

# Research on Cancer Screening Promotion and Employment Support for Employees with Cancer at Business Establishments

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## ABSTRACT

**Background** Increasing cancer screening rates among working-age populations and providing employment support for employees with cancer are issues that need to be addressed in Japan. Therefore, this study aimed to clarify the situation regarding cancer screening promotion and employment support for employees with cancer at business establishments and the support they seek from medical professionals regarding these issues.

**Methods** This survey covered 1,058 business establishments and included the following items: attributes of the business establishments, cancer screening rate, support for employees to promote cancer screening, support sought by business establishments from medical professionals to promote cancer screening, presence of employees with cancer, support programs for employees with cancer, awareness of the resources available for employment support for employees with cancer, difficulties in supporting employees with cancer in the workplace, and support sought by business establishments from medical professionals in providing employment support for employees with cancer. Data analysis was primarily conducted using summary statistics.

**Results** This study included 153 establishments. The median cancer screening rate ranged from 50.00 to 99.15. Employee support for promoting cancer screening ranged from approximately 30% to 40% for “ensuring time for screening” and from 20% to 30% for “providing full subsidies for cancer screening cost.” The median screening rate for breast and cervical cancers was 50.00, and support for promoting screening was less than 30% for each. Business establishments sought support from medical professionals regarding cancer and study sessions on cancer prevention to promote cancer screening. Regarding support systems for employees with cancer, 49.7% of the establishments offered sickness benefits, and 42.5% offered paid leave on an hourly basis. Less than 10% were aware of the websites provided by public organizations regarding employment support for patients with cancer. Approximately 50% of the establishments reported difficulties regarding treatment policies and duration uncertainties.

**Conclusion** Business establishments sought the provision of relevant knowledge and specific information to

increase cancer screening rates and provide employment support for employees with cancer. Furthermore, this study suggests that employees with cancer need to manage the information they provide their establishments.

**Key words** cancer screening; employment; return to work; supported; workplace

According to the Japanese data for 2019 presented by the National Cancer Center, the cumulative risk of all cancers was 65.5% for men and 51.2% for women.<sup>1</sup> This data indicate that one in every two Japanese citizens will develop cancer during their lifetime. Early cancer detection and treatment of cancer effectively improve the prognosis for cancer control. Therefore, undergoing cancer screening is important. According to Japan's third basic plan to promote cancer control programs, the goal is to achieve a cancer screening rate of at least 50%.<sup>2</sup> However, as of 2019, only gastric cancer screening for men aged 50–69 years and lung cancer screening for men aged 40–69 years had achieved this target.<sup>3</sup> Cancer screening rates are increasing; however, this target remains unachieved. In Japan, employers are required by law to conduct annual health examinations for their employees. However, cancer screening is not included in these mandatory health examinations. Therefore, increasing the cancer screening rate, especially among the working-age population, is important. This is because out of all the people diagnosed with cancer in 2019, those aged 20–64 years and 20–69 years accounted for approximately 25% and 37%, respectively. Furthermore, the proportion of patients with cancer among the working population is expected to rise further, considering the recent increase in the employment rate of women and the trend toward extending retirement age.<sup>4,5</sup>

Patients with cancer must visit the hospital for extended periods during and after treatment for follow-ups

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Abbreviations: MHLW, Ministry of Health, Labor, and Welfare; QOL, quality of life

to detect recurrence as early as possible. Consequently, many patients quit their jobs when they are diagnosed with cancer. According to a 2018 survey by the Ministry of Health, Labor, and Welfare (MHLW), 19.8% of employees with cancer resigned or closed their businesses; of these, 56.8% did so before their first treatment.<sup>6</sup> Takahashi et al. discovered that reasons for leaving the workforce included inconvenience to their workplace, lack of physical strength, and difficulty balancing work and treatment.<sup>7</sup> Tsuchiya et al. also revealed that a few patients willing to continue working were forced to reassign, take sick leave, or resign after consulting their employers regarding their illnesses.<sup>8</sup>

It has been reported that returning to the workplace by patients with cancer who had previously worked improves their mental health and prognosis.<sup>9, 10</sup> For employees with cancer to balance work and treatment, support from employers and coworkers and their understanding of cancer and its treatments are important.

The MHLW is increasing cancer screening rates in the workplace as part of its “Corporate Action to Promote Cancer Control” to increase cancer screening rates among the working-age population.<sup>11</sup> In addition, a cancer clinical research project funded by MHLW, “Research on Establishment of Comprehensive Employment Support System for Working Cancer Patients and Their Families” (2010–2012), was conducted, and support for employees with cancer in business establishments was promoted by formulating “Guidelines for support for balancing treatment and work in workplaces” in 2016.<sup>11, 12</sup> However, when the cancer screening rate among the working-age population and job turnover rate after cancer were considered, the results suggested that challenges in improving cancer screening rates in the workplace and providing employment support after cancer diagnosis remained.

Most studies on employment among employees with cancer in Japan have focused on patients or medical professionals. Studies of employees with cancer evaluated employment status, factors related to continued work, support needs, and support provided by business establishments and workplaces.<sup>13–16</sup> Studies of medical professionals reported that employment support provided by nurses mainly consisted of providing information and consultation, and that difficulties were observed regarding collaboration with other agencies, consideration for privacy, and intervention in economic issues.<sup>17–20</sup> The study also noted a lack of interest in employment supports among medical professionals.<sup>21</sup> In contrast, very few studies have been conducted on business establishments that have employees with cancer, despite the importance of support for employees with

cancer in business establishments. The study conducted by Sakamoto et al.’s study, which served as the basis for formulating the above-mentioned “Guidelines for support for balancing treatment and work in workplaces,” is one of these studies.<sup>22</sup> According to the study, what business establishments sought from medical institutions regarding employment support for employees with cancer is information on the disease, treatment, and consultation services. Support from medical professionals at the workplace is necessary for patients with cancer to return to work.

Improving cancer screening rates and providing support after a cancer diagnosis are important for cancer control in the working-age population in Japan. Unfortunately, presenting “Corporate Action to Promote Cancer Control” and “Guidelines for support for balancing treatment and work in workplaces” is insufficient to address these issues. However, it will contribute to building a more realistic and practical model of employment support for employees with cancer, specifically clarifying the difficulties business establishments are facing in providing employment support for employees with cancer, what they seek from medical professionals to improve cancer screening rates and provide employment support for employees with cancer, including surveys of situations on current efforts. In other countries, multidisciplinary and comprehensive support systems have been initiated for cancer survivors to return to work through collaboration between medical and non-medical professionals, including rehabilitation, supportive care, and side-effect management, according to the cancer survivor’s needs.<sup>23, 24</sup> The medical and employment systems in these countries differ from those in Japan. Considering support that is appropriate for the Japanese system is necessary when referring to employment support in other countries.

Therefore, this study aimed to clarify the situation regarding cancer screening promotion and employment support for employees with cancer at business establishments and the support they seek from medical professionals regarding these issues.

## SUBJECTS AND METHODS

### Participants

The business establishments were sampled randomly from the NTT Town Page Database from a single prefecture, with 1,058 selected based on industry. Responses to the survey were requested from individuals who could respond, such as those in charge of human resources, health measures, and return to work support at the establishments.

### **Survey method**

Written explanations of the study and the survey form were mailed to the establishments. Completed survey forms were received via mail. Participation in the study was voluntary, and consent was presumed granted by submitting the completed survey form.

### **Survey period**

The survey period was from February 2022 to May 2022.

### **Survey contents**

#### **Attributes of the business establishments**

The type of industry, number of employees, type of health insurance, assignment of industrial physicians, nursing staffing, and number of establishments without consultation services to support employees with cancer were surveyed. The establishments were categorized according to the number of employees based on The MHLW's Survey on Employment Trends and Industrial Physician Staffing Standards: 1–10, 11–50, 51–100, 101–300, and more than 300.

#### **Cancer screening rate**

The cancer screening uptake rates of business establishments for lung, gastric, colorectal, breast, and cervical cancer were surveyed.

#### **Support provided by business establishments to promote cancer screening**

Based on a previous study and the Corporate Action to Promote Cancer Control website, we developed 17 specific support items to promote cancer screening.<sup>25, 26</sup> These items include: “Cancer screening information guide” (2 items), “Holding study sessions related to cancer screening” (3 items), “Cancer screening recommendations” (2 items), “Providing opportunities for cancer screening” (5 items), “Subsidies for cancer screening expenses” (2 items), and “Securing time for cancer screening” (3 items). We surveyed whether these establishments provided these supports for lung, gastric, colorectal, breast, and cervical cancer screening.

#### **Support sought by business establishments from medical professionals to promote cancer screening**

Based on previous studies, the survey inquired whether establishments sought support for employees (4 items) and the department in charge (7 items).<sup>25, 27</sup>

#### **The number of employees with cancer**

The number of employees with cancer presently and in the past five years was surveyed.

### **Support program for employees with cancer**

The survey inquired about the availability of the seven programs related to support systems for employees with cancer, including injury and illness benefits, shorter working hours, and working from home.

#### **Awareness of the resources available to support employees with cancer in the workplace**

Based on previous studies and the Corporate Action to Promote Cancer Control website the survey inquired whether business establishments know about the 14 resources available for employment support for employees with cancer.<sup>26, 28, 29</sup>

#### **Difficulties in supporting employees with cancer in the workplace**

For establishments that have employees with cancer presently or in the past five years, it was surveyed whether they had difficulty supporting employees with cancer at each of the following times: “At the time of cancer diagnosis,” “While on leave,” “Upon returning to work,” and “After returning to work,” and the difficulty levels they faced in supporting employees with cancer at these times. Based on previous study, respondents were asked to rate their difficulty levels on a four-point scale of “very much troubled” (4 points), “somewhat troubled” (3 points), “not much troubled” (2 points), or “not troubled” (1 point) for “At the time of cancer diagnosis” (8 items), “While on leave” (10 items), “Upon returning to work” (15 items), and “After returning to work” (13 items).<sup>26</sup>

#### **Support sought by establishments from medical professionals in providing employment support for employees with cancer**

Based on previous studies, we surveyed whether they sought support for employees with cancer (7 items), departments in charge (8 items), and coworkers (2 items).<sup>7, 26</sup>

### **Statistical analysis**

“Attributes of the business establishments,” “Support provided by business establishments to promote cancer screening,” and “Difficulties in supporting employees with cancer in the workplace” were analyzed using summary statistics. Crosstabulations were conducted based on the number of employees with respect to “Cancer screening rate,” “Support sought by business establishments from medical professionals to promote cancer screening,” “Support program for employees with cancer,” “Awareness of the resources available to support employees with cancer in the workplace,”

and “Support sought by business establishments from medical professionals in providing employment support for employees with cancer.” The chi-squared test was used to analyze the relationship between “The number of employees with cancer” and “Support sought by business establishments from medical professionals to promote cancer screening,” “Support sought by business establishments from medical professionals in providing employment support for employees with cancer,” and “Awareness of the resources available to support employees with cancer in the workplace.” The significance level was set at 5%.

Statistical analysis was conducted using SPSS statistical software (Ver. 25, IBM Corp., Armonk, NY).

### Ethical consideration

An explanatory letter was mailed to each establishment along with the survey form, clearly stating the purpose and methodology of the study and that the establishments would not be disadvantaged by not participating in the study and would not be identified. Furthermore, the establishments were deemed to have consented by submitting the completed survey form. The anonymous survey form did not contain any content that might be used to identify the establishments. The Ethical Review Committee of the Faculty of Medicine, Tottori University, approved (Approval No. 21A146) this study.

## RESULTS

This analysis included 153 completed survey forms (14.5% response rate).

### Attributes of the business establishments

Table 1 lists the attributes of the establishments. Most of the business establishments belonged to the construction industry, accounting for 23 (15.0%), followed by wholesale and retail at 21 (13.7%) and public institutions at 14 (9.2%). Establishments with 11–50 employees were the highest, with 58 establishments (37.9%), followed by 49 (32.0%) with 1–10 employees. Six (3.9%) and 38 establishments (24.8%) had personal and outsourced industrial physicians, respectively. Five (3.3%) and two establishments (1.3%) had full-time occupational health and full-time nurses, respectively. Eleven establishments (7.2%) responded that they do not offer consultation services, and 10 had 50 or fewer employees.

### Cancer screening rate

Table 2 shows the number of responses to cancer screening rates and the cancer screening rates of the responding establishments. The number of responses differed for each cancer screening. The number of

establishments responding to lung cancer screening was 106 (69.3%), and the median (quartile range) screening rate was 99.15 (42.50–100.00). For gastric cancer screening, 110 establishments (71.9%) responded with 69.00 (26.73–93.13). For colorectal cancer screening, 105 establishments (68.6%) responded with 70.00 (20.00–98.00). For breast cancer screening, 92 establishments (60.1%) responded with 50.00 (11.05–100.00). For cervical cancer screening, 93 establishments (60.8%) responded with 50.00 (10.00–100.00). The number of responses for breast and cervical cancer screenings was lower than those for other screenings, and screening rates were also lower. The screening rate was high for establishments with 1–10 employees.

### Support provided by business establishments to promote cancer screening

Table 3 shows the support provided by business establishments to promote cancer screening. Approximately 30–40% of the establishments offered cancer screening during working hours, and approximately 20–30% offered full payment of cancer screening expenses. However, less support was provided to promote breast and cervical cancer screenings than lung, gastric, and colorectal cancer screenings.

### Support sought by business establishments from medical professionals to promote cancer screening

Table 4 shows the support sought by business establishments from medical professionals to promote cancer screening. Regarding “Support for employees,” 49 establishments (32.0%) selected “Holding study sessions on cancer prevention” and 36 establishments (23.5%) selected “Holding study sessions on cancer.”

In addition, as for “Support for departments in charge,” 33 establishments (21.6%) selected “Providing advice and dispatching lecturers when planning study sessions on cancer prevention,” 30 establishments (19.6%) selected “Holding study sessions on cancer prevention,” and 25 establishments (16.3%) selected “Holding study sessions on types and methods of cancer screening.”

### The number of employees with cancer

Thirty-seven establishments (24.2%) had at least one employee diagnosed with cancer presently, while 50 establishments (32.7%) have had at least one employee in the past five years. Fifty-six establishments (36.6%) have (or had) at least one employee diagnosed with cancer presently or in the past five years.

**Table 1. Attributes of the business establishments (N = 153)**

Items	Classification	Number of establishments n (%)
Type of industry	Construction	23 (15.0)
	Wholesale and retail	21 (13.7)
	Public institutions (national, prefectural, and municipal)	14 (9.2)
	Manufacturing	13 (8.5)
	Transportation and telecommunications	12 (7.8)
	Welfare	11 (7.2)
	Lodging and catering	8 (5.2)
	Agriculture, forestry, and fishing	8 (5.2)
	Medical	8 (5.2)
	Finance and insurance	8 (5.2)
	Education, research, and learning	5 (3.3)
	Electricity, gas, heat supply, and water supply	4 (2.6)
	Others	18 (11.8)
Number of employees	1–10	49 (32.0)
	11–50	58 (37.9)
	51–100	15 (9.8)
	101–300	18 (11.8)
	> 300	13 (8.5)
Type of health insurance	Health insurance association	102 (66.7)
	Society-managed health insurance	22 (14.4)
	Mutual aid association	17 (11.1)
	National health insurance	9 (5.9)
	Others	3 (2.0)
Assignment of industrial physicians	Personal industrial physician	6 (3.9)
	Outsourced industrial physician	38 (24.8)
Nursing staffing	Full-time occupational health nurse	5 (3.3)
	Part-time occupational health nurse	0 (0)
	Full-time nurse	2 (1.3)
	Part-time nurse	0 (0)
Consultation service for employment support	nil	11 (7.2)

### Support program for employees with cancer

Table 5 shows the support programs for employees with cancer. The most common support program was “Sickness and injury benefits,” which was selected by 76 establishments (49.7%). However, the number of establishments with 1–10 employees was 12 (24.5%). This was followed by “Paid leave on an hourly basis,” which was selected by 65 (42.5%) establishments, and the number of establishments with 1–10 employees was 12 (24.5%). Forty-one establishments (26.8%) selected “Shorter working hours,” and the number of establishments with more than 300 employees was two

(15.4%). “Shorter working hours,” “Company-specific allowances,” and “Staggered commuting” were more prevalent among establishments with 11–300 employees, while two (15.4%) of the establishments with over 300 employees selected “Working from home.”

### Awareness of the resources available to support employees with cancer in the workplace

Table 6 shows the awareness of the resources available to support employees with cancer in the workplace. “Industrial physicians” was the highest at 52 establishments (34.0%). This was followed by “Labor and social

**Table 2. Cancer screening rate**

Cancer screening			Number of employees					
	Total <i>n</i> = 153		1–10 <i>n</i> = 49	11–50 <i>n</i> = 58	51–100 <i>n</i> = 15	101–300 <i>n</i> = 18	> 300 <i>n</i> = 13	
Lung	Number of responses <i>n</i> (%)		106 (69.3)	30 (61.2)	46 (79.3)	10 (66.7)	11 (61.1)	9 (69.2)
	Screening rate	Median (Quartile range)	99.15 (42.50–100.00)	100.00 (75.00–100.00)	92.90 (10.00–100.00)	92.50 (8.00–100.00)	95.00 (81.70–100.00)	60.00 (4.50–99.50)
Gastric	Number of responses <i>n</i> (%)		110 (71.9)	28 (57.1)	50 (86.2)	10 (66.7)	12 (66.7)	10 (76.9)
	Screening rate	Median (Quartile range)	69.00 (26.73–93.13)	77.50 (60.00–100.00)	70.00 (20.00–100.00)	38.65 (8.25–76.25)	51.50 (21.25–77.05)	52.00 (33.75–82.50)
Colorectal	Number of responses <i>n</i> (%)		105 (68.6)	27 (55.1)	49 (84.5)	9 (60.0)	10 (55.6)	10 (76.9)
	Screening rate	Median (Quartile range)	70.00 (20.00–98.00)	80.00 (50.00–100.00)	55.00 (15.00–95.00)	50.00 (6.50–90.00)	74.15 (42.50–91.18)	63.50 (33.75–84.25)
Breast	Number of responses <i>n</i> (%)		92 (60.1)	22 (44.9)	46 (79.3)	7 (46.7)	8 (44.4)	9 (69.2)
	Screening rate	Median (Quartile range)	50.00 (11.05–100.00)	55.00 (27.50–100.00)	30.00 (4.75–100.00)	20.00 (10.00–95.00)	29.55 (20.00–72.50)	50.00 (19.50–85.00)
Cervical	Number of responses <i>n</i> (%)		93 (60.8)	23 (46.9)	47 (81.0)	7 (46.7)	8 (44.4)	8 (61.5)
	Screening rate	Median (Quartile range)	50.00 (10.00–100.00)	60.00 (20.00–100.00)	30.00 (5.00–90.00)	20.00 (10.00–50.00)	41.65 (20.68–72.50)	46.10 (28.25–69.00)

security attorney” at 51 establishments (33.3%) and “Attending physicians of employees with cancer” at 43 establishments (28.1%). The “MHLW website” was selected by 16 establishments (10.5%), and the “Center for Cancer Control and Information Services of the National Cancer Center website” was selected by 11 establishments (7.2%).

### Difficulties in supporting employees with cancer in the workplace

Table 7 shows the difficulties in supporting employees with cancer in the workplace. “At the time of cancer diagnosis,” 27 establishments (48.2%) responded that “It was difficult to adjust work duties due to treatment policy and duration uncertainties,” and the median (quartile range) difficulty level was 3.00 (2.00–3.00). This was followed by “I did not know to whom and what extent I should tell other employees about the illness” at 22 establishments (39.3%), and the median difficulty level was 3.00 (1.50–3.00).

“While on leave,” 26 establishments (46.4%) responded that “It was difficult to adjust work duties due to treatment policy and duration uncertainties,” and the median difficulty level was 3.00 (2.00–3.00). This was followed by “I did not know to whom and what extent I should tell other employees about the illness” at 20 establishments (35.7%), and the median difficulty level was 3.00 (1.75–3.00).

“Upon returning to work,” 24 establishments (42.9%) responded that “It was difficult to adjust the amount of work to accommodate treatment and symptoms,” and the median difficulty level was 3.00 (2.00–3.00). Similarly, 24 establishments (42.9%) responded that “It was difficult to adjust the work content to accommodate treatment and symptoms,” with a median difficulty level of 3.00 (2.00–3.00).

“After returning to work,” 21 establishments (37.5%) responded that “It was difficult to adjust the work content to accommodate treatment and symptoms,” and the median difficulty level was 3.00 (2.00–3.00). This was followed by “I did not know how to deal with side effects and after-effects of treatment and examinations” at 20 establishments (35.7%) with the median difficulty level of 3.00 (2.50–3.00) and “It was difficult to adjust the amount of work to accommodate treatment and symptoms” at 20 establishments (35.7%) with a median difficulty level of 3.00 (2.50–3.00).

### Support sought by business establishments from medical professionals to provide employment support for employees with cancer

Table 8 shows the support sought by business establishments from medical professionals to provide employment support for employees with cancer. Regarding “Support for employees with cancer,” 105 establishments (68.6%) cited “Explanation of specific precautions

**Table 3. Support provided by business establishments to promote cancer screening (N = 153)**

	Cancer screening				
	Lung n (%)	Gastric n (%)	Colorectal n (%)	Breast n (%)	Cervical n (%)
Cancer screening information guide					
Distribution of cancer screening pamphlets	42 (27.5)	41 (26.8)	41 (26.8)	37 (24.2)	37 (24.2)
Posting of cancer screening posters	25 (16.3)	24 (15.7)	23 (15.0)	22 (14.4)	22 (14.4)
Holding study sessions related to cancer screening					
Holding study sessions related to cancer	4 (2.6)	4 (2.6)	4 (2.6)	4 (2.6)	3 (2.0)
Providing health education for cancer prevention	13 (8.5)	2 (1.3)	2 (1.3)	2 (1.3)	2 (1.3)
Providing opportunities to hear about cancer patients' experiences of fighting the disease	0 (0)	1 (0.7)	0 (0)	2 (1.3)	1 (0.7)
Cancer screening recommendations					
Encourage employees to undergo cancer screening at morning meetings.	18 (11.8)	17 (11.1)	16 (10.5)	14 (9.2)	14 (9.2)
Encourage employees who need to have a checkup for a detailed examination	38 (24.8)	41 (26.8)	42 (27.5)	28 (18.3)	27 (17.6)
Providing opportunities for cancer screening					
Conducting cancer screening in a screening vehicle on the premises	23 (15.0)	25 (16.3)	18 (11.8)	5 (3.3)	4 (2.6)
Conducting cancer screening in a screening vehicle near the workplace	7 (4.6)	7 (4.6)	5 (3.3)	3 (2.0)	2 (1.3)
Cancer screening at outsourced facilities	30 (19.6)	31 (20.3)	34 (22.2)	26 (17.0)	27 (17.6)
Option of complete health screening	26 (17.0)	29 (19.0)	27 (17.6)	30 (19.6)	30 (19.6)
Cancer screening during lifestyle related disease prevention screening by the National Health Insurance Association	65 (42.5)	68 (44.4)	69 (45.1)	52 (34.0)	52 (34.0)
Subsidies for cancer screening expenses					
Full payment	49 (32.0)	56 (36.6)	51 (33.3)	31 (20.3)	32 (20.9)
Partial payment	14 (9.2)	15 (9.8)	17 (11.1)	14 (9.2)	15 (9.8)
Securing time for cancer screening					
During working hours	64 (41.8)	67 (43.8)	65 (42.5)	45 (29.4)	45 (29.4)
Using paid leave	11 (7.2)	12 (7.8)	12 (7.8)	13 (8.5)	13 (8.5)
Using special leave or time off	7 (4.6)	7 (4.6)	7 (4.6)	8 (5.2)	8 (5.2)

for continuing the work,” and 92 establishments (60.1%) cited “Providing information about future treatment so that the employee can explain it to the workplace.”

Regarding “Support for departments in charge,” 92 establishments (60.1%) cited “Providing information on specific precautions for employees with cancer to continue working,” and 66 establishments (43.1%) cited “Presentation of the duration of the employee’s treatment for cancer.”

Regarding “Support for other employees,” 75 establishments (49.0%) cited “Providing basic information about cancer.”

#### **Relationship between the presence of employees with cancer and awareness of resources available**

#### **to support business establishments seeking support from medical professionals and employment support for employees with cancer**

Table 9 shows the relationship between the presence of employees with cancer presently and in the past five years and “Support sought by business establishments from medical professionals to promote cancer screening,” “Support sought by business establishments from medical professionals to provide employment support for employees with cancer,” and “Awareness of resources available to support employees with cancer in the workplace,” Compared to other establishments, those with employees with cancer presently or in the past five years scored higher with 10 out of 42 items related to “Support sought by business establishments

**Table 4. Support sought by business establishments from medical professionals to promote cancer screening**

Support	Total <i>n</i> = 153 <i>n</i> (%)	Number of employees				
		1–10 <i>n</i> = 49 <i>n</i> (%)	11–50 <i>n</i> = 58 <i>n</i> (%)	51–100 <i>n</i> = 15 <i>n</i> (%)	101–300 <i>n</i> = 18 <i>n</i> (%)	> 300 <i>n</i> = 13 <i>n</i> (%)
<b>Support for employees</b>						
Holding study sessions on cancer prevention	49 (32.0)	8 (16.3)	21 (36.2)	4 (26.7)	9 (50.0)	7 (53.8)
Holding study sessions on cancer	36 (23.5)	4 (8.2)	15 (25.9)	5 (33.3)	6 (33.3)	6 (46.2)
Holding study sessions on types and methods of cancer screening	23 (15.0)	4 (8.2)	14 (24.1)	3 (20.0)	0 (0)	2 (15.4)
Holding meetings to hear from cancer patients about their experiences in fighting cancer	12 (7.8)	2 (4.1)	4 (6.9)	1 (6.7)	2 (11.1)	3 (23.1)
Others	3 (2.0)	1 (2.0)	2 (3.4)	0 (0)	0 (0)	0 (0)
<b>Support for departments in charge</b>						
Providing advice and dispatching lecturers when planning study sessions on cancer prevention	33 (21.6)	5 (10.2)	16 (27.6)	2 (13.3)	5 (27.8)	5 (38.5)
Providing advice and dispatching lecturers when planning study sessions on cancer	14 (9.2)	1 (2.0)	7 (12.1)	2 (13.3)	1 (5.6)	3 (23.1)
Providing advice and dispatching lecturers when planning study sessions on cancer screening	10 (6.5)	1 (2.0)	5 (8.6)	0 (0)	0 (0)	4 (30.8)
Advising when planning meetings to hear cancer patients' experiences of battling the disease and introducing patients	7 (4.6)	0 (0)	2 (3.4)	1 (6.7)	2 (11.1)	2 (15.4)
Holding study sessions on cancer prevention	30 (19.6)	4 (8.2)	14 (24.1)	0 (0)	5 (27.8)	7 (53.8)
Holding study sessions on types and methods of cancer screening	25 (16.3)	4 (8.2)	14 (24.1)	3 (20.0)	1 (5.6)	3 (23.1)
Holding study sessions on cancer	24 (15.7)	1 (2.0)	10 (17.2)	3 (20.0)	5 (27.8)	5 (38.5)
Others	3 (2.0)	0 (0)	3 (5.2)	0 (0)	0 (0)	0 (0)

**Table 5. Support program for employees with cancer**

Support	Total <i>n</i> = 153 <i>n</i> (%)	Number of employees				
		1–10 <i>n</i> = 49 <i>n</i> (%)	11–50 <i>n</i> = 58 <i>n</i> (%)	51–100 <i>n</i> = 15 <i>n</i> (%)	101–300 <i>n</i> = 18 <i>n</i> (%)	> 300 <i>n</i> = 13 <i>n</i> (%)
Sickness and injury benefits	76 (49.7)	12 (24.5)	34 (58.6)	11 (73.3)	12 (66.7)	7 (53.8)
Paid leave on an hourly basis	65 (42.5)	12 (24.5)	29 (50.0)	7 (46.7)	8 (44.4)	9 (69.2)
Shorter working hours	41 (26.8)	15 (30.6)	13 (22.4)	5 (33.3)	6 (33.3)	2 (15.4)
Company-specific allowances	30 (19.6)	5 (10.2)	14 (24.1)	5 (33.3)	5 (27.8)	1 (3.3)
Flexible commuting	22 (14.4)	6 (12.2)	8 (13.8)	4 (26.7)	2 (11.1)	2 (15.4)
Staggered commuting	20 (13.1)	4 (8.2)	6 (10.3)	4 (26.7)	5 (27.8)	1 (7.7)
Working from home	12 (7.8)	3 (6.1)	4 (6.9)	1 (6.7)	2 (11.1)	2 (15.4)
Change in commuting method	9 (5.9)	1 (2.0)	2 (3.4)	3 (20.0)	1 (5.6)	2 (15.4)
Company's cancer-specific leave program	7 (4.6)	2 (4.1)	5 (8.6)	0 (0)	0 (0)	0 (0)
Others	14 (9.2)	3 (6.1)	6 (10.3)	2 (13.3)	1 (5.6)	2 (15.4)

from medical professionals to promote cancer screening.” “Support sought by business establishments from medical professionals to provide employment support

for employees with cancer,” and “Awareness of the resources available to support employees with cancer in the workplace.”



**Table 6. Awareness of resources available to support employees with cancer in the workplace**

Resources	Number of employees					
	Total	1–10	11–50	51–100	101–300	> 300
	<i>n</i> = 153 <i>n</i> (%)	<i>n</i> = 49 <i>n</i> (%)	<i>n</i> = 58 <i>n</i> (%)	<i>n</i> = 15 <i>n</i> (%)	<i>n</i> = 18 <i>n</i> (%)	<i>n</i> = 13 <i>n</i> (%)
Industrial physicians	52 (34.0)	7 (14.3)	12 (20.7)	9 (60.0)	14 (77.8)	10 (76.9)
Labor and social security attorney	51 (33.3)	14 (28.6)	21 (36.2)	5 (33.3)	10 (55.6)	1 (7.7)
Attending physician of an employee with cancer	43 (28.1)	11 (22.4)	13 (22.4)	7 (46.7)	7 (38.9)	5 (38.5)
Consultation services at medical institutions where employees with cancer are seen	27 (17.6)	8 (16.3)	9 (15.5)	4 (26.7)	5 (27.8)	1 (7.7)
The public employment security office	21 (13.7)	6 (12.2)	10 (17.2)	2 (13.3)	3 (16.7)	0 (0)
Occupational health nurses	17 (11.1)	3 (6.1)	5 (8.6)	1 (6.7)	5 (27.8)	3 (23.1)
Ministry of Health, Labor, and Welfare website	16 (10.5)	4 (8.2)	7 (12.1)	3 (20.0)	2 (11.1)	0 (0)
The administrative office of the local government where the employee with cancer resides	13 (8.5)	3 (6.1)	6 (10.3)	3 (20.0)	1 (5.6)	0 (0)
Nurses whose main duty is to manage the health of employees	11 (7.2)	3 (6.1)	2 (3.4)	1 (6.7)	4 (22.2)	1 (7.7)
Community occupational health centers	11 (7.2)	1 (2.0)	5 (8.6)	2 (13.3)	1 (5.6)	2 (15.4)
Center for Cancer Control and Information Services of the National Cancer Center website	11 (7.2)	4 (8.2)	3 (5.2)	2 (13.3)	2 (11.1)	0 (0)
Bureau of Labor Affairs	7 (4.6)	2 (4.1)	3 (5.2)	1 (6.7)	1 (5.6)	0 (0)
Corporate Action to Promote Cancer Control website	4 (2.6)	0 (0)	1 (1.7)	2 (13.3)	1 (5.6)	0 (0)
Human resource consultants	1 (0.7)	0 (0)	0 (0)	1 (6.7)	0 (0)	0 (0)
Others	2 (1.3)	1 (2.0)	1 (1.7)	0 (0)	0 (0)	0 (0)

## DISCUSSION

The main support provided by establishments for promoting cancer screening was “Securing time for cancer screening” and “Subsidies for cancer screening expenses,” which were implemented in approximately 20–40% of the establishments. The cancer screening rate of the establishments that responded was approximately 50–70%, which was in line with the national target.<sup>2</sup> Establishments sought advice from medical professionals about holding study sessions, planning such sessions on cancer and cancer prevention, and dispatching lecturers to promote cancer screening. However, the need was higher for establishments with employees with cancer presently or in the past five years. These findings suggest a high-interest level in cancer control measures among establishments with high cancer screening rates and those with employees with cancer. However, some establishments did not respond to the cancer screening rate or did not provide support to promote cancer screening uptake. Hence, these establishments have low-interest levels in cancer control. Increasing the interest of business establishments in cancer and cancer screening is necessary to improve cancer screening rates. However, increasing their interest in cancer screening

might be difficult if they do not have employees with cancer.

The response status of the cancer screening rate and support provided by establishments to promote cancer screening uptake differed based on the cancer type. Breast and cervical cancer screening received fewer responses than other cancers. Moreover, screening rates were lower, and there was less support for promoting screening uptake. There might be a reluctance to encourage women to undergo breast and cervical cancer screening because they are only available to women. However, this should be remedied as soon as possible. This is because the prime age for breast and cervical cancers is the working age. Incidence of cervical cancer begins to increase in the late 20s and breast cancer in the late 40s.<sup>30, 31</sup> Despite the decline in overall cancer mortality, mortality rates for breast and cervical cancer are increasing.<sup>32</sup> According to the 2021 Labor Force Survey, the employment rate for women aged 15–64 years is 71.3% and is increasing yearly.<sup>33</sup> Endo et al. classified stomach, colon, breast, and female genital cancers in the high complete return rate group. Therefore, improving cancer screening rates for breast and cervical cancers is significant for early cancer detection and treatment and

**Table 7. Difficulties in supporting employees with cancer in the workplace (N = 56)**

	Difficulty Yes <i>n</i> (%)	Difficulty level		
		<i>n</i>	Median	(Quartile range)
<b>At the time of cancer diagnosis</b>				
It was difficult to adjust work duties due to treatment policy and duration uncertainties	27 (48.2)	38	3.00	(2.00–3.00)
I did not know to whom and what extent I should tell other employees about the illness.	22 (39.3)	37	3.00	(1.50–3.00)
Considering employees' treatment, it is difficult to ask them about their illnesses because of privacy issues.	18 (32.1)	36	3.00	(1.00–3.00)
Difficulties in understanding the medical certificate confused work adjustment.	2 (3.6)	24	1.00	(1.00–1.00)
I had trouble dealing with other employees' misconceptions or prejudice toward the illness or its treatment.	1 (1.8)	24	1.00	(1.00–2.00)
The medical institution refused to issue a medical certificate necessary for workplace procedures.	0 (0)	23	1.00	(1.00–1.00)
The medical institution refused to revise the medical certificate.	0 (0)	22	1.00	(1.00–1.00)
Others	1 (1.8)	1	3.00	
<b>While on leave</b>				
It was difficult to adjust work duties due to treatment policy and duration uncertainties.	26 (46.4)	38	3.00	(2.00–3.00)
I did not know to whom and what extent I should tell other employees about the illness.	20 (35.7)	34	3.00	(1.75–3.00)
Considering employees' treatment, it is difficult to ask them about their illnesses because of privacy issues.	16 (28.6)	30	3.00	(1.00–3.00)
Paying social insurance premiums during extended leave or absence was burdensome.	9 (16.1)	28	2.00	(1.00–3.00)
There was no advisor or contact person when I had problems treating employees with cancer (I did not know).	3 (5.4)	22	1.00	(1.00–2.00)
I had trouble dealing with other employees' misconceptions or prejudice toward the illness or its treatment.	1 (1.8)	21	1.00	(1.00–2.00)
Difficulties in understanding the medical certificate confused work adjustment.	1 (1.8)	21	1.00	(1.00–1.00)
The medical institution refused to issue an application for sickness and injury benefits while on leave.	1 (1.8)	21	1.00	(1.00–1.00)
The medical institution refused to issue a medical certificate necessary for workplace procedures.	0 (0)	21	1.00	(1.00–1.00)
The medical institution refused to revise the medical certificate.	0 (0)	20	1.00	(1.00–1.00)
<b>Upon returning to work</b>				
It was difficult to adjust the amount of work to accommodate treatment and symptoms.	24 (42.9)	34	3.00	(2.00–3.00)
It was difficult to adjust the work content to accommodate treatment and symptoms.	24 (42.9)	34	3.00	(2.00–3.00)
It was difficult to adjust work hours to accommodate treatment and symptoms.	18 (32.1)	29	3.00	(1.50–3.00)
I did not know how to deal with the side effects and after-effects of treatment and examinations.	17 (30.4)	28	3.00	(2.00–3.00)
It was difficult to adjust work duties due to treatment policy and duration uncertainties	16 (28.6)	28	3.00	(1.25–3.00)
It was difficult to determine whether it was appropriate to have the patient return to work.	16 (28.6)	30	3.00	(1.00–3.00)
I did not know how to prevent the worsening of the condition or recurrence.	14 (25.0)	25	3.00	(1.50–3.00)
Even considering employees' treatment, it is difficult to ask them about their illnesses because of privacy issues.	10 (17.9)	25	2.00	(1.00–3.00)
I did not know to whom and what extent I should tell other employees about the illness.	10 (17.9)	24	2.00	(1.00–3.00)
There was no advisor or contact person when I had problems treating employees with cancer (I did not know).	4 (7.1)	24	2.00	(1.00–2.75)
It was difficult to share the information with medical institutions.	4 (7.1)	21	1.00	(1.00–2.00)
I had trouble dealing with other employees' misconceptions or prejudice toward the illness or its treatment.	3 (5.4)	22	1.50	(1.00–2.00)
Difficulties in understanding the medical certificate confused work adjustment.	3 (5.4)	20	1.00	(1.00–2.00)
The medical institution refused to issue a medical certificate necessary for workplace procedures.	0 (0)	20	1.00	(1.00–1.00)
The medical institution refused to revise the medical certificate.	0 (0)	20	1.00	(1.00–1.00)
<b>After returning to work</b>				
It was difficult to adjust the work content to accommodate treatment and symptoms.	21 (37.5)	33	3.00	(2.00–3.00)
I did not know how to deal with the side effects and after-effects of treatment and examinations.	20 (35.7)	29	3.00	(2.50–3.00)
It was difficult to adjust the amount of work to accommodate treatment and symptoms.	20 (35.7)	32	3.00	(2.00–3.00)
It was difficult to adjust work hours to accommodate treatment and symptoms.	18 (32.1)	29	3.00	(1.50–3.00)
I did not know how to prevent the worsening of the condition or recurrence.	14 (25.0)	26	3.00	(2.00–3.00)
Considering employees' treatment, it is difficult to ask them about their illnesses because of privacy issues.	14 (25.0)	28	2.50	(1.00–3.00)
I did not know to whom and what extent I should tell other employees about the illness.	11 (19.6)	26	2.00	(1.00–3.00)
I had trouble dealing with other employees' misconceptions or prejudice toward the illness or its treatment.	3 (5.4)	22	1.50	(1.00–2.00)
There was no advisor or contact person when I had problems treating employees with cancer (I did not know).	3 (5.4)	20	1.50	(1.00–2.00)
It was difficult to share the information with medical institutions.	3 (5.4)	21	1.00	(1.00–2.00)
The medical institution refused to issue a medical certificate necessary for workplace procedures.	1 (1.8)	20	1.00	(1.00–1.00)
Difficulties in understanding the medical certificate confused work adjustment.	1 (1.8)	21	1.00	(1.00–1.00)
The medical institution refused to revise the medical certificate.	0 (0)	20	1.00	(1.00–1.00)

**Table 8. Support sought by business establishments from medical professionals to provide employment support for employees with cancer**

Supports	Total <i>n</i> = 153 <i>n</i> (%)	Number of employees				
		1–10 <i>n</i> = 49 <i>n</i> (%)	11–50 <i>n</i> = 58 <i>n</i> (%)	51–100 <i>n</i> = 15 <i>n</i> (%)	101–300 <i>n</i> = 18 <i>n</i> (%)	> 300 <i>n</i> = 13 <i>n</i> (%)
Support for employees with cancer						
Explanation of specific precautions for continuing the work	105 (68.6)	31 (63.3)	37 (63.8)	10 (66.7)	17 (94.4)	10 (76.9)
Providing information about future treatment so that the employee can explain it to the workplace	92 (60.1)	20 (40.8)	38 (65.5)	12 (80.0)	13 (72.2)	9 (69.2)
Explanation of treatment duration	80 (52.3)	19 (38.8)	28 (48.3)	11 (73.3)	14 (77.8)	8 (61.5)
Explanation of whether inpatient or outpatient treatment is required	68 (44.4)	15 (30.6)	29 (50.0)	7 (46.7)	10 (55.6)	7 (53.8)
Explanation of side effects of treatment	65 (42.5)	16 (32.7)	22 (37.9)	8 (53.3)	11 (61.1)	8 (61.5)
Presentation or explanation of treatment options	57 (37.3)	12 (24.5)	21 (36.2)	8 (53.3)	8 (44.4)	8 (61.5)
Others	6 (3.9)	2 (4.1)	4 (6.9)	0 (0)	0 (0)	0 (0)
Support for departments in charge						
Providing basic knowledge about cancer	49 (32.0)	9 (18.4)	21 (36.2)	7 (46.7)	7 (38.9)	5 (38.5)
Content to be performed with the permission of the individual						
Providing information on specific precautions for employees with cancer to continue working	92 (60.1)	26 (53.1)	33 (56.9)	10 (66.7)	13 (72.2)	10 (76.9)
Presenting the duration of the employee's treatment for cancer	66 (43.1)	13 (26.5)	30 (51.7)	7 (46.7)	10 (55.6)	6 (46.2)
Providing specific details of the diagnosis	60 (39.2)	15 (30.6)	22 (37.9)	10 (66.7)	7 (38.9)	6 (46.2)
Providing information on whether inpatient or outpatient treatment is required	59 (38.6)	12 (24.5)	29 (50.0)	6 (40.0)	7 (38.9)	5 (38.5)
Providing information on side effects of the treatment received by employees with cancer	59 (38.6)	16 (32.7)	21 (36.2)	8 (55.3)	8 (44.4)	6 (46.2)
Explanation of the treatment received by employees with cancer	51 (33.3)	11 (22.4)	23 (39.7)	5 (33.3)	7 (38.9)	5 (38.5)
Others	6 (3.9)	1 (2.0)	3 (5.2)	1 (6.7)	1 (5.6)	0 (0)
Support for other employees						
Providing basic information about cancer	75 (49.0)	20 (40.8)	34 (58.6)	8 (53.3)	9 (50.0)	4 (30.8)
Others	6 (3.9)	2 (4.1)	3 (5.2)	1 (6.7)	0 (0)	0 (0)

securing the working population.<sup>13</sup> However, Tsuchiya et al. reported that women were more likely to lose their jobs after a cancer diagnosis than men.<sup>14</sup> A study on the return to work of patients with gynecological cancer suggests that being employed part-time could negatively affect returning to work or changing jobs.<sup>34</sup> Studies on patients with breast cancer returning to work also discovered that some women lost their jobs after diagnosis and could not obtain new employment. Part-time workers were significantly more likely to lose their jobs than full-time workers.<sup>35</sup> Employment style is also important for female employees with cancer to continue working.

Promoting cancer screening for breast and cervical cancers, which have high incidence rates, and early detection and treatment will lead to shorter treatment time and better prognosis, contributing to returning to work.

In this study, 56 establishments (36.6%) had employees with cancer presently or in the past five years.

Kim et al. reported that cancer survivors who were not working had a significantly lower health-related quality of life (QOL) than cancer survivors who were working.<sup>36</sup> Lieb et al. reported that non-workers had higher levels of depression, anxiety, and distress than workers.<sup>9</sup> Yang et al. study on the return to work and

**Table 9. Relationship between the presence of employees with cancer and the awareness of resources available to the support that business establishments seek from medical professionals and the employment support for employees with cancer**

Items	Total <i>n</i> = 153 <i>n</i> (%)	Employees with cancer* Yes <i>n</i> = 56 <i>n</i> (%)	Others <i>n</i> = 97 <i>n</i> (%)	<i>P</i> values
Support sought by business establishments from medical professionals to provide employment support for employees with cancer				
Support for employees				
Holding study sessions on cancer	36 (23.5)	22 (39.3)	14 (14.4)	< 0.001
Holding study sessions on cancer prevention	49 (32.0)	25 (44.6)	24 (24.7)	0.011
Support to the department in charge				
Providing advice and dispatching lecturers when planning study sessions on cancer prevention	10 (6.5)	7 (12.5)	3 (3.1)	0.023
Support sought by establishments from medical professionals in providing employment support for employees with cancer				
Support for employees with cancer				
Explanation of side effects of treatment	65 (42.5)	34 (60.7)	31 (32.0)	0.001
Presentation or explanation of treatment options	57 (37.3)	29 (51.8)	28 (28.9)	0.005
Support for departments in charge				
Providing information on the side effects of the treatment received by employees with cancer	59 (38.6)	29 (51.8)	30 (30.9)	0.011
Awareness of resources available to support employees with cancer in the workplace				
Industrial physician	52 (34.0)	33 (58.9)	19 (19.6)	< 0.001
Labor and social security attorney	51 (33.3)	26 (46.4)	25 (25.8)	0.009
Attending physician of an employee with cancer	43 (28.1)	25 (44.6)	18 (18.6)	0.001
Nurses whose primary responsibility is to provide health care to employees	11 (7.2)	9 (16.1)	2 (2.1)	0.001

\*Presence of employees with cancer presently and in the past five years.

chi-square test. Items with a significance level of less than 5% were listed in “Support sought by business establishments from medical professionals to promote cancer screening,” “Support sought by establishments from medical professionals in providing employment support for employees with cancer,” and “Awareness of resources available to support employees with cancer in the workplace.”

mortality in lung cancer survivors reported higher survival rates for patients with stage III and IV lung cancer who returned to work.<sup>10</sup> Return of employees with cancer to the workplace is an important contributor to cancer patient survival rate, mental health, and QOL. The most common support provided by business establishments for employees with cancer was “Sickness and injury benefits” (49.7%), followed by “Paid leave on an hourly basis” (42.5%), and “Shorter working hours” (26.8%). Small-scale establishments with 1–10 employees provided less support for employees with cancer. Resources known to be available for employment support of employees with cancer were “Industrial physician” (34.0%), “Labor and social security attorney”

(33.3%), and “Attending physician of an employee with cancer” (28.1%), in that order. Less than 10% of the respondents knew about the “MHLW website,” “Center for Cancer Control and Information Services of the National Cancer Center website,” and “Corporate Action to Promote Cancer Control website.” The available social resources provided by public institutions on the Internet are not well known. In medium-sized or larger establishments with 51 or more employees, awareness of “Industrial physicians” exceeded 60%. This is because Japanese occupational safety and health regulations require industrial physicians to be at establishments employing 50 or more workers. Establishments with 10 or more employees must assign a person to be in charge

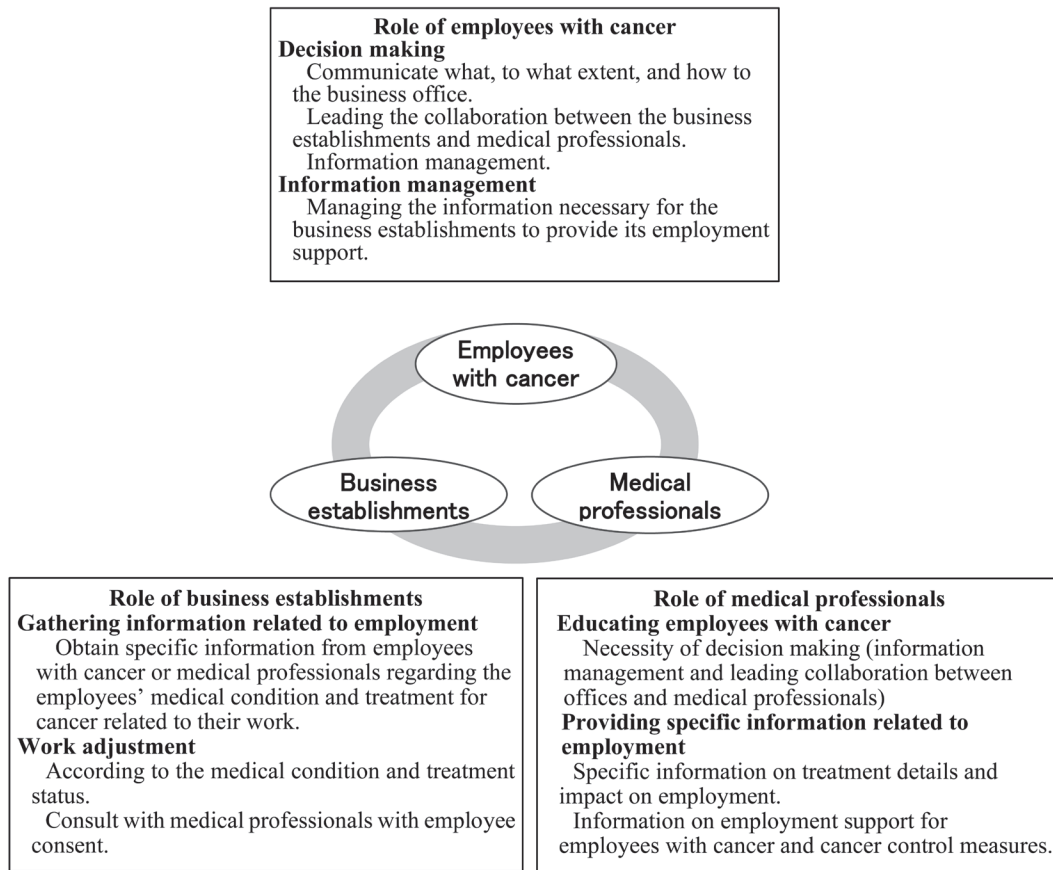
of employee health care. Although no standards for the assignment of public health and other types of nurses at business establishments exist, they may be assigned to the health care management of employees. In establishments with 50 or fewer employees, the awareness of available resources was less than 40% in all categories. Preparing numerous support measures for employees with cancer for small-scale establishments and assigning medical professionals, such as industrial physicians, may be difficult. Ensuring that such establishments are informed about the available resources that public institutions have in place to provide employment support for employees with cancer is important. In addition, establishments that reported having an employee with cancer presently or in the past five years were more likely to know about resources available to support employees with cancer than those without them. Establishments without employees with cancer may have less interest in the resources available to support employees with cancer. The difficulties in supporting employees with cancer in the workplace vary from phase to phase. The main difficulties “At the time of cancer diagnosis” and “While on leave” were related to uncertainties of treatment policy and duration and privacy, whereas the main difficulties “Upon returning to work” and “After returning to work” were related to work adjustment based on treatment and symptoms, and dealing with side effects and after-effects. In response to these difficulties, information regarding treatment and specific precautions for continuing treatment and employment were sought. In particular, providing information to employees with cancer is crucial. Business establishments seek specific information from employees with cancer because adjusting the amount, hours, and content of work to accommodate the duration, side effects, and symptoms of treatment is difficult. Specific and detailed explanations by medical professionals are required for employees with cancer to enable them to thoroughly explain their conditions to personnel at their workplaces. Providing business establishments with detailed information on the medical report with the consent of the employee with cancer is important for a smooth return to work. Hence, employees with cancer must cooperate with medical care providers and business offices and determine “What,” “To what extent,” and “How” they should communicate to business offices to support their employment.

This study’s results revealed the challenges in providing employment support for employees with cancer in business establishments. Business establishments seek specific information about cancer treatment and its impact on employees to provide employment support.

Nevertheless, privacy concerns for employees with cancer have made it difficult to request this information from employees with cancer and medical professionals. Little is known about the available resources provided by public agencies to support the employment of employees with cancer. In particular, establishments with no employees with cancer may be less aware of the difficulties in supporting employees with cancer in their employment and the resources available to support such employees. In addition, it is challenging to increase the interest of employers in cancer screening of their employees, which may delay cancer detection and treatment. Based on these findings, we propose a model of employment support in which employees with cancer lead collaborations between medical professionals and business establishments so that they can return to work and continue working. Figure 1 depicts this model.

First, “Decision making” is critical to continue working in a business establishment. This includes deciding “What,” “To what extent,” and “How” to communicate to the business establishment and deciding to lead collaborations between the medical professionals and business establishment. In addition, employees with cancer must manage specific information about their condition and treatment so that business establishments have the information required to support their employment. This is because requesting private information by establishments is difficult. When an employee with cancer obtains information from medical professionals regarding his or her medical condition or treatment related to employment, he or she should be specific with the medical professionals as to “What” and “To what extent” he or she wishes to communicate to the business establishments. Furthermore, establishments should be allowed to consult their attending physicians or medical professionals regarding inquiries and employment support.

When employees with cancer return to work or continue working, medical professionals educate them on their role in managing specific information related to their employment and connecting medical professionals and business establishments. In addition, medical professionals should provide employees with cancer and business establishments with specific information about medical conditions and treatments related to their employment to facilitate employment support. Medical professionals should also inform employees with cancer that they can provide information about social resources that business establishments can use to support their employment. Furthermore, medical information about business establishments’ efforts to support the employment of employees with cancer and improve cancer



**Fig. 1.** Employment support model in which employees with cancer lead the collaboration. The roles of the employee with cancer, medical professional, and business establishments in supporting the employment of employees with cancer are represented. The “Decision making” component of employees with cancer is particularly important.

screening uptake should be provided.

Business establishments obtain specific information from employees with cancer and their medical professionals regarding their medical conditions and treatments related to employment. Business establishments should also coordinate the work of employees with cancer according to their medical conditions and treatments while utilizing social resources available for employment support.

A model of multidisciplinary collaboration has been proposed to facilitate the return of employees with cancer to work.<sup>23, 24, 37</sup> The “Multidisciplinary” team includes cancer survivors, return to work case managers, oncologists, psychologists, occupational physicians, occupational therapists or physiotherapists, social workers, and nurses. This model is ideal for an integrated, multidisciplinary medical approach; however, it is not feasible in Japan at this time. It is not realistic in the Japanese healthcare system to assign numerous specialists to each employee with cancer to support their return

to work and employment. In Japan, the 2018 revision of medical fees established the “Medical treatment and work compatibility support guidance fee.”<sup>38</sup> This fee is charged when a physician provides support for balancing medical treatment and work for an employee with cancer and also provides medical information to an industrial physician or other qualified health management personnel at the business establishment. However, this fee does not apply to establishments in which no qualified health management personnel are assigned. Business establishments with less than 10 employees are not obliged to assign qualified health management personnel. In order to calculate the “Medical treatment and work compatibility support guidance fee,” the employee with cancer must first request compatibility support from the business establishment. Next, the business establishment must submit work information that is prepared jointly with the employee with cancer to the physician, and then the physician must provide the medical information in return. In other words, a model

of employment support based on the initiative of the employee with cancer in collaboration with medical professionals and the business establishment, is appropriate for the Japanese healthcare system at this time.

Our proposed “Employment support model,” in which employees with cancer lead collaboration between medical professionals and business establishments, clarifies the respective roles of employees with cancer, medical professionals, and business establishments. This model emphasizes that employees with cancer must manage their information regarding the medical condition and treatment and take the initiative in establishing collaborations between medical institutions and business establishments to support their return to the workplace. Furthermore, this model primarily focuses on patient education. Therefore, this applies to the Japanese healthcare system. Medical professionals must educate employees with cancer, organize explanatory content, check information on the diagnosis form, and scrutinize the information provided to businesses to implement this model. Therefore, operating this model and verifying its effectiveness is also necessary.

Our study had some limitations. This study has limited generalizability owing to sample selection bias. The target was business establishments in Tottori Prefecture. However, Tottori has the smallest population in Japan and a large percentage of small and medium-sized enterprises. In addition, the survey collection rate and data volume were insufficient. This was because the survey was conducted between the end of a fiscal year and the beginning of the next. There might have been a high-interest level in supporting employees with cancer and cancer screening among the establishments that responded, which may have influenced the results. Improving the collection rate and data volume by adjusting the survey timing, expanding the number of target businesses, and devising survey methods, such as web surveys, is necessary to enhance generalizability.

In conclusion, this study is the exploratory and concrete clarification of the actual status of the cancer screening rate, difficulties related to employment support for employees with cancer, and needs in Japanese business establishments, the details of which have been unknown. Therefore, new findings included: (1) screening for breast and cervical cancers is lower than that for other cancers, and there is little support for promoting screening; (2) business establishments sought support related to cancer and cancer prevention study sessions from medical professionals, (3) resources available for cancer control prepared by public institutions are not well known to business establishments, and (4) business establishments had difficulty obtaining

specific information on cancer and its treatment owing to privacy issues when providing employment support to their employees with cancer. The need for employees with cancer to manage the information that they provide to business establishments and for medical professionals to provide relevant knowledge and specific information to business establishments has been suggested. In addition, identifying issues in supporting employees with cancer in business establishments and developing a hypothetical model to support employees with cancer in their workplaces may improve the QOL of cancer survivors and cancer control measures in the future, which is significant from a health and medical science perspective.

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