical Education (PEACE) has been conducted in Japan, and previous studies have reported that the PEACE workshop was able to improve various palliative care skills of participants. However, whether or not the effects of the program are long-lasting and if the program consequently changed physicians' practice with regard to lung cancer patients have been unclear.

**Methods** Web-based surveys, including the palliative care knowledge test (PEACE-Q), the Palliative Care self-reported Practice Scale (PCPS), and the Palliative Care Difficulties Scale (PCDS), were conducted among lung cancer physicians in Japan. The differences in the survey results between participants and non-participants of the PEACE workshop were examined.

**Results** Among 923 respondents (455 respiratory physicians, 345 pulmonary surgeons, and 123 others), 519 had participated in the PEACE workshop. The total PEACE-Q score was significantly higher in the PEACE workshop participants than in non-participants (28.0 versus 24.5,  $p < 0.0001$ ). The score was significantly higher in respiratory physicians than in pulmonary surgeons (27.4 versus 25.5). The total PCPS and PCDS scores were also significantly better in workshop participants than in non-participants (71.8 versus 67.1 and 34.3 versus 36.9, respectively), although some domains of PCDS were similar between the groups.

**Conclusion** The PEACE program improved the knowledge and practices with regard to palliative care and resolved difficulties associated therewith among lung cancer physicians. In regions where palliative care specialists are insufficient, such educational programs may be effective.

**Key words:** palliative care, education, lung cancer

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### Introduction

Palliative care has become an essential part of cancer treatment (1). A pivotal prospective study showed that the early integration of palliative care into standard cancer treatment improved both the quality of life and the overall survival of patients with newly-diagnosed metastatic non-small

cell lung cancer (NSCLC), and the American Society of Clinical Oncology has therefore recommended it in their clinical guideline (2, 3). However, the development of the palliative care field varies from country to country. In the United States, the number of authorized palliative care specialists was 7,054 as of December 2015 (4), while it was only 178 in Japan as of September 2017 (5). Thus, the Japanese Ministry of Health, Labour, and Welfare has encour-

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aged the development of an educational program for attending physicians (non-palliative care specialists) who treat cancer patients under the “Cancer Control Act” established in 2006, and the Japanese Society for Palliative Medicine has consequently conducted the Palliative care Emphasis program on symptom management and Assessment for Continuous medical Education (PEACE) since 2008 (6).

The main component of PEACE is a two-day workshop that provides education on the general principles of palliative care, management of pain and other major symptoms, communication skills, and regional collaboration in patient care (Supplementary material 1) (7, 8). Over 1,000 workshops have been held all over Japan since 2008, and 94,739 physicians have participated in the education program as of March 2017. Previous reports have shown that the knowledge and practices with regard to palliative care and resolved difficulties associated therewith significantly improved among participants in the workshop through the use of validated tools (8-11).

However, in those previous studies, the effect of the educational program was only evaluated two months after the workshop. As such, whether or not the effects of the program were long-lasting and if they resulted in an actual difference in the physicians’ palliative care practice compared to non-participants have been unclear. We therefore conducted this web-based survey on palliative care among lung cancer physicians who are members of the Japanese Lung Cancer Society.

## Materials and Methods

This study was announced by e-mail in February 2015 to medical doctors who were members of the Japan Lung Cancer Society (JLCS) and whose e-mail addresses were recorded at the society’s office. The web-based survey using Survey Monkey included a questionnaire about the background characteristics of the physician (age, gender, specialty, clinical experience, etc.), the palliative care knowledge test (PEACE-Q), the Palliative Care self-reported Practice Scale (PCPS), and the Palliative Care Difficulties Scale (PCDS), which were similar to previous reports (10).

Knowledge was measured using the PEACE-Q, which has 33 items across the following 9 domains: 1) philosophy of palliative care, 2) cancer pain, 3) side effects of opioids, 4) dyspnea, 5) nausea and vomiting, 6) psychological distress, 7) delirium, 8) communication, and 9) community-based palliative care. The PEACE-Q scores range from 0 to 33, with higher scores indicating higher levels of knowledge (10).

Practices were measured using the PCPS, which has 18 items across the following 6 domains: 1) pain, 2) dyspnea, 3) delirium, 4) dying-phase care, 5) communication, and 6) patient- and family-centered care. Each item is evaluated using a Likert-type scale from 1 (not at all) to 5 (always). The scores on the PCPS range from 18 to 90, with higher scores indicating higher levels of performance of recommended

practices (11).

Difficulties were measured using the PCDS, which has 15 items across the following 5 domains: 1) alleviation of symptoms, 2) expert support, 3) communication in multidisciplinary teams, 4) communication with the patient and family, and 5) community coordination. Each item is evaluated by agreement with statements on a Likert-type scale from 1 (never) to 5 (very much). The scores on the PCDS range from 15 to 75, with higher scores indicating higher levels of perceived difficulties in providing palliative care (11).

The ethical and scientific validity of this survey was approved by the institutional review board of Tohoku University Hospital. Consent to participate in the survey was indicated by completion and return of the questionnaire, with no reminder or reward offered. Two-tailed t-tests were used to evaluate differences in the physicians’ knowledge, practice, and difficulties between PEACE workshop participants and non-participants. Statistical analyses were performed using the statistical software program JMP (JMP 10.0.2; SAS Institute Japan, Tokyo, Japan). The significance level was set at  $p < 0.05$  (two-tailed).

## Results

A total of 5,322 announcements were successfully sent by e-mail to the members of JLCS, and 923 members completed the web-based survey (all questions were answered). Among them, 519 had already participated in the PEACE workshop. Table 1 summarizes the background characteristics of the 923 members. Workshop participation rates differed markedly by specialty, and participants were on average significantly younger than non-participants.

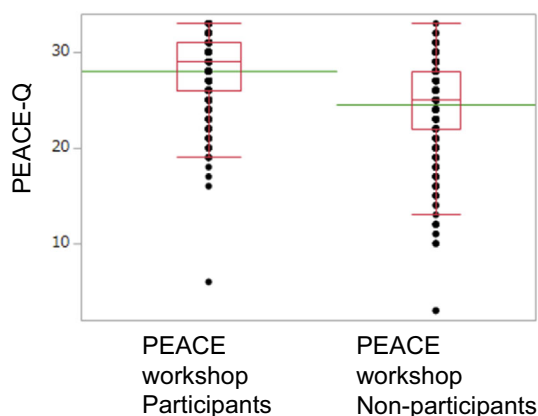
With regard to the knowledge of palliative care as evaluated by the PEACE-Q, workshop participants achieved significantly higher scores than non-participants ( $28.0 \pm 3.4$  versus  $24.5 \pm 4.9$ ;  $p < 0.0001$ ) (Figure). Significant differences between workshop participants and non-participants were observed in all domains of the PEACE-Q (Table 2). The mean PEACE-Q score was significantly higher in medical oncologists and respiratory physicians than in pulmonary surgeons (28.8, 27.4, and 25.5, respectively), which was associated with the participant rates in each group (Table 1). The mean PEACE-Q score was inversely proportional to the physicians’ clinical experience ( $p = 0.0001$ ), and this was also correlated with low participant rates among older physicians (Supplementary material 2).

Significant differences in total PCPS scores and all domains of the PCPS were also observed between workshop participants and non-participants (Table 3). With regard to the PCDS, highly significant differences were also observed in the total scores and the domain “Alleviation of symptoms” between the two groups, while there was no significant difference in two of the five domains (“Communication in multidisciplinary teams” and “Community coordination”) (Table 4).

**Table 1. Background Characteristics of Subjects.**

|  | PEACE participants<br>(n=519)<br>n (%) | Non-participants<br>(n=404)<br>n (%) | p value |
|--|--|--------------------------------------|---------|
| Age, mean±SE                                     | 44.9±0.40                              | 47.0±0.46                            | 0.0004  |
| Gender   |  |                                      |         |
| Male   | 448 (86.3)                             | 362 (89.6)                           | 0.1310  |
| Female   | 71 (13.7)                              | 42 (10.4)                            |         |
| Specialty  |  |                                      |         |
| Respiratory Physician                            | 271 (59.6)                             | 184 (40.4)                           | <0.0001 |
| Pulmonary Surgeon                                | 164 (47.5)                             | 181 (52.5)                           |         |
| Medical Oncologist                               | 30 (85.7)                              | 5 (14.3)                             |         |
| Other*   | 54 (61.4)                              | 34 (38.6)                            |         |
| Institution                                      |  |                                      |         |
| Designated Cancer Hospitals                      | 368 (70.9)                             | 269 (66.6)                           | 0.1669  |
| Hospital over 200 beds                           | 113 (21.8)                             | 87 (21.5)                            |         |
| Hospital under 199 beds                          | 26 (5.0)                               | 29 (7.2)                             |         |
| Other  | 12 (2.3)                               | 19 (4.7)                             |         |
| Years of clinical experiences, mean±SE           | 19.2±0.39                              | 21.4±0.44                            | 0.0002  |
| Number of cared cancer patients in the past year |  |                                      |         |
| 0-9  | 1 (0.2)                                | 5 (1.2)                              | 0.1386  |
| 10-99  | 94 (18.1)                              | 69 (17.1)                            |         |
| 100-   | 424 (81.7)                             | 330 (81.7)                           |         |

\*including radiologist, general physician, pathologist



**Figure.** The PEACE-Q score of the PEACE workshop participants and non-participants. Long bars indicate the mean value. Square and central bars indicate the quartile and median of the score, respectively, and the upper and lower bars indicate the 97.5% and 2.5% quantiles of the score, respectively.

## Discussion

Metastatic NSCLC, the leading cause of cancer death worldwide, results in a high burden of symptoms and a poor quality of life; the estimated prognosis after the diagnosis is less than one year (12, 13). Following Temel's study, which demonstrated many favorable effects of early palliative care on metastatic NSCLC patients (2), the JLCS formed a specialized committee that encouraged members of the society to offer quality palliative care to their patients. The committee also facilitated the participation of members in the

PEACE workshop to encourage members to improve their palliative care skills by learning skills for symptom management, communication skills, and even strategies for coordinating with the community and home healthcare industries. However, some members were neutral towards palliative care. Therefore, we wanted to substantiate the effects of the PEACE program and highlight its importance.

To our knowledge, this is the first study to evaluate various palliative care skills in lung cancer physicians, and our results clearly demonstrates that physicians who have received education on primary palliative care through the workshop are more knowledgeable, perform better palliative care practice, and have fewer difficulties in palliative care than those who have not received such education. Since it was impossible for most of the responders to participate in the workshop in the few months prior to this web-based survey, the results suggest that the above effects were sustained at least several months after participating in the workshop. Although several countries have also established nationwide palliative care education programs, only a few studies have examined the sustainability of the outcomes (14-16). This sustainability might result from a well-designed workshop program that can facilitate the long-term retention of the knowledge gained and thereby be able to change practices and attitudes using role-play and case studies (Supplementary material 2) (9).

Of note, some domains of the PCDS ("Communication in multidisciplinary teams" and "Community coordination") did not show any improvement after participating in the workshop. This finding is similar to that of a previous study, which suggested that these domains are not influenced by

**Table 2. Difference in the PEACE-Q for Each Domain.**

|                                 | PEACE participants (n=519) |                | Non-participants (n=404) |                | p value |
|---------------------------------|----------------------------|----------------|--------------------------|----------------|---------|
|                                 | Mean                       | Standard error | Mean                     | Standard error |         |
| Philosophy of palliative care   | 2.784                      | 0.026          | 2.527                    | 0.029          | <0.0001 |
| Cancer pain                     | 7.728                      | 0.065          | 6.666                    | 0.074          | <0.0001 |
| Side effects of opioids         | 2.434                      | 0.030          | 2.181                    | 0.034          | <0.0001 |
| Dyspnea                         | 2.536                      | 0.028          | 2.203                    | 0.032          | <0.0001 |
| Nausea and vomiting             | 2.634                      | 0.034          | 2.228                    | 0.038          | <0.0001 |
| Psychological distress          | 2.696                      | 0.030          | 2.468                    | 0.035          | <0.0001 |
| Delirium                        | 2.383                      | 0.035          | 2.052                    | 0.040          | <0.0001 |
| Communication                   | 2.696                      | 0.027          | 2.418                    | 0.030          | <0.0001 |
| Community-based palliative care | 2.158                      | 0.042          | 1.792                    | 0.048          | <0.0001 |

**Table 3. Difference in the Palliative Care Self-reported Practice Scale (Total Score and Each Domain).**

|                                   | PEACE participants (n=519) |                | Non-participants (n=404) |                | p value |
|-----------------------------------|----------------------------|----------------|--------------------------|----------------|---------|
|                                   | Mean                       | Standard error | Mean                     | Standard error |         |
| Total score                       | 71.796                     | 0.483          | 67.057                   | 0.579          | <0.0001 |
| By domain                         |                            |                |                          |                |         |
| Pain                              | 12.846                     | 0.088          | 11.995                   | 0.099          | <0.0001 |
| Dyspnea                           | 11.990                     | 0.103          | 11.188                   | 0.116          | <0.0001 |
| Delirium                          | 9.973                      | 0.126          | 8.842                    | 0.143          | <0.0001 |
| Dying-phase care                  | 11.798                     | 0.112          | 10.960                   | 0.127          | <0.0001 |
| Communication                     | 12.707                     | 0.084          | 12.176                   | 0.095          | <0.0001 |
| Patient- and family-centered care | 12.482                     | 0.092          | 11.896                   | 0.105          | <0.0001 |

**Table 4. Difference in the Palliative Care Difficulties Scale (Total Score and Each Domain).**

|   | PEACE participants (n=519) |                | Non-participants (n=404) |                | p value |
|---|----------------------------|----------------|--------------------------|----------------|---------|
|   | Mean                       | Standard error | Mean                     | Standard error |         |
| Total score                               | 34.341                     | 0.425          | 36.876                   | 0.510          | 0.0001  |
| By domain                                 |                            |                |                          |                |         |
| Alleviation of symptom                    | 6.952                      | 0.108          | 8.109                    | 0.123          | <0.0001 |
| Expert support                            | 6.131                      | 0.140          | 6.577                    | 0.158          | 0.0352  |
| Communication in multidisciplinary teams  | 6.613                      | 0.118          | 6.807                    | 0.134          | 0.2784  |
| Communication with the patient and family | 7.256                      | 0.113          | 7.624                    | 0.128          | 0.0315  |
| Community coordination                    | 7.389                      | 0.136          | 7.760                    | 0.154          | 0.0711  |

the skill of the attending physician, but instead by the status of each multidisciplinary team or the home healthcare system at each institute and region (17). To improve these areas, other approaches, such as creating opportunities to meet the community palliative care team or holding multidisciplinary conferences to develop collaborative relationships among healthcare workers in the region, may be effective (18).

This study has several limitations, the first of which is the potential for response bias. The survey respondents may have had an acute sense of palliative care, as even the non-participants achieved superior results in the PEACE-Q, PCPS, and PCDS compared with the results reported at the baseline (before participating the workshop) in a previous study (25, 67.1, and 36.9 versus 21.7, 62.1, and 44.4, re-

spectively) (9). However, even given this potentially biased population, workshop participants appear to have demonstrated significantly better results than the baseline non-participants. Second, whether or not the improved results of self-reported measures by physicians reflect the quality of palliative care in actual practice remains unclear. To evaluate the true outcome of primary palliative care education, a study to assess the quality of life of patients and their families using patient-related outcomes will be necessary. Third, since this survey was conducted by the palliative care committee of the JLCS, only the members of the JLCS were examined. However, the importance of palliative care should be expressed to all physicians who treat patients with cancer or other life-threatening non-cancer disease through respective medical societies.

In conclusion, the PEACE program improved the knowledge and practices with regard to palliative care and resolved difficulties associated therewith among lung cancer physicians in Japan. In regions where palliative care specialists are insufficient, such educational programs may be effective.

**The authors state that they have no Conflict of Interest (COI).**

## References

- World Health Organization. Cancer Control Knowledge into Action: WHO Guide for Effective Programs in Palliative Care. World Health Organization, Geneva, 2007.
- Temel JS, Greer JA, Muzikansky A, et al. Early palliative care for patients with metastatic non-small-cell lung cancer. *N Engl J Med* **363**: 733-742, 2010.
- Ferrell BR, Temel JS, Temin S, et al. Integration of palliative care into standard oncology care: American Society of Clinical Oncology Clinical Practice Guideline Update. *J Clin Oncol* **35**: 96-112, 2017.
- American Academy of Hospice and Palliative Medicine. [Internet]. [cited 2017 sep. 23]. Available from: <http://aahpm.org/hpm/number-certified>
- Japanese Society for Palliative Medicine. [Internet]. [cited 2017 sep. 23]. Available from: <https://www.jspm.ne.jp/ninte/pdf/senmon1170401.pdf> (in Japanese).
- PEACE project. [Internet]. [cited 2017 sep. 23]. Available from: [www.jspm-peace.jp](http://www.jspm-peace.jp) (in Japanese).
- Yamaguchi T. Recent development in the management of cancer pain in Japan: education, clinical guidelines and basic research. *Jpn J Clin Oncol* **42**: 1120-1127, 2012.
- Nakazawa Y, Yamamoto R, Kato M, et al. Improved knowledge of and difficulties in palliative care among physicians during 2008 and 2015 in Japan: association with a nationwide palliative care education program. *Cancer* 2017 (Epub ahead of print).
- Yamamoto R, Kizawa Y, Nakazawa Y, et al. Outcome evaluation of the palliative care emphasis program on symptom management and assessment for continuous medical education: nationwide physician education project for primary palliative care in Japan. *J Palliat Med* **18**: 45-49, 2015.
- Yamamoto R, Kizawa Y, Yakazana Y, et al. The palliative care knowledge questionnaire for PEACE: reliability and validity of an instrument to measure palliative care knowledge among physicians. *J Palliat Med* **16**: 1423-1428, 2013.
- Nakazawa Y, Miyashita M, Morita T, et al. The validity and reliability of two scales evaluating self-reported practice and difficulty in palliative care among health professionals: The psychometric property of the palliative care self-reported practice scale (PCPS) and the palliative care difficulties Scale (PCDS). *J Palliat Med* **13**: 423-437, 2010.
- Jemal A, Siegel R, Ward E, et al. Cancer statistics, 2009. *CA Cancer J Clin* **59**: 225-249, 2009.
- Lutz S, Norrell R, Bertucio C, et al. Symptom frequency and severity in patients with metastatic or locally recurrent lung cancer: a prospective study using the Lung Cancer Symptom Scale in a community hospital. *J Palliat Med* **4**: 157-165, 2001.
- Shaw EA, Marshall D, Howard M, et al. A systematic review of postgraduate palliative care curricula. *J Palliat Med* **13**: 1091-1108, 2010.
- Katya R. Assessment of the education for physicians on End-of-Life Care (EPECTM) project. *J Palliat Med* **7**: 637-645, 2004.
- Shvartzman P. Constructing a post-graduate palliative care curriculum: The Israeli National Palliative Care Training (INPACT) experience. *J Palliat Care* **27**: 238-243, 2011.
- Maeda I, Tsuneto S, Miyashita M, et al. Progressive development and enhancement of palliative care services in Japan: Nationwide surveys of designated cancer hospitals for three consecutive years. *J Pain Symptom Manage* **48**: 367-373, 2014.
- Morita T, Miyashita M, Yamagishi A, et al. Effects of a programme of interventions on regional comprehensive palliative care for patients with cancer: a mixed-method study. *Lancet Oncol* **14**: 638-646, 2013.

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