



## ORIGINAL ARTICLE

# Development and evaluation of a training program for occupational health nurses regarding support for workers with cancer and their workplaces

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**Abstract**

**Objectives:** This study aimed to develop and evaluate a training program for occupational health nurses (OHNs) regarding support for workers with cancer and their workplaces.

**Methods:** Based on our prior research, we engaged in multiple discussions on the development of training program for OHNs. For examining the effectiveness of the developed training program, we collected and analyzed the data from three repeated surveys conducted before, immediately after, and 3 months after the training on self-confidence levels of the participants regarding 23 items associated with support for workers with cancer and their workplaces.

**Results:** We made a 3-hour training program including a lecture and a group work. First, we gave a lecture explaining the support scheme consisting of 4 parts and the 12 hints in action phrase while using the guidebook. Second, we conducted the group work regarding the case of a female worker diagnosed with breast cancer. Of the participants who supported workers with cancer in actuality during the 3-month post-training, 86% acknowledged the utility of the training in implementing support. As for the pre-post evaluation of the training program, most items of the participants' self-confidence significantly increased from pretraining to immediately after and 3 months post-training.

**Discussion:** This study demonstrated that the developed training program was effective in that the participants learned the support schemes and skills and gained self-confidence in implementing supports in real-work settings. We hope that this training program will be extensively used in the future, enabling OHNs to contribute toward balancing cancer treatment and work.

**KEYWORDS**

cancer treatment, continuation of work, development and evaluation, occupational health nurse, training program

## 1 | INTRODUCTION

Cancer is one of the leading diseases in Japan, with a cumulative cancer prevalence rate of 62% for men and 47% for women in 2014.<sup>1,2</sup> In 2010, approximately 325 000 working individuals were diagnosed with cancer in Japan. Balancing medical treatment and return to work is the special concern for cancer survivors and their companies. Takahashi<sup>3</sup> reviewed cancer survivorship in Japan focusing on the current status of research, care, and policy. In fact, studies on this issue have been conducted worldwide from various dimensions and conceptual framework was suggested for factors associated with return to work among cancer survivors including medical treatment, health services, workplace environment, financial issues, and human rights.<sup>4</sup> In February 2016, the Japanese Ministry of Health, Labour and Welfare presented the guideline on support for workers with cancer or other diseases to balance sustainable treatment and employment.<sup>5</sup> The guideline emphasizes the importance of building a desirable workplace environment, such as work/work-off system and social climate, as well as case management by fostering collaborations among multiple professionals.

Occupational health service (OHS) professional is expected to play an important role in providing support to workers with cancer and their workplaces.<sup>6–11</sup> Occupational health nurses (OHNs) are members of OHS who play a vital role in supporting workers with cancer and their workplaces.<sup>12</sup>

Our prior qualitative and quantitative studies on the roles of OHNs established that OHNs contribute to sustainable support for workers with cancer and their workplaces by gathering information multidirectionally, assessing needs for support, planning, and coordinating support with occupational health physicians, human resource staff, workers themselves, and their supervisors.<sup>13</sup>

Based on these results, we created a support guidebook for OHNs<sup>14</sup> entitled “Twelve Hints for Better Support for Workers with Cancer and Their Workplaces” in 2012.<sup>15</sup> This guidebook is constructed with following three parts: basic support scheme, 12 action phrases with explanations, and several case studies. Twelve hints in action phrases can be divided into four categories: supports for individual workers, support for supervisors and colleagues, collaboration with human resource staffs, and collaborations with stakeholders inside and outside the company.

However, our prior study also reported that novice OHNs with less experiences have difficulties in conducting these support activities.<sup>13</sup> Hence, we considered that an effective training program was warranted for OHNs to standardize the competencies for supporting workers with cancer and their workplaces irrespective of their experiences. The purpose of this study was to

develop a training program for OHNs aiming at better support for workers with cancer and their workplaces and to examine the effectiveness of the training program.

## 2 | METHODS

### 2.1 | Development of a training program

To develop the effective training program with using the created guidebook,<sup>15</sup> four university faculty members with experience as an OHN engaged in numerous discussions while receiving the advices from the pedagogic expert who was university faculty member specialized in education. The ADDIE Model, the traditional instructional design model, was used to develop the training program. The ADDIE Model has five phases: Analysis, Design, Development, Implementation, and Evaluation, representing a dynamic, flexible guideline for building effective training.<sup>16</sup>

### 2.2 | Enforcement of the training seminar and data collection for evaluation

A total of four sessions of the developed training program for OHNs focusing on supporting workers with cancer and their workplaces were held repeatedly between December 2013 and March 2014.

Voluntary participants were asked to fill in the simple questionnaire a total of three times: before, immediately after, and approximately 3 months after the training. The surveys before and immediately after the training were conducted at the training hall, while the survey done 3 months later was in a questionnaire form mailed to the participants to be completed and returned.

The survey included questions related to basic information regarding the respondents and the facilities that they belonged to, in addition to those their levels of self-confidence (on a 4-point scale) at each survey point with regard to 23 items related to support for workers with cancer and their workplaces. The 23 items were composed of three parts: supports for individual workers with cancer (8 items), supports for supervisors and colleagues (7 items), and collaborations with multiple professionals inside and outside the company (8 items). Three-month post-training survey also included the following questions: (a) whether, after having undergone training, the participants had supported an individual worker who had been diagnosed with cancer; (b) whether they provided organizational support such as creating a corporate culture supportive of balancing cancer treatment and work; and (c) whether what they learned during the training program was useful in providing support.

**TABLE 1** Overview and contents of the developed training program

Overview	
Title:	
Better Supporting Workers with Cancer and Their Workplaces—Necessary Skills for Occupational Health Nurses	
Participant	
OHNs with less experiences (OHNs with years of experiences shorter than 10 years are targeted)	
Analysis of the participants	
The participants feel difficulty in supporting workers with cancer and their workplaces	
The participants want to know how to support not only workers with cancer but also their workplaces	
Training goals	
Participants will be able to grasp the points of attention in supporting work-cancer balance and make actual support plans based on the model cases, involving workers with cancer, their workplaces (supervisors and colleagues), human resources, and outside organizations including medical professionals, using the guidebook	
Time: 180 min	
Lecturers	
The developers of this training with the practice experience as OHNs	
Number of participants	
20-30 persons per once	
Contents	Time
Introductions	10 min
Objectives of this training	
Support scheme: Four roles of OHNs to support workers with cancer and their workplace	10 min
Supports for individual workers	
Supports for supervisors and colleagues	
Collaborations with the human resources staff	
Collaborations with stakeholders inside and outside of the company	
Case study: Supporting a worker with breast cancer and her workplace	
Introducing a case	5 min
Individual work: Assessing necessary support for the case	10 min
Assessing support needs from her symptoms and work conditions	
Lecture: the comprehensive support for balancing cancer treatment and work	20 min
Explanation of 4 categories of support for cancer survivor at workplace	
Present situations of OHNs support practice for cancer survivors	

(Continues)

**TABLE 1** (Continued)

Contents	Time
Group discussions: Deeping the assessment by sharing ideas with each other	40 min
Assessing the situation and feeling/thought of each person involved	
Presentation: Sharing the results of group discussions	
Group discussions: Discussing the support plan	70 min
Confirming the 12 hints based on characteristics of cancer	
Confirming the ordinary practice of OHN activities	
Describing the ideas for supporting cancer survivors	
Group discussions and presentations	
Describing the ideas for supporting supervisors and colleagues	
Group discussions and presentations	
Describing the ideas for collaborating with human resources staffs	
Group discussions and presentations	
Individual work:	
Reviews of problems and challenges for better support to cancer survivors	5 min
Summary of the training course	10 min
Describing individual plan to improve support practice	
Providing follow-up information	

Abbreviation: OHNs, occupational health nurses.

### 2.3 | Analyses

As to 23 items evaluating self-confidence in implementing support for workers with cancer and their workplaces, participants' answers were converted to scores ranging 1-4. "I think I can do it" was assigned 4 point, "I think I could do it to some extent" was assigned 3 point, "I don't think I can do it very well" was assigned 2 point, and "I can't do it" was assigned 1 point. We calculated the average scores for before, immediately after, and 3 months after the training and performed the Friedman test to examine the difference between the three time points. If the difference was statistically significant, a post hoc paired comparison was implemented using the Wilcoxon signed rank test with adjusting Bonferroni-corrected alpha level. The standard statistical significance level was set to  $P < 0.05$ .

### 2.4 | Ethical considerations

Participants were given written and oral explanations of the study objectives and of the ethical considerations. They were

given an entry column in which to state whether they gave consent to participate in the research and the data of only those respondents who gave their consent were submitted to analysis. This study was conducted with the approval of the ethical review board of the School of Health Sciences in Tokai University (No. 13-31).

### 3 | RESULTS

#### 3.1 | Structure and contents of the developed training program

The expected participants in the training program were OHNs having less experiences and more difficulties to support workers with cancer and their workplaces. The aims of the training program were focused as follows: (a) to reduce the sense of difficulty among OHNs themselves regarding support for workers with cancer and for their workplaces; (b) to enable them to provide proactive support; and (c) to enable them to play coordinating roles as OHNs so as to effectively support workers with cancer in coordination with multiple disciplines inside and outside the company.

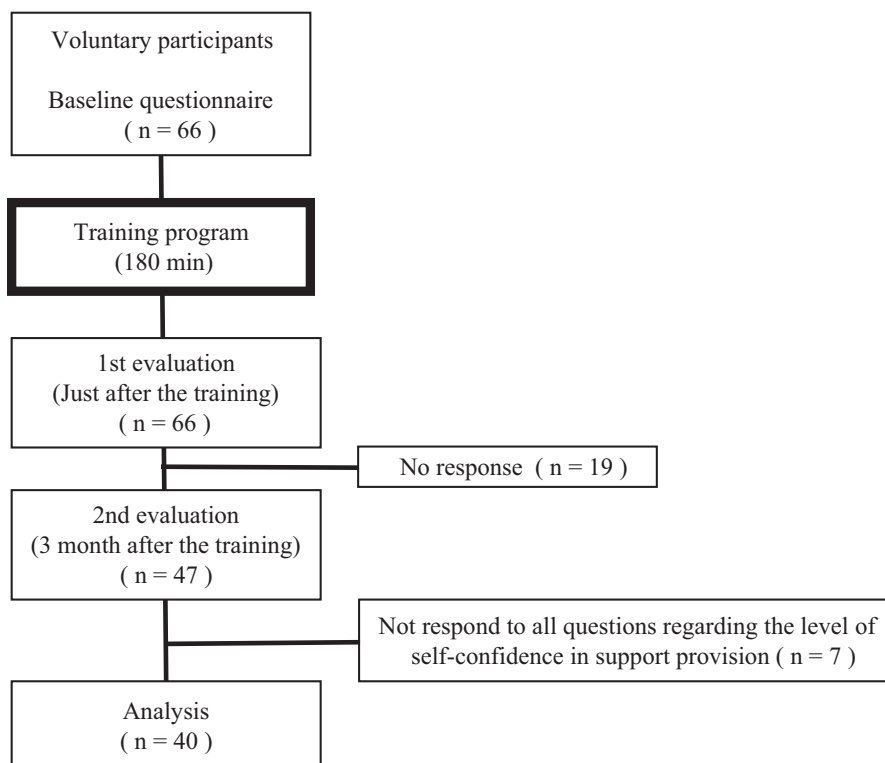
We made a 3-hour training program including a lecture and a group work (Table 1). First, the guidebook<sup>15</sup> was introduced and the participants were given a lecture regarding support scheme consisting of four parts: supports to individual workers with cancer, supports to supervisors and colleagues, collaboration with human resource personnel,

and collaborations with occupational health physicians and other health professionals inside and outside the company. Then, we explained about the 12 hints, gave case reports, and advised them the guidebook usage. Second, the case of a female worker diagnosed with breast cancer was presented and two group tasks were conducted based on this case. The former task involved discussions of the problems and feelings experienced by the worker herself, by her boss, by colleagues, and by the personnel department in order to improve understanding of those involved. The latter task involved discussion of the needed support for the worker herself, for her boss, for colleagues, and for the personnel department, then necessary coordination with related professionals such as the primary physician and occupational health physicians. Finally, we provided time for questions and answers, and for the participants to review their own issues.

#### 3.2 | Evaluation of the training program

Of the total 66 subjects who voluntarily participated in the training program, 47 responded to the questionnaire survey sent approximately 3 months after completion of the training. The data from 40 participants who responded to all questions regarding the level of self-confidence in support provision was then subjected to analyses (Figure 1).

The demographic characteristics of the participants analyzed were shown in Table 2. About half of the participants were in their 30s and had 5 years and more experience as an



**FIGURE 1** Flowchart for the evaluation on the training program. Of the total 66 voluntary participants who answered baseline and first evaluation questionnaire, 47 responded to the second evaluation questionnaire sent 3 months after the training. The data from 40 participants who responded to all questions regarding the level of self-confidence in support provision was subjected to analyses

**TABLE 2** Demographic characteristics of participants

Variables	n (%)
<b>Age group</b>	
20-29	2 (5.0)
30-39	20 (50.0)
40-49	9 (22.5)
50-59	7 (17.5)
60-	1 (2.5)
no reply	1 (2.5)
<b>Years of experiences as an OHN</b>	
less than 5 years	18 (45.0)
5 years or more	22 (55.0)
<b>Experience as a hospital nurse</b>	
Yes	37 (92.5)
No	3 (7.5)
<b>Qualification (multiple answer)</b>	
Registered nurse	34 (85.0)
Public health nurse	28 (70.0)
OHNs certified by JSOH	2 (5.0)
Industrial counselor	5 (12.5)
Industrial health administrator	23 (57.5)
<b>Affiliated Institution</b>	
Company (health sector)	27 (67.5)
Company (clinic)	1 (2.5)
Health insurance association	4 (10.0)
Public health sector	2 (5.0)
Others	6 (15.0)
<b>Main workplace in charge</b>	
Number of Employees	
50-499	13 (32.5)
500-999	10 (25.0)
1000-2999	6 (15.0)
3000-	11 (27.5)
<b>Occupational health physician</b>	
Full-time	11 (27.5)
Part-time	27 (67.5)
no reply	2 (5.0)
<b>OHN (participant oneself)</b>	
Full-time	36 (90.0)
Part-time	4 (10.0)

Abbreviations: OHN, occupational health nurse; JSOH, Japan Society of Occupational Health.

OHN. Most of the participants had experience as a hospital nurse and belonged to companies and worked in full-time.

Subjective evaluations of the participants on the training program were as follows. During the 3-month post-training, 21 (52.5%) participants provided support to an individual

worker who had been diagnosed with cancer. Meanwhile, 14 (35.0%) nurses had provided support to a workplace organization regarding balance between cancer treatment and work, such as creating a corporate culture, building daily relationship, etc. Of the 21 participants who had provided support to an individual worker with cancer, 18 (85.7%) answered that the training program was “useful” or “somewhat useful.” Of the 14 participants who had provided support to an organization, 12 (85.7%) answered that the training program was “useful” or “somewhat useful.”

Concerning the changes in the level of self-confidence of the participants regarding support for workers with cancer and their workplaces, the comparison results between the three time point, before, immediately after, and 3 months after the training were shown in Table 3. Increased levels of self-confidence after the training were different among the three parts of support items. As for the eight items of support for individual workers with cancer, every self-confidence item showed a significant variation in the levels of self-confidence between the three time points. Significantly increased levels of self-confidence were observed in the four items immediately after and 3 months after the training in comparison with before the training. Among them, remarkable increases were shown in the following three items: “identifying challenges involved in balancing work and cancer treatment,” “formulating support plan for balancing work and cancer treatment while respecting individual worker's autonomy,” and “advising workers about a use of available social resources inside and outside the companies when needed.” Increases only 3 months after the training were observed in the two items: “obtaining information regarding employment conditions, contents of duties, and workplace environment” and “assessing workers' needs by integrating multi-dimensional information regarding workplace environment and workers themselves including changes in their work ability.”

Among the seven items of supports for supervisors and colleagues, similar significant increases immediately after and 3 months after the training were observed in the four items, while one item showed increase only immediately after the training. The other two items including “building a good relationship with supervisors and colleagues of workers with cancer,” which showed higher score even before the training, showed no significant variations between the three time points.

As for the eight items of collaboration with multiple professionals inside and outside the company, significant increases both immediately after and 3 months after the training were observed only in 1 item “understanding the difficult position of personnel labor manager and grasp the company's present condition,” while the three items including the item of collaboration with occupational health physicians, which showed high self-confident score even



**TABLE 3** Comparison of the levels of self-confidence of participants between the three time points before and after the training regarding support for workers with cancer and their workplaces

Items	Scores of self-confidence at each time point			Difference between the time points		
	Before the training (a)	Immediately after the training (b)	3 months after the training (c)	Between the three time points (a)(b)(c)	Between (a) and (b)	Between (a) and (c)
	Mean ± SD	Mean ± SD	Mean ± SD	P-value <sup>a</sup>	P-value <sup>b</sup>	P-value <sup>b</sup>
<b>Supports for individual workers with cancer</b>						
Obtain necessary information from the workers including the present disease status and future treatment plans	2.8 ± 0.7	3.0 ± 0.5	3.1 ± 0.6	0.030*	0.011*	0.007*
Make effective use of interview skills to understand the worker's psychological conditions such as anxiety about the treatment, desire for continued employment, etc.	3.0 ± 0.6	3.2 ± 0.6	3.2 ± 0.6	0.035*	0.017	0.102
Obtain information regarding employment conditions, contents of duties, and workplace environment	3.0 ± 0.6	3.0 ± 0.5	3.2 ± 0.5	0.010*	0.662	0.011*
Assess workers' needs by integrating multidimensional information regarding workplace environment and workers themselves including changes in their work ability	2.6 ± 0.6	2.9 ± 0.6	3.0 ± 0.6	0.010*	0.017	0.002*
Identify challenges involved in balancing work and cancer treatment	2.5 ± 0.7	2.8 ± 0.5	2.9 ± 0.6	<0.001***	<0.001**	<0.001**
Formulate a support plan for balancing work and cancer treatment while respecting employee autonomy	2.4 ± 0.7	2.7 ± 0.5	2.7 ± 0.6	<0.001***	<0.001**	0.004*
Identify key workplace personnel for the workers to contact. Advise them how they may approach their boss or colleagues to seek necessary cooperation	2.8 ± 0.6	3.0 ± 0.6	2.8 ± 0.7	0.040*	0.019	0.978
Advise workers about a use of available social resources inside and outside the companies when needed	2.4 ± 0.8	2.8 ± 0.6	2.9 ± 0.7	<0.001***	<0.001**	<0.001**
<b>Supports for supervisors and colleagues</b>						
Build a good relationship with the workplace supervisors and colleagues of the workers.	3.0 ± 0.7	3.1 ± 0.6	3.1 ± 0.6	0.146	—	—
Understand the workplace positions of both the supervisors and colleagues as well as the workplace situations	2.8 ± 0.7	3.1 ± 0.6	3.1 ± 0.4	0.003**	0.003*	0.013*
Identify factors causing anxiety and difficulties for the supervisors and the colleagues.	2.7 ± 0.7	3.0 ± 0.5	3.1 ± 0.4	<0.001***	0.006*	<0.001**
Assess workplace needs for adjustment including relationships with supervisors/colleagues	2.6 ± 0.7	2.8 ± 0.6	2.9 ± 0.6	0.051	—	—
Formulate a necessary support plan to build and reinforce the support system at the workplace	2.2 ± 0.7	2.6 ± 0.6	2.6 ± 0.6	<0.001***	0.002**	0.002**
Give advice to the supervisors and colleagues about what they can do for the workers at the workplace	2.7 ± 0.7	3.0 ± 0.6	2.8 ± 0.7	0.024*	0.013*	0.123

(Continues)

TABLE 3 (Continued)

Items	Scores of self-confidence at each time point			Difference between the time points		
	Before the training (a)	Immediately after the training (b)	3 months after the training (c)	Between the three time points (a)(b)(c)	Between (a) and (b)	Between (a) and (c)
	Mean ± SD	Mean ± SD	Mean ± SD	P-value <sup>a</sup>	P-value <sup>b</sup>	P-value <sup>b</sup>
Collect information about the effects of the increased workload of the supervisors and the colleagues on their mental and physical health and offer appropriate support	2.4 ± 0.7	2.9 ± 0.5	2.8 ± 0.6	<0.001***	<0.001**	0.002**
Collaborations with multiple professionals inside and outside the company						
Understand the difficult position of personnel labor manager and grasp the company's present condition	2.7 ± 0.7	3.0 ± 0.5	3.0 ± 0.6	0.013*	0.015*	0.017*
Understand the personnel systems, related laws and guidelines	2.8 ± 0.7	2.9 ± 0.7	2.9 ± 0.6	0.172	—	—
Support information-sharing between workers and personnel labor manager to enable workers to learn and utilize regulations for improving their work-treatment balance.	2.8 ± 0.7	3.1 ± 0.6	3.0 ± 0.5	0.013*	0.004*	0.152
Submit appropriate status report to the occupational health physicians and achieve effective collaboration with them	3.0 ± 0.7	3.1 ± 0.6	3.2 ± 0.7	0.076	—	—
Understand the organizational structures, occupational categories, and human resources available within the company	2.4 ± 0.7	2.6 ± 0.7	2.7 ± 0.6	0.005*	0.019	0.040
Share an appropriate information with a primary physician in collaboration with the occupational health physician, after taking the worker's consent when needed	2.8 ± 0.6	3.0 ± 0.6	3.0 ± 0.8	0.124	—	—
Provide information to the worker, supervisor, and human resource manager in collaboration with the occupational health physician and the primary physician as appropriate	2.8 ± 0.7	2.9 ± 0.7	3.0 ± 0.7	0.040*	0.188	0.056
Take care to protect personal information and provide appropriate adjustment and support to enable information-sharing among the related parties.	2.9 ± 0.7	3.0 ± 0.6	3.2 ± 0.6	0.002**	0.052	0.004*

<sup>a</sup>Analyzed with the Friedman's rank test (paired samples). \* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ .

<sup>b</sup>Analyzed with the Wilcoxon signed-rank test (paired sample). Bonferroni-corrected p-values were applied for each comparison. \* $P < 0.017$  (0.05/3), \*\* $P < 0.003$  (0.01/3).

before the training, showed no significant variations between the three time points.

## 4 | DISCUSSION

This study illustrated the effectiveness of the training program developed for OHNs regarding support for workers with cancer and their workplaces, with the findings that a

majority of the self-confidence items of support activities exhibited significant increases immediately after and 3 months after the training compared with pretraining. Moreover, approximately 86% of nurses who provided practical support after the training acknowledged the efficacy of the training program.

Among the items, all support activities for individual workers with cancer exhibited marked variations between the three time points before and after the training, implicating

the efficacy of this training program on increasing the self-confidence of OHNs, particularly in support for individual workers. The training program introduced the case of a worker with breast cancer and provided issues for group discussions that were aimed at improving support for her and persons around her; in these discussions, participants could avail opportunities to contemplate and deliberate comprehensively about support needs and construct a suitable plan if they were to encounter such situations in the real workplaces.

Regarding support for supervisors and colleagues as well as collaborations with multiple professionals inside and outside the company, approximately half the items displayed similar increments post-training, indicating that the training also effectively enhanced the self-confidence of nurses in support for those involved persons around the worker with cancer and collaborations with various stakeholders. However, some of these items, such as building relationships with supervisors and colleagues of cancer survivors or relationships with occupational health physicians, exhibited no increment post-training, incriminating that those were fundamental practices for OHNs.

To date, various studies have highlighted the significance of support for balancing cancer treatment and work from several perspectives.<sup>4,17,18</sup> Endo et al<sup>19</sup> reported that 47.1% of cancer survivors returned to full-time work within 6 months of their initial day of sick leave absence and 62.3% by 12 months, indicating that it is crucial for companies to establish and enhance their return-to-work (RTW) support system for cancer survivors, knowing that the median time to RTW is assumed to be at least a few months. In our training seminar, support for RTW was considered a major part of support for not only cancer survivors but also for relevant persons around survivors. Takahashi et al<sup>20</sup> reported that only 23.5% of workers with cancer were screened for work-related issues by healthcare providers and 40.2% of participants who resigned from their work because of cancer decided to do so before the initial treatment began. Support for workers with cancer is needed from an early period after diagnosis at multiple sites, including hospitals and workplaces.

OHNs are the frontline staff among occupational health professionals and if OHNs can be the good healthcare providers to the workers with cancer, the resignation rate can decrease. One of the important challenges toward the future should be to strengthen the collaboration among multi-institutions and multiprofessionals<sup>21-24</sup> including occupational health nursing professionals. Recently, Stone et al<sup>12</sup> reported that interaction processes between cancer survivors and occupational and environmental health professionals comprised revealing the survivor-self, sustaining workability, gatekeeping (employment opportunities and RTW), and accessing support. Overall, our training program was revealed to increase self-confidence of OHNs, who can play such important roles regarding support for workers with cancer and their workplaces.

## 5 | CONCLUSION

In this study, an effective training program was developed for OHNs that increases the self-confidence of participants with a broad range of perspectives on balancing work and cancer treatment. Hopefully, this training program could be extensively used, enabling occupational health nursing professionals to contribute more to workers with cancer and their workplaces in collaboration with multiple professionals.

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## DISCLOSURE

*Approval of the research protocol:* The Research Ethics Review Board of School of Health Sciences, the Tokai University, approved the study procedures (No. 13-31). *Informed consent:* Participants were given written and oral explanations of the study objectives and of the ethical considerations. The data of only those respondents who gave their consent were submitted to analysis. *Registry and the registration no. of the study/trial:* N/A. *Animal studies:* N/A. *Conflict of interest:* The authors declare that there are no conflicts of interest.

## AUTHOR CONTRIBUTIONS

NN and MS conceived the ideas; all the members collected and analyzed the data; and NN, MS, and EY led the writing.

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