Effect of employers’ concerns about cancer countermeasures on the implementation of cancer screening and support for balancing cancer treatment and work in small and medium-sized Japanese enterprises

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Abstract
Objective: Japan has recently implemented screening and support to balance cancer treatment and work. The present study evaluated whether the interest of employers in small and medium-sized enterprises (SMEs) affects cancer control in the workplace.

Methods: Cancer preparedness at work was examined by a Japanese life insurance company contracting 370,000 SMEs. The analysis targeted SMEs hiring ≤50 employees whose employer was aged ≥40 years. The endpoints were performing one or more screening for stomach, colon, or lung cancer recommended for both sexes in Japan and implementing three or more supportive measures from the nine systems listed in a questionnaire. Logistic regression analysis was performed to predict these endpoints using other factors.

Results: The survey was completed from January 5 to 28, 2022 and included 5268 eligible companies. Around half were small enterprises with up to five employees. Screenings were performed for stomach (32%), colorectal (27%), and lung (26%) cancers. Sick leave (36%) was the most common support for balancing cancer treatment and work. Logistic regression analysis revealed that employer’s concern was a significant predictor of screening (odds ratio [OR] = 3.59, P < .001) and support (OR = 2.55, P < .01) compared with “not concerned at all,” along with industry type, annual sales, experience of employees with cancer, and employer’s participation in screening.

Conclusion: Our findings suggested that employers’ interest was a powerful predictor of implementing cancer control in SMEs. Educational intervention targeted toward the employer could play a critical role in improving SMEs.

Keywords
Cancer screening, Japan, SMEs, Supporting measures, Workplace
1 | INTRODUCTION

Cancer has been the leading cause of death in Japan since 1981. In Japan, the “Cancer Control Act” was introduced in 2006, and a law was enforced in 2007 to help to reduce deaths due to cancer in the population. Since then, screening for stomach, lung, colorectal, breast, and cervical cancers has been recommended by the government and shown to reduce mortality. However, the cancer screening rate for target ages was around 36%–46% in 2019, which was below the goal of 50%. The revision of the “Cancer Control Act” in 2016 by the government emphasized taking a stronger approach to cancer-related issues with the aim of implementing cancer screening in the workplace and understanding how these systems are prepared. Employers are responsible for health care in the workplace, where employees spend most of their time, and employers generally perform occupational health services focusing on the economic aspects of medical cost containment and productivity loss. In Japan, there is no legal requirement for cancer screening, and the screening is practiced as a part of the welfare system and social responsibility.

The Ministry of Health, Labour and Welfare (MHLW) promoted “support for balancing cancer treatment and work” in which employees could continue to work while receiving cancer treatment. Following reports that 30% of employees left their jobs within 3 months of receiving a cancer diagnosis and 40% of employees resigned prior to starting cancer treatment, the MHLW published their “Guideline for Workplace Personnel to Promote Work and Treatment Balance” in 2016. Central to the guidelines was the concept of introducing a breaks system (hourly paid annual leave and sick leave) and flexible work systems (short-time work, telework, staggered work, and trial work) to support employees’ work–life balance.

In 2019, there were approximately 3 589 000 companies in Japan, of which 15% were medium-sized enterprises ($\leq 100$ million Japanese yen [JPN] and $\leq 100$ employees in the wholesale industry, $\leq 50$ million JPN and $\leq 100$ employees in the service industry, $\leq 50$ million JPN and $\leq 50$ employees in the retail industry, and $\leq 300$ million JPN and $\leq 300$ employees in the manufacturing industry and the other industries) and 85% were small ($\leq 5$ employees in the wholesale industry, the service industry, and the retail industry, and $\leq 20$ employees in the manufacturing industry and the other industries). Large companies have emphasized human resource development and spent money on social welfare and benefits rather than small and medium-sized enterprises (SMEs). In the 2016 national survey, the cost of non-statutory benefits, which covers the cost of cancer screening, was around 1.7 times higher for companies with $>1000$ employees than that for companies with $30$–$99$ employees. To the best of our knowledge, there have been no detailed studies on small enterprises, which appear to have insufficient budgets. Poor health care systems were also noted in small businesses in other countries. According to a Japanese survey, owner-managed firms account for 70%–80% of those employing $<100$ people, and more than half of these employers indicated that owner-management influenced their business. Therefore, it is reasonable to suggest that management is also reflected in the benefits system. Previous studies have shown that employers could provide appropriate health education by adopting workplace health promotion programs, which also apply to small enterprises.

There is growing interest in cancer issues in the workplace. However, the extent to which employer engagement plays a role in resolving those problems in Japanese SMEs remains unclear. The present study aimed to determine what cancer measures exist in Japanese SMEs, particularly small companies, and investigate whether employers’ interest affects cancer control in the workplace. The study specifically tested the hypothesis that employers’ attitudes affect the implementation of cancer screening and measures to support balancing employees’ work and cancer treatment. We aimed to identify interventional targets for cancer issue education and improve the cancer screening rate and support measures to balance cancer treatment and work provided by SMEs.

2 | METHODS

The “Survey on cancer screening and support for balancing cancer treatment and work” was performed as part of the monthly “Daido-Life Survey” by Daido Life Insurance Company (Daido Life) in 2022 to elucidate the current practices of cancer control measures in SMEs. The company’s main business is insurance services that specialize in Japanese SMEs and it has approximately 370,000 corporate clients under contract. Daido Life introduced the “Daido-Life Survey” as a social commitment and disclosed the information publicly after understanding the businesses of the SMEs and their future situations. In addition to monthly business trends, the survey comprised timely themes, such as “health management,” “disaster preparedness,” “telework implementation status,” and “Sustainable Development Goals initiatives” in 2021. Daido Life targeted 750,000 affiliated corporations and 70,000 members of tax payment associations and received monthly responses from around 10,000 companies. The salespersons arbitrarily selected five to 10 companies from the above corporations and conducted a survey mainly focused on small enterprises with $\leq 50$ employees. The survey was typically an on-site interview with the employer;
however, due to the COVID-19 pandemic, responses by telephone, mail, and e-mail were accepted. Prior to commencing the interview, the salespersons explained to the participants about the survey purpose and obtained the agreement. We performed a detailed analysis based on the datasets provided by Daido Life at their request. Approval was obtained from the Institutional Review Board for Clinical Research, Tokai University (21R-021).

The selection criteria for the participants were enterprises with \( \leq 50 \) employees who agreed to the objectives of the survey. Participants were excluded if the employers were \(<40\) years old or inappropriate responses were included in their responses. This age threshold was adopted because stomach, colorectal, and lung cancer screenings are not recommended for Japanese men and women aged \(<40\) years.\(^2\)

The questionnaire was designed to determine the characteristics of the enterprise (locations, industries, the number of employees, annual sales, and business performance) and the characteristics of the employer (sex and age) as well as the cancer-related and support-related factors of the workplace (employers’ interest in cancer control and history of cancer screening, employee’s history of cancer, and policies for implementation of cancer screening and support measures for balancing treatment and work). Among the 27 questions included, 17 were analyzed after excluding open-ended and less relevant responses. The questionnaire focused on stomach, colorectal, and lung cancer screening and assessed sick leave, leave extensions, staggered working hours, shortened working hours, alterations to working days and places, trial working after recovery, compensation pay, and other systems as support measures. Details of the questionnaires are shown in Supplement 1.

Chi-squared tests were used to compare the association between the implementation of each cancer screening and the introduction of each support with the employers’ interest in cancer control. We defined the two endpoints as executing one or more recommended cancer screening (stomach, colorectal, or lung), and implementing three or more support measures (listed in Supplement 1), respectively, resulting in dichotomous variables. Similarly, we considered employers undergoing cancer screening if they had at least one stomach, colorectal, or lung screening. We compared the association between these endpoints and other factors using chi-squared tests and logistic regression analysis. Each odd ratio was controlled for the other dependent variables. For demographic factors, prefectures were classified according to the Organization for Economic Co-operation and Development (OECD) regional typology into three groups: predominantly urban, intermediate, and predominantly rural.\(^14\) Industries were classified according to the Japan standard industrial classification into three groups: blue-collar, service, and white-collar.\(^15\) The blue-collar industry included agriculture/forestry/fishing, construction, manufacturing, transport, and postal services, the service industry included wholesale, retail trade, accommodations, eating, drinking, living-related, amusement, and other services, and the white-collar industry included information, communications, real estate, goods rental, medical, healthcare, welfare, education, and learning support.\(^15\) The question about employer’s concerns against cancer control used a 4-point Likert scale: “greatly concerned,” “somewhat concerned,” “not very concerned,” and “not concerned at all.” All statistical analysis was performed using R software (version 4.4.1) and significance levels were set at 5%.

3 | RESULTS

The survey was conducted from January 5 to 28, 2022 by 2094 sales representatives and responses from 7946 companies were received. The number of valid responses was 5268 (66.3%). The descriptive statistics are shown in Table 1. Of the 5268 companies, 3411 (64.7%) were small enterprises, consisting of wholesale, service, and retail industries with up to five employees and manufacturing and other industries with \(<20\) employees.\(^7\) Employers received screenings for stomach (53.7%), colorectal (48.1%), and lung (40.5%) cancers, whereas the screenings provided in the workplace were for stomach (32.1%), colorectal (27.0%), and lung (26.1%) cancers. Sick leave was the most common support measure (35.7%), followed by shortened working hours (22.8%) and alterations to working days (17.6%). Small enterprises implemented stomach (28.0%), colorectal (24.0%), and lung (22.5%) cancer screenings and offered sick leave systems in 28.3% of their offices (Supplement 2). Figures 1 and 2 describe the association between employers’ interests and the implementation rate of each screening and compatibility support measure. Employers that were more interested showed a significant adoption of the screening (stomach cancer, \(P < .001\); colorectal cancer, \(P < .001\); lung cancer, \(P < .001\)) and supports except for “other systems” (\(P = .65\)). Table 2 shows the results of the univariate analysis of each factor and the two endpoints. Employers’ interest had a significant impact on both screening (\(P < .001\)) and support (\(P < .001\)). In addition, the number of employees (screening, \(P < .001\); support, \(P < .001\)), annual sales (screening, \(P < .001\); support, \(P < .001\)), years in business (screening, \(P < .001\); support, \(P < .001\)), current business performance (screening, \(P < .001\); support, \(P < .001\)), current excess/deficiency of employees (screening, \(P < .001\); support, \(P < .001\)), experience of employees with cancer (screening, \(P < .001\); support, \(P < .001\);
### Table 1: Enterprises’ and the employers’ characteristics among whole enterprises (N = 5268)

|                          | N   | %    | Employer’s concerns about cancer control | N   | %    |
|--------------------------|-----|------|------------------------------------------|-----|------|
| **Location**             |     |      |                                          |     |      |
| Predominantly Urban      | 3036| 57.6 | Greatly concerned                        | 562 | 10.7 |
| Intermediate             | 1529| 29.0 | Somewhat concerned                       | 3401| 64.6 |
| Predominantly Rural      | 703 | 13.3 | Not very concerned                       | 1206| 22.9 |
| **Industry**             |     |      |                                          |     |      |
| Blue-collar industry     | 2547| 48.3 | Employer’s history of cancer screening   |     |      |
| White-collar industry    | 748 | 14.2 | Stomach cancer                           |     |      |
| Service industry         | 1973| 37.5 | Yes                                      | 2829| 53.7 |
| **Number of employees**  |     |      |                                          |     |      |
| <5                       | 2296| 43.6 | Coloecal cancer                          |     |      |
| 6–10                     | 1042| 19.8 | Yes                                     | 2533| 48.1 |
| 11–20                    | 812 | 15.4 | No                                      | 2735| 51.9 |
| ≥20                      | 1118| 21.2 | Lung cancer                              |     |      |
| **Annual sales**         |     |      |                                          |     |      |
| <30,000,000 JPY          | 961 | 18.2 | No                                      | 3132| 59.5 |
| <100,000,000 JPY         | 1598| 30.3 | Enterprises’ implementation of cancer screening |     |      |
| <500,000,000 JPY         | 1850| 35.1 | Stomach cancer                           |     |      |
| ≥500,000,000 JPY         | 859 | 16.3 | Yes                                     | 1691| 32.1 |
| **Years in business**    |     |      |                                          |     |      |
| <10                      | 445 | 8.4  | Coloecal cancer                          |     |      |
| 11–30                    | 1299| 24.7 | Yes                                     | 1421| 27.0 |
| 31–50                    | 1646| 31.2 | No                                      | 3847| 73.0 |
| ≥50                      | 1878| 35.6 | Lung cancer                              |     |      |
| **Current business performance** | |      |                                          |     |      |
| Better                   | 515 | 9.8  | No                                      | 3892| 73.9 |
| Constant                 | 2981| 56.6 | Enterprises’ implementation of support measures |     |      |
| Worse                    | 1772| 33.6 | Sick leave                              |     |      |
| **Monthly sales compared with the previous** | |      |                                          |     |      |
| Better                   | 656 | 12.5 | No                                      | 3388| 64.3 |
| Constant                 | 3423| 65.0 | Leave extensions                        |     |      |
| Worse                    | 1189| 22.6 | Yes                                     | 816 | 15.5 |
| **Monthly cash-flow compared with the previous** | |      |                                          |     |      |
| Better                   | 328 | 6.2  | Staggered working hours                 |     |      |
| Constant                 | 4304| 81.7 | Yes                                     | 736 | 14.0 |
| Worse                    | 636 | 12.1 | No                                      | 4532| 86.0 |
| **Prospects for future business performance** | |      |                                          |     |      |
| Better                   | 779 | 14.8 | Yes                                     | 1203| 22.8 |
| Constant                 | 3827| 72.6 | No                                      | 4065| 77.2 |
| Worse                    | 662 | 12.6 | Alterations to working days             |     |      |
| **Current excess/deficiency of employees** | |      |                                          |     |      |
| Excess                   | 95  | 1.8  | No                                      | 4341| 82.4 |
| Sufficient               | 3188| 60.5 | Alterations to working places            |     |      |
| Deficiency               | 1985| 37.7 | Yes                                     | 332 | 6.3  |
| **Employer age (years)** |     |      |                                          | 4936| 93.7 |
support, \( P < .001 \), and employers’ history of cancer screening (screening, \( P < .001 \); support, \( P < .001 \)) was all significant for both endpoints. The results of the logistic regression analysis are presented in Table 3 and showed the types of industry, annual sales, experience of employees with cancer, employers’ interest in cancer control, and employer’s participation in screening were significant factors predicting the implementation of both screening and support. Particularly, employer’s cancer screening showed the greatest association (odds ratio \( [OR] = 19.4, P < .001 \)) followed by concern about cancer control (greatly concerned, \( OR = 3.59, P < .001 \); somewhat concerned, \( OR = 3.08, P < .01 \); not very concerned, \( OR = 2.10, P = .04 \); not concerned at all [reference]) with the practices of cancer screening at work. On the other hand, “greatly concerned” about cancer control (\( OR = 2.55, P < .01 \)) showed the greatest association with support using “not concerned at all” as a reference. Short-term business conditions, annual sales, and excess or shortage of employees showed no association.

### Table 1 (Continued)

|               | N   | %   | N   | %   |
|---------------|-----|-----|-----|-----|
| 40–49         | 1161| 22.0| Trial working after recovery | 373 | 7.1 |
| 50–59         | 1767| 33.5| Yes | 4895| 92.9|
| 60–69         | 1389| 26.4| No  |     |     |
| ≥70           | 951 | 18.1| Compensation pay               |     |     |

| Employer sex | N   | %   |
|--------------|-----|-----|
| Male         | 4892| 92.9|
| Female       | 376 | 7.1 |

| Experience of employees with cancer | N   | %   |
|-------------------------------------|-----|-----|
| Yes                                 | 194 | 3.7 |
| No                                  | 5074| 96.3|

| Experience of employees with cancer | N   | %   |
|-------------------------------------|-----|-----|
| Yes                                 | 194 | 3.7 |
| No                                  | 5074| 96.3|

**Figure 1** Association between the employer’s concerns about cancer control and enterprise’ implementation rate of cancer screening.
DISCUSSION

The present study used a survey conducted by a Japanese life insurance company to examine cancer screening implementation and compatibility support measures among SMEs in Japan. Around half of the employers of SMEs received stomach, colorectal, and lung cancer screening, whereas less than one-third implemented these screenings in the workplace. Analysis of the support for balancing cancer treatment and work revealed that, apart from sick leave systems, which were introduced in 36% of the enterprises, other support measures were incorporated in <25% of companies. Logistic regression analysis indicated that, in addition to industry type, sales, and experience of employees with cancer, employers’ interest in cancer control and employers’ cancer screening history were significantly influential factors on the introduction of cancer screening and supportive measures.

In Japan, SMEs account for 99.7% of all companies but 68.8% of all employees, whereas small enterprises represent 86.3% of all companies but 33.2% of all employees. In 2016, the locations of the Japanese SMEs were 53.0% predominantly urban, 33.5% intermediate, and 13.6% predominantly rural, which was similar to the findings of the present study. In 2016, the industry types of the SMEs comprised 24.6% blue-collar, 23.3% white-collar, and 52.1% service, whereas the industries of small enterprises comprised 25.9% blue-collar, 23.2% white-collar, and 50.9% service. This distribution was substantially different from the industries observed in our study, which included 48.3% blue-collar, 14.2% white-collar, and 37.5% service. SMEs’ owners in the construction and manufacturing industries often work on site and would be more worried about occupational accidents or hazards, causing them to make a contract with life insurance. Daido Life is one of the leading companies that commit to Japanese SME insurances. It is not surprising that the proportion of blue-collar workers in the present study is high. National data showed that 18.2% of SME employers were aged in their 40s, 25.4% were in their 50s, 35.7% were in their 60s, and 20.7% were ≥70 years, which was a relatively older than in the present study. More firms evaluated their business conditions negatively than positively and perceived a shortage of employees, possibly due to the COVID-19 pandemic and Japan’s lack of human resources. SME managers tend to be older and the labor force is facing a short supply. Among all the companies in the present study, 29% had workers diagnosed with cancer. The number of cancer patients working in SMEs is likely to increase in the future as more than 50% of Japanese people will develop cancer in their lifetime. The working-age population (15–65 years) accounts for 30% of all workers and the employment rate of elderly people aged ≥65 is 34.1% for men and 17.8% for women. The employer screening rate was 53.7% for stomach cancer, 48.1% for colorectal cancer, and 40.5% for lung cancer. This is similar to the national screening rates of 54.2% for stomach cancer and 47.8% for colorectal cancer, whereas lung cancer screening has a rate of 53.4%, which is more than a 10% higher. Chest X-rays are recommended for lung cancer screening in Japan, whereas annual chest X-rays are performed in most workplaces under the Occupational Health and Safety Law. Although there are differences in the interpretation procedures, the methods of execution remain largely the same.
Table 2. Univariate analysis: association between cancer screening and support measures with other characteristics

| Location                      | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|-------------------------------|-------------------------------------------------|-------------------------------------------------|
|                               | One or more (N = 1951)                  | None (N = 3317)                               | Three of more (N = 1029)                      | Up to two (N = 4239)                      |
|                               | N   | %  | N   | %  | p value | N   | %  | N   | %  | p value |
| Predominantly Urban           | 1018| 34 | 2018| 66 | <.001   | 607| 20 | 2429| 80 | .45   |
| Intermediate                  | 618 | 40 | 911 | 60 |         | 296| 19 | 1233| 81 |       |
| Predominantly Rural           | 315 | 45 | 388 | 55 |         | 126| 18 | 577 | 82 |       |

| Industry                      | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|-------------------------------|-------------------------------------------------|-------------------------------------------------|
|                               | One or more (N = 1951)                  | None (N = 3317)                               | Three of more (N = 1029)                      | Up to two (N = 4239)                      |
|                               | N   | %  | N   | %  | p value | N   | %  | N   | %  | p value |
| Blue-collar industry          | 1029| 40 | 1518| 60 | <.001   | 502| 20 | 2045| 80 | .40   |
| White-collar industry         | 260 | 35 | 488 | 65 |         | 157| 21 | 591 | 79 |       |
| Service industry              | 662 | 34 | 1311| 66 |         | 370| 19 | 1603| 81 |       |

| Number of employees           | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|-------------------------------|-------------------------------------------------|-------------------------------------------------|
|                               | One or more (N = 1951)                  | None (N = 3317)                               | Three of more (N = 1029)                      | Up to two (N = 4239)                      |
|                               | N   | %  | N   | %  | p value | N   | %  | N   | %  | p value |
| <5                            | 663 | 29 | 1633| 71 | <.001   | 291| 13 | 2005| 87 | <.001 |
| 6–10                          | 411 | 39 | 631 | 61 |         | 189| 18 | 853 | 82 |       |
| 11–20                         | 342 | 42 | 470 | 58 |         | 182| 22 | 630 | 78 |       |
| ≥20                           | 535 | 48 | 583 | 52 |         | 367| 33 | 751 | 67 |       |

| Annual sales                  | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|-------------------------------|-------------------------------------------------|-------------------------------------------------|
|                               | One or more (N = 1951)                  | None (N = 3317)                               | Three of more (N = 1029)                      | Up to two (N = 4239)                      |
|                               | N   | %  | N   | %  | p value | N   | %  | N   | %  | p value |
| <30,000,000 JPY               | 214 | 22 | 747 | 78 | <.001   | 99 | 10 | 862 | 90 | <.001 |
| <100,000,000 JPY              | 508 | 32 | 1090| 68 |         | 253| 16 | 1345| 84 |       |
| <500,000,000 JPY              | 789 | 43 | 1061| 57 |         | 402| 22 | 1448| 78 |       |
| ≥500,000,000 JPY              | 440 | 51 | 419 | 49 |         | 275| 32 | 584 | 68 |       |

| Years in business             | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|-------------------------------|-------------------------------------------------|-------------------------------------------------|
|                               | One or more (N = 1951)                  | None (N = 3317)                               | Three of more (N = 1029)                      | Up to two (N = 4239)                      |
|                               | N   | %  | N   | %  | p value | N   | %  | N   | %  | p value |
| <10                           | 114 | 26 | 331 | 74 | <.001   | 87 | 20 | 358 | 80 | <.001 |
| 11–30                         | 431 | 33 | 868 | 67 |         | 224| 17 | 1075| 83 |       |
| 31–50                         | 627 | 38 | 1019| 62 |         | 293| 18 | 1353| 82 |       |
| ≥50                           | 779 | 41 | 1099| 59 |         | 425| 23 | 1453| 77 |       |

| Current business performance  | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|-------------------------------|-------------------------------------------------|-------------------------------------------------|
|                               | One or more (N = 1951)                  | None (N = 3317)                               | Three of more (N = 1029)                      | Up to two (N = 4239)                      |
|                               | N   | %  | N   | %  | p value | N   | %  | N   | %  | p value |
| Better                        | 209 | 41 | 306 | 59 | <.01   | 135| 26 | 380 | 74 | <.001 |
| Constant                      | 1135| 38 | 1846| 62 |         | 580| 19 | 2401| 81 |       |
| Worse                         | 607 | 34 | 1165| 66 |         | 314| 18 | 1458| 82 |       |

| Monthly sales compared with the previous | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|------------------------------------------|-------------------------------------------------|-------------------------------------------------|
|                                           | One or more (N = 1951)                  | None (N = 3317)                               | Three of more (N = 1029)                      | Up to two (N = 4239)                      |
|                                           | N   | %  | N   | %  | p value | N   | %  | N   | %  | p value |
| Better                                   | 258 | 39 | 398 | 61 | .36    | 169| 26 | 487 | 74 | <.001 |
| Constant                                 | 1248| 36 | 2175| 64 |         | 655| 19 | 2768| 81 |       |
| Worse                                    | 445 | 37 | 744 | 63 |         | 205| 17 | 984 | 83 |       |

| Monthly cash-flow compared with the previous | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|---------------------------------------------|-------------------------------------------------|-------------------------------------------------|
|                                            | One or more (N = 1951)                  | None (N = 3317)                               | Three of more (N = 1029)                      | Up to two (N = 4239)                      |
|                                            | N   | %  | N   | %  | p value | N   | %  | N   | %  | p value |
| Better                                    | 126 | 38 | 202 | 62 | .042   | 78 | 24 | 250 | 76 | .11   |
| Constant                                  | 1618| 38 | 2686| 62 |         | 834| 19 | 3470| 81 |       |
| Worse                                     | 207 | 33 | 429 | 67 |         | 117| 18 | 519 | 82 |       |

| Prospects for future business performance  | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|-------------------------------------------|-------------------------------------------------|-------------------------------------------------|
|                                           | One or more (N = 1951)                  | None (N = 3317)                               | Three of more (N = 1029)                      | Up to two (N = 4239)                      |
|                                           | N   | %  | N   | %  | p value | N   | %  | N   | %  | p value |
| Better                                    | 315 | 40 | 464 | 60 | .095   | 225| 29 | 554 | 71 | <.001 |
| Constant                                  | 1390| 36 | 2437| 64 |         | 680| 18 | 3147| 82 |       |
| Worse                                     | 246 | 37 | 416 | 63 |         | 124| 19 | 538 | 81 |       |

(Continues)
and may be recognized as similar tests by examinees and providers.17

Among the participants with these backgrounds, cancer screening implantation rates were 32% for stomach cancer, 27% for colorectal cancer, and 26% for lung cancer. The MHLW reported that relatively large enterprises (mostly with >50 employees) had screening rates of 71% for stomach cancer, 66% for colorectal cancer, and 54% for lung cancer.18 In contrast, health insurance societies had screening rates of 72% for stomach cancer, 76% for colorectal, and 64% for lung cancer.18 There is an inconsistency with the implementation rate associated with the workforce size. At the prefecture level, SMEs with <50 employees had screening rates of 50%–67% for stomach cancer, 48%–62% for colorectal cancer, and 38%–65% for lung cancer, and the rates increased with increasing workforce size.19–21 On the other hand, 55% of small enterprises offered or recommended cancer screenings, which is greater than that of medium or large companies.22 In the present study, the implementation rate among small enterprises was found to be around 13% lower than the overall implementation rate. Previous studies have shown that companies implemented cancer screening because they cared about employee health, whereas the reason for not performing screening was because employers left health-related issues to the judgment of the individual employees.20,21,23 These reasons are consistent with the findings of the present study that employers’ attitude was a significant factor. Interestingly, we were able to demonstrate quantitatively that employer concern played a more integral role than employee size or annual sales in SMEs, which is compatible with the results of previous studies.11 While short-term fluctuations in sales had little effect on screening rate, the size of sales had an impact, as previously reported in a Japanese study, although cost-related effects were reported as a reason for not implementing cancer screening.20,21,23

Among companies with <100 employees, 21%–59% offered sick leave, 32% offered short-time work, and 26% offered staggered work systems.8,24 Despite variable

| TABLE 2 (Continued) |
|----------------------|----------------------|
| **Enterprises’ implementation of cancer screening** | **Enterprises’ implementation of support measures** |
| | One or more (N = 1951) | None (N = 3317) | N | % | N | % | p value |
| Current excess/deficiency of employees | | | | | | |
| Excess | 36 | 38 | 59 | 62 | <.001 | | | |
| Sufficient | 1113 | 35 | 2075 | 65 | | | |
| Deficiency | 802 | 40 | 1183 | 60 | | | |
| Employer age (years) | | | | | | |
| 40–49 | 409 | 35 | 752 | 65 | .21 | | | |
| 50–59 | 670 | 38 | 1097 | 62 | | | |
| 60–69 | 535 | 39 | 854 | 61 | | | |
| ≥70 | 337 | 35 | 614 | 65 | | | |
| Employer sex | | | | | | |
| Male | 1831 | 37 | 3061 | 63 | <.05 | | | |
| Female | 120 | 32 | 256 | 68 | | | |
| Experience of employees with cancer | | | | | | |
| No | 1236 | 33 | 2483 | 67 | <.001 | | | |
| Yes | 715 | 46 | 834 | 54 | | | |
| Employer’s concerns about cancer control | | | | | | |
| Greatly concerned | 273 | 49 | 289 | 51 | <.001 | | | |
| Somewhat concerned | 1379 | 41 | 2022 | 59 | | | |
| Not very concerned | 287 | 24 | 919 | 76 | | | |
| Not concerned at all | 12 | 12 | 87 | 88 | | | |
| Employer’s history of cancer screening | | | | | | |
| No | 111 | 6 | 1859 | 94 | <.001 | | | |
| Yes | 1840 | 56 | 1458 | 44 | | | |
|                | Enterprises’ implementation of cancer screening |                 | Enterprises’ implementation of support measures |                 |
|----------------|-----------------------------------------------|----------------|-----------------------------------------------|----------------|
|                | Odd Ratio 95% Lower 95% Upper p value | Odd Ratio 95% Lower 95% Upper p value |                 |                 |
| Location       |                                              |                 |                                              |                 |
| Predominantly Urban (reference) |                         |                 | Predominantly Urban (reference) |                         |                 |
| Intermediate   | 1.43 1.23 1.67 <.001                          | 0.92 0.78 1.08 .31 |                 |                 |
| Predominantly rural | 1.59 1.30 1.95 <.001                          | 0.85 0.68 1.06 .15 |                 |                 |
| Industry       |                                              |                 |                                              |                 |
| Blue-collar industry (reference) |                         |                 | Blue-collar industry (reference) |                         |                 |
| White-collar industry | 1.07 0.86 1.32 .55                          | 1.32 1.06 1.65 <.05 |                 |                 |
| Service industry | 0.80 0.69 0.93 <.01                          | 1.09 0.93 1.28 .31 |                 |                 |
| Number of employees |                                            |                 |                                              |                 |
| <5 (reference) |                                              |                 |                                              |                 |
| 6–10           | 1.04 0.85 1.26 .73                          | 1.23 0.99 1.54 .067 |                 |                 |
| 11–20          | 0.98 0.77 1.23 .84                          | 1.46 1.14 1.88 <.01 |                 |                 |
| ≥20            | 0.90 0.70 1.15 .40                          | 1.99 1.53 2.58 <.001 |                 |                 |
| Annual sales   |                                              |                 |                                              |                 |
| <30,000,000 JPY (reference) |                         |                 | <30,000,000 JPY (reference) |                         |                 |
| <100,000,000 JPY | 1.34 1.08 1.68 <.01                          | 1.56 1.20 2.04 <.01 |                 |                 |
| <500,000,000 JPY | 2.06 1.61 2.63 <.001                          | 1.61 1.21 2.14 <.01 |                 |                 |
| ≥500,000,000 JPY | 2.52 1.83 3.47 <.001                          | 1.86 1.31 2.63 <.01 |                 |                 |
| Years in business |                                            |                 |                                              |                 |
| <10 (reference) |                                              |                 |                                              |                 |
| 11–30          | 1.15 0.86 1.54 .34                          | 0.73 0.54 0.98 <.05 |                 |                 |
| 31–50          | 1.27 0.96 1.70 .098                         | 0.69 0.51 0.92 <.05 |                 |                 |
| ≥50            | 1.30 0.97 1.74 .078                         | 0.75 0.56 1.01 .058 |                 |                 |
| Current business performance |                                            |                 |                                              |                 |
| Better         | 1.03 0.81 1.32 .80                          | 1.13 0.89 1.44 .32 |                 |                 |
| Constant (reference) |                                                 |                         | 0.99 0.83 1.19 .93 |                 |
| Worse          | 0.93 0.78 1.10 .36                          | 0.84 0.68 1.04 .11 |                 |                 |
| Monthly sales compared with the previous |                                            |                 |                                              |                 |
| Better         | 1.10 0.87 1.41 .42                          | 1.13 0.89 1.44 .32 |                 |                 |
| Constant (reference) |                                             |                         | 0.99 0.83 1.19 .93 |                 |
| Worse          | 1.17 0.97 1.43 .11                          | 0.84 0.68 1.04 .11 |                 |                 |
| Monthly cash-flow compared with the previous |                                            |                 |                                              |                 |
| Better         | 0.81 0.59 1.11 .19                          | 0.88 0.64 1.22 .44 |                 |                 |
| Constant (reference) |                                             |                         | 0.99 0.83 1.19 .93 |                 |
| Worse          | 0.80 0.62 1.02 .067                         | 1.14 0.88 1.48 .32 |                 |                 |
| Prospects for future business performance |                                            |                 |                                              |                 |
| Better         | 1.16 0.95 1.41 .14                          | 1.63 1.35 1.98 <.001 |                 |                 |
| Constant (reference) |                                             |                         | 0.99 0.83 1.19 .93 |                 |
| Worse          | 1.17 0.94 1.44 .16                          | 1.20 0.96 1.51 .12 |                 |                 |
| Current excess/deficiency of employees |                                            |                 |                                              |                 |
| Excess         | 0.91 0.54 1.52 .71                          | 0.79 0.470 1.34 .38 |                 |                 |
findings, fewer measures were previously found to be implemented in SMEs and even fewer were found in small enterprises, which was also the case in the present study.8,24 Studies on return to work (RTW) among cancer patients have predominantly focused on health-related personal factors, such as cancer site, cancer stage, prognosis, type of treatment, comorbidities, and age, and few studies have examined work-related factors.25 Supportive work environments and a favorable employer–employee relationship were associated with RTW.26 Although not targeted at cancer patients, studies have shown that introducing shortened working hours reduced the absence length and reducing duties decreased the re-institutionalization rate.27,28 Much less is known about reassignment, work restrictions, and trial attendance.29 Although several countries have introduced supportive working styles, such as shorter working hours for RTW, the employment outcomes have not been established and future studies are expected.29 However, providing employment assistance for RTW is considered valuable and is recommended.29 Studies to date have not yet determined which of the measures presented in our questionnaires are helpful, but all appear to be beneficial for employees with cancer, leading to a realistic approach to identify factors that are introduced to some extent or more, as performed in this study. Employers’ interest in cancer was a factor that was strongly correlated with the prevalence of the measure. We believe that the introduction of supportive measures focused on balancing cancer treatment and work may be promoted by increasing employers’ interest in SMEs. It has been suggested that collaboration with occupational physicians could improve RTW among cancer patients, and strengthening occupational health functions has also been recommended to ensure workers’ health.6,30 Nevertheless, there is no obligation to appoint occupational physicians in establishments with <50 employees, which makes intervention by industrial physicians difficult practically. Therefore, if interventions can be made to enhance the interest of employers in SMEs in cancer control, such as a previously reported support tool for balancing cancer treatment and work in SMEs, this could lead to the implementation of cancer screening and the introduction of countermeasures to

| Employer age | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|--------------|-----------------------------------------------|-----------------------------------------------|
|              | Odd Ratio | 95%Lower | 95%Upper | p value | Odd Ratio | 95%Lower | 95%Upper | p value |
| Sufficient   | (reference) | | | | (reference) | | | |
| Deficiency   | 1.08      | 0.93     | 1.24     | .31     | 1.02      | 0.88     | 1.19     | .76     |
| 40–49 years  | (reference) | | | | (reference) | | | |
| 50–59 years  | 1.00      | 0.82     | 1.20     | .96     | 1.02      | 0.84     | 1.24     | .85     |
| 60–69 years  | 0.85      | 0.70     | 1.04     | .11     | 0.96      | 0.78     | 1.18     | .68     |
| ≥70 years    | 0.90      | 0.72     | 1.12     | .34     | 0.92      | 0.72     | 1.16     | .48     |

| Employer sex | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|--------------|-----------------------------------------------|-----------------------------------------------|
| Male         | (reference) | | | | (reference) | | | |
| Female       | 0.89      | 0.68     | 1.17     | .40     | 1.47      | 1.13     | 1.92     | <.01    |

| Experience of employees with cancer | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|------------------------------------|-----------------------------------------------|-----------------------------------------------|
| No                                 | (reference) | | | | (reference) | | | |
| Yes                                | 1.30      | 1.11     | 1.52     | <.01    | 1.90      | 1.62     | 2.22     | <.001   |

| Employer’s concerns about cancer control | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|-----------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Greatly concerned                        | 3.59      | 1.76     | 7.31     | <.001   | 2.55      | 1.27     | 5.12     | <.01    |
| Somewhat concerned                      | 3.08      | 1.55     | 6.15     | <.01    | 1.73      | 0.88     | 3.40     | .11     |
| Not very concerned                      | 2.10      | 1.04     | 4.24     | <.05    | 1.13      | 0.56     | 2.25     | .74     |
| Not concerned at all                    | (reference) | | | | (reference) | | | |

| Employer’s history of cancer screening | Enterprises’ implementation of cancer screening | Enterprises’ implementation of support measures |
|---------------------------------------|-----------------------------------------------|-----------------------------------------------|
| No                                    | (reference) | | | | (reference) | | | |
| Yes                                   | 19.4      | 15.8    | 23.9     | <.001   | 1.35      | 1.15     | 1.58     | <.001   |

Note: Each odd ratio was controlled for other dependent variables.
support to balance cancer treatment and work. Health promotion, defined as “the process of enabling people to increase control over, and to improve, their health”, is an important way to enhance employers’ concerns. The Japanese government advocated health promotion in Health Japan 21. A recent report noted that continuous support for SMEs’ employers improved leadership and promoted workplace health implementation. The Corporate Action to Promote Cancer Control, an MHLW-commissioned project, involves numerous SMEs and provides cancer education in the workplace, including some seminars and E-learnings (in the Japanese and English versions). These outside organizations could support improving the cancer awareness of SMEs’ employers.

For the urban–rural differentials of the enterprise locations, our study demonstrated a reversed trend between the implementation of cancer screening and support measures. Since the Japanese public health system is decentralized, the policies considerably vary depending on the local government. Past Japanese studies showed that older adults in rural areas were less healthy than in urban, and cancer was the highest priority of all health issues among rural people. These urban–rural divides could explain why rural SMEs more often performed cancer screening. In contrast, urban enterprises were better equipped with support measures, although there was no significant difference. Urban companies could afford to pay the costs required for support measures because they reportedly achieved higher labor productivity and larger office sizes than rural ones. This could explicate higher preparedness of support measures in urban SMEs.

The present study has several limitations. First, this study may have been influenced by selection bias. Since the salespersons belonging to Daido Life arbitrarily selected target firms from SMEs and other companies with contractual relationships, it is possible that some companies included in the study were interested in life insurance or financially sound enough to afford the contracts. These companies were not necessarily representative of Japanese SMEs. Second, the questionnaires designed for this study were not validated. Although in-person surveys were planned, phone calls, mailings, and emails were tolerated as appropriate, which may have led to bias. Third, the survey was carried out during the COVID-19 pandemic and public awareness of the novel coronavirus and vaccination as well as disease and health were increasing. The pandemic may have also influenced the management and welfare of the companies. However, screening and support were unlikely to have been affected by short-term changes, as indicated in Table 3; therefore, we believe the impact would be minimal. Fourth, the present study did not include specific details of cancer screening or support for balancing work and cancer treatment in the questionnaire. It is possible that non-recommended screening may have been performed or misunderstood support measures may have been included, such as sick leave or shorter working hours with pay. Fifth, we defined the implementation of support measures as implementing three or more of the nine measures shown in Table 1. The implementation rate of each item ranged from 4% to 36%. On average, the number of measures practiced by one enterprise was around one and a half. We set three measures as the threshold line to identify the advantaged enterprise in implementing supports, although we could not deny arbitrariness. Next, this cross-sectional study could not imply causation. Possibly, the employers who implemented screenings and support measures were more likely to indicate that they were interested in cancer control measures. Finally, unknown confounding factors that were not examined may have distorted the findings. Despite these limitations, the present study is extensive and included >5000 SMEs, particularly involving many small enterprises. We gained critical insight into the current situations of cancer control measures in SMEs and the implications for improving cancer control.

Japan has one of the largest aging populations, with a rate of 28.8%, which is the highest among OECD countries, and a high labor participation rate among those aged ≥65 years. Furthermore, the growing number of working women and the increasing incidence of breast and cervical cancer will further escalate working cancer patients. As cancer control in the workplace becomes progressively essential, we believe that the findings of the present study are valuable for understanding cancer control in SMEs in the future.

5 | CONCLUSION

The present study elucidated the current practices of cancer screening and supportive measures implemented among Japanese SMEs. These strategies were significantly related to industry type, annual sales, employees’ experience with cancer, employers’ interest in cancer control, and employers’ cancer screening history. Improving employers’ interests may contribute to enhancing cancer control in SMEs.

DISCLOSURE

Approval of the research protocol: The Institutional Review Board for Clinical Research, Tokai University (21R-021) approved the study. Informed consent: N/A. Registry
and the Registration No. of the study/trial: N/A. Animal studies: N/A.

**AUTHOR CONTRIBUTIONS**

Masanari Minamitani and Mukasayuki Tatemichi: Conceptualization; Masanari Minamitani and Tomoya Mukai: Methodology; Masanari Minamitani and Tomoya Mukai: Formal analysis; Masanari Minamitani: Writing - original draft preparation; Masayuki Tatemichi, Atsuto Katano, and Keiichi Nakagawa: Writing - review and editing; Keiichi Nakagawa: Supervision.

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**CONFLICT OF INTEREST**

The authors declare that they have no conflict of interest.

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**DATA AVAILABILITY STATEMENT**

The data that support the findings of this study are available from Daido Life Insurance Company.

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**REFERENCES**

1. Ministry of Health, Labour and Welfare. Third basic plan to promote cancer control programs (in Japanese). https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000183313.html. Published 2018. Accessed July 1, 2022.
2. Hamashima C. Cancer screening guidelines and policy making: 15 years of experience in cancer screening guideline development in Japan. Jpn J Clin Oncol. 2018;58(3):278-286. doi:10.1093/jjco/hyx1390
3. Baicker K, Cutler D, Song Z. Workplace wellness programs can generate savings. Health Aff. 2010;29(2):304-311. doi:10.1377/hlthaff.2009.0626
4. Takahashi M, Tsuchiya M, Horio Y, et al. Job resignation after cancer diagnosis among working survivors in Japan: timing, reasons and change of information needs over time. Jpn J Clin Oncol. 2018;48(1):43-51. doi:10.1093/jjco/HYX143
5. Yamaguchi K. Joint Study Group on the Sociology of cancer: a report on research into the anxieties and burdens of cancer sufferers – the views of 4054 people who faced up to cancer 2013 (in Japanese). http://cancerqa.scchr.jp/sassi28.html. Accessed July 1, 2022.
6. Ministry of Health, Labour and Welfare. The guideline for workplace patient coordination and disease treatment (in Japanese). http://www.mhlw.go.jp/stf/houdou/0000113365.html. Published 2016. Accessed July 1, 2022.
7. Small and Medium Enterprise Agency. White paper on small and medium enterprises in Japan. https://www.chusho.meti.go.jp/sme_english/whitepaper/whitepaper.html. Accessed July 1, 2022.
8. Ministry of Health, Labour and Welfare. General survey on working conditions (in Japanese). https://www.mhlw.go.jp/toukei/list/11-23c.html. Accessed July 1, 2022.
9. Harris JR, Hannon PA, Beresford SAA, Linnan LA, McLellan DL. Health promotion in smaller workplaces in the United States. Annual Review of Public Health. 2014;35:327-342. doi:10.1146/annurev.publhealth-032013-182416
10. Goetzel RZ, Ozminkowski RJ. The health and cost benefits of work site health-promotion programs. Annual Review of Public Health. 2008;29:303-323. doi:10.1146/annurev.publhealth.29.020907.090930
11. Harris JR, Kava CM, Chan KCG, et al. Pathways to employee outcomes in a workplace health promotion program. Am J Health Promot. 2022;36(4), 662-672. doi:10.1177/08901171211066898
12. T&D Holdings Inc. Daido Life Insurance Company. Annual Report 2017 (integrated edition). https://www.td-holdings.co.jp/ir/library/annual/online/online17/ar/en/plan/daido_life/index.html. Published 2017. Accessed July 1, 2022.
13. T&D Holdings Inc. Daido-life survey (in Japanese). https://www.daido-life.co.jp/knowledge/survey/. Accessed July 1, 2022.
14. OECD. OECD territorial reviews: Japan. 2016. OECD Publishing; 2016. doi:10.1787/9789264250543-en
15. Zaits M, Kaneko R, Takeuchi T, Sato Y, Kobayashi Y, Kawachi I. Occupational class and male cancer incidence: nationwide, multicenter, hospital-based case-control study in Japan. Cancer Med. 2019;8(2):795-813. doi:10.1002/cam4.1945
16. Statistics Bureau, Ministry of Internal Affairs and Communications. Labour Force Survey. https://www.stat.go.jp/english/data/roudou/index.html. Published 2019. Accessed July 1, 2022.
17. Watanabe Y, Nakagawa T, Fukai K, et al. Descriptive study of chest X-ray examination in mandatory annual health examinations at the workplace in Japan. PLoS One. 2022;17(1):e0262404. doi:10.1371/JOURNAL.PONE.0262404
18. Ministry of Health, Labour and Welfare. 2020 survey report on cancer screening in the workplace (in Japanese). https://www.mhlw.go.jp/content/10901000/000894795.pdf. Published 2022. Accessed July 1, 2022.
19. Tokyo. Report of cancer prevention and screening in Tokyo (in Japanese). https://www.fukushihoken.metro.tokyo.lg.jp/kensui/gan/toukei/jittaityousa30.html. Published 2017. Accessed July 1, 2022.
20. Saitama. Report of cancer screening in the workplace in Saitama (in Japanese). https://www.pref.saitama.lg.jp/a0705/gantaisaku/syokubadenoankenkennsinzyusinnsokusinn.html. Published 2019. Accessed July 1, 2022.
21. Saga. Report of cancer screening in the workplace in Saga (in Japanese). https://www.pref.saga.lg.jp/toukei/kiji003774
22. Morioka I, Terashita H, Miyashita K, Ikuta Z, Tatsuya Takeshita KT. Supporting a balance between work schedules and treatment regimens among cancer patients: A questionnaire focusing on company size in Wakayama Prefecture, Japan (in Japanese). Sangyo Eiseigaku Zasshi 2019;61(5):159–169. doi:10.1539/SANGYOEISEI.2018-036-E

23. Miyazaki. Report of cancer screening in the workplace (in Japanese). https://www.msuis in.jp/ganke nshin/ upimg/ 20160707105602F_1.pdf. Published 2016. Accessed July 1, 2022.

24. The Japan Institute for Labour Policy and Training. Survey on the actual situation of corporate welfare policies (in Japanese). https://www.jil.go.jp/insti tute/resea rch/2020/203.html. Published 2020. Accessed July 1, 2022.

25. Lindbohm ML, Viikari- Juntura E. Cancer survivors' return to work: importance of work accommodations and collaboration between stakeholders. Occup Environ Med. 2010;67(9):578-579. doi:10.1136/oem.2009.051847

26. Amir Z, Neary D, Luker K. Cancer survivors’ views of work 3 years post diagnosis: a UK perspective. Eur J Oncol Nurs. 2008;12(3):190-197. doi:10.1016/j.ejon.2008.01.006

27. Viikari-Juntura E, Kausto J, Shiri R, et al. Return to work after early part-time sick leave due to musculoskeletal disorders: a randomized controlled trial. Scand J Work Environ Heal. 2012;38(2):134-143. doi:10.5271/sjweh.3258

28. van Duin M, Burdorff A. Influence of modified work on recurrence of sick leave due to musculoskeletal complaints. J Rehabil Med. 2008;40(7):576-581. doi:10.2340/16501977-0215

29. Kojimahara N, Fukumoto M, Yoshikawa E, Shinada K, Tsuiki H. Guidance for return to work in occupational health (in Japanese). Sangyo Eiseigaku Zasshi. 2018;60(5):103-111. doi:10.1539/SANGYOEISEI.2017-030-B

30. Tammenga SJ, Verbeek JHAM, Bos MMEM, et al. Effectiveness of a hospital-based work support intervention for female cancer patients – a multi-centre randomised controlled trial. PLoS One. 2013;8(5):e63271. doi:10.1371/journal.pone.0063271

31. Nishikido N, Sakai M, Yoshikawa E, Ito M, Abe H, Sakiyama N. Development of a support tool for balancing cancer treatment and work in small and medium-sized enterprises. Environ Occup Heal Pract. 2019;1(1):13-19. doi:10.1539/EOHP.2019-0006-OA

32. World Health Organization. Ottawa charter for health promotion. http://www.who.int/healthpromotion/conferences/previ ous/ottawa/en/ Published 1986. Accessed July 1, 2022.

33. Nomura S, Sasaki M, Yoshikawa E, Ito M, Abe H, Sakiyama N. Development of a support tool for balancing cancer treatment and work in small and medium-sized Japanese enterprises. J Occup Health. 2022;64:e12352. doi:10.1002/1348-9585.12352

SUPPORTING INFORMATION
Additional supporting information can be found online in the Supporting Information section at the end of this article.

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