Industrial Health 2019, **57**, 537–546

Original Article

Associations of occupation, employment type and company size with actions related to health examinations among Japanese employees

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Received May 19, 2018 and accepted November 30, 2018
Published online in J-STAGE December 8, 2018

Abstract: Taking action in response to health examination results is important to stay healthy. We aimed to investigate the associations between occupation, employment type and company size, and having a health examination and taking action in response to the results among Japanese employees. We focused on three particular actions by employees in response to health examination results: paying attention to one's health, receiving health guidance, and visiting a medical institution. We used anonymous data from the 2010 Comprehensive Survey of Living Conditions of Japan, a self-administered nationwide questionnaire survey. The data of 23,963 employees (12,938 male and 11,025 female) aged 20–64 yr were analyzed using logistic regression models adjusted by covariates. There were significant changes in odds ratios for receiving a health examination by occupation, employment type and company size. We found significant odds ratios for receiving health guidance by occupation and company size, but there was almost no significant association with paying attention to one's health and visiting a medical institution. These results confirmed that receiving a health examination was associated with occupational factors, and suggested that receiving health guidance after health examination results was associated with occupation and company size.

Key words: Health examination, Health guidance, Occupation, Employment, Comprehensive Survey of Living Conditions

Introduction

Health examinations are necessary to promote and maintain the health of employees[1, 2]. In Japan, they are used to prevent both work-related health problems, and lifestyle-related diseases[3]. It is also important that both employers and employees take action to follow-up health examinations[1, 4]. Actions that employees may take in response to their health examination results include paying attention to their own health, receiving health guidance from health experts, and visiting a medical institution[4, 5]. Several studies have shown that occupational factors (occupation, employment type and company size) affect whether employees receive health examinations[6–8]. The 2012 Survey on State of Employees' Health conducted

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by the Ministry of Health, Labour and Welfare of Japan reported that receiving health examinations was associated with occupational factors[9]. However, few studies have examined the effects of occupational factors on actions taken in response to health examination results[10–12]. In addition, the Survey on State of Employees' Health did not collect information on paying attention to one's health or receiving health guidance[9].

We investigated the associations between occupation, employment type and company size and actions related to health examinations among Japanese employees. The actions examined were receiving health examinations, paying attention to one's health, receiving health guidance, and visiting a medical institution.

Subjects and Methods

Subjects

We used anonymous data from the 2010 Comprehensive Survey of Living Conditions of Japan, a self-administered questionnaire survey distributed to about 750,000 people in randomly selected households nationwide[13]. Data from about 94,000 people were resampled to make the original data anonymous. The sample for the present study comprised 23,963 employees (12,938 male and 11,025 female) aged 20–64 yr for which information on receiving health examinations, occupational class, and other variables (described below) was available. The sample did not include self-employed workers, unemployed persons, and employers.

Data were provided with permission from the Ministry of Health, Labour and Welfare of Japan, under Article 36 of the Statistical Act. Use of such anonymous data does not require ethical review.

Actions related to health examinations

Figure 1 shows a flow diagram of the questions and responses regarding actions related to health examinations[13]. Data about receiving health examinations were collected with the question "Did you receive a health examination in the last year?" (Q1). This was followed by the question "Did you receive any comments about the results of your health examination, or the report of your health examination with any comments?" (Q2). Examples of comments were provided, such as "Cut down on salt intake because of relatively high blood pressure," "Demanded a retest," and "Visited a medical institution." People who responded "Yes" to both questions (n=7,476) were asked further questions. First, they were asked "Did you pay more attention to your own health as a result of receiving a health examination?" (Q3). Respondents were then asked "Were you advised to receive health guidance on improvement of lifestyle behavior from health experts (medical doctors, public health nurses, managerial dieticians, or others)?" (Q4). Those who answered yes (n=3,650) were asked "Did you receive health guidance?" (Q5). Finally, respondents were asked "Were you advised to visit a medical institution for reasons other than undergoing a retest or detailed examination?" (Q6). Those who answered yes (n=3,162) were asked "Did you visit a medical institution?" (Q7).

Occupational class and other variables

We used employment type, company size and occupation as indicators of occupational class. Classification of occupational factors was based on the available data and previous reports[9, 14]. Employment type was classified into permanent worker, temporary/contract worker, part-time worker, and other. Company size was classified into 1–29 employees, 30–299 employees, 300–999 employees, 1,000 or more employees, and civil servants. Occupation was classified into professionals and technicians, managers, clerks, sales and service workers, production workers, and others.

We also used sex, age, marital status, self-rated health and outpatient visits. Age was classified into 20–29, 30–39, 40–49 and 50–64 yrs old. Marital status was classified into currently married, never married, and divorced/widowed. Self-rated health was classified into good/above average/average, and not so good/poor. Outpatient visits was classified into presence or absence.

Statistical analysis

The odds ratios and 95% confidence intervals for the association between each action related to health examinations and employment type, company size and occupation were estimated using logistic regression models by sex. Two sets of independent variables were used. The first set of independent variables included age, marital status, self-rated health, outpatient visits and one of the occupational class variables. The second set of independent variables included the first set and all occupational class variables. Reference categories for estimating the odds ratios were based on a previous study that used the same data source (Comprehensive Survey of Living Conditions): permanent worker for employment type, 1–29 employees for company size, and professionals and technicians for occupation[14]. The level of statistical significance was set at 0.05. All analyses were performed using JMP® 12 (SAS Institute Inc., Cary, NC, USA).

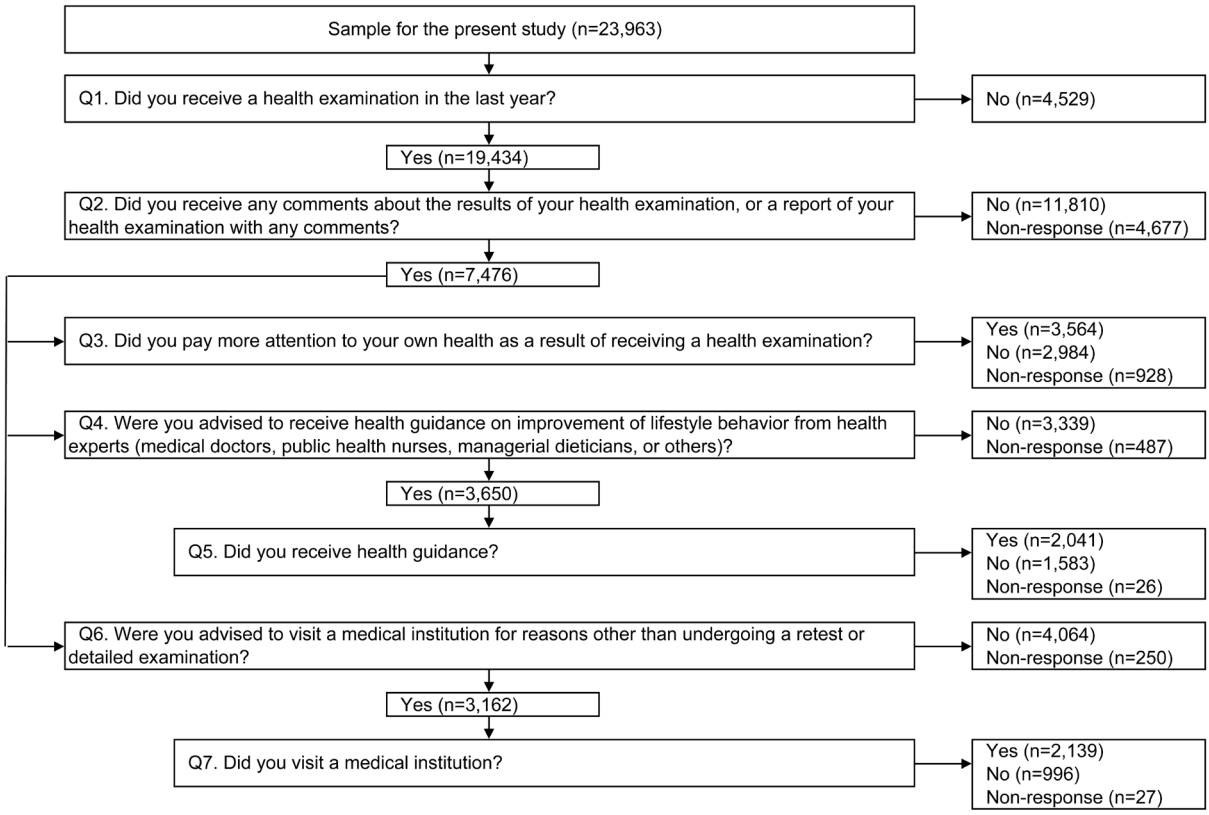

Fig.1. Flow diagram of questions and responses regarding actions related to health examinations among male and female employees.

Results

Table 1 shows the characteristics, occupational class, and actions related to health examinations among male and female employees. The number of men and women in each age group ranged from 2,281 to 4,066. The proportion of men and women who were currently married was 68% and 59%, the proportion with good/above average/average self-rated health was 90% and 89%, and the proportion with outpatient visits was 28% and 31%. In total, 85% of men and 46% of women were permanent workers, 8% and 11% were temporary or contract workers and 7% and 42% were part-time. The proportions working in each size of company ranged from 9% to 33%. In total, 29% of men and 26% of women were professionals and technicians, 10% and 1% were managers, 11% and 28% were clerks, 24% and 33% were sales and service workers and 23% and 9% were production workers. A total of 85% of men and 76% of women had received a health examination. Over half, 53% and 57% of those with some comments to the results of health examination, had paid more attention to their health as a result, 55% and 59% of those advised to do so had received health guidance, and 66% and 71% of those advised to visit a medical institution had done so.

Table 2 shows the odds ratios for receiving a health examination associated with each occupational class adjusted by age, marital status, self-rated health, outpatient visits, and other occupational class variables among male and female employees. The analysis did not included people who had not provided answers to the question about receiving a health examination. The odds ratios were significantly lower for temporary/contract and part-time workers than permanent employees (0.51 and 0.35 among male employees, and 0.55 and 0.33 among female employees). The odds ratios of having a health examination were also better for those in companies with 30–299, 300–999, and 1,000 or more employees than 1–29 employees (3.36, 7.71 and 8.55 among male employees, and 2.42, 3.02 and 3.51 among female employees). Clerks and sales and service workers were less likely than professionals and technicians to receive a health examination (0.79 and 0.59 among male employees, and 0.82 and 0.50 among female employees).

Table 3 shows the odds ratios for paying attention to one's health associated with each occupational class adjusted by age, marital status, self-rated health, outpatient

visits, and other occupational class variables among male and female employees. The analysis did not include people who had not received any comments about their health examination results or had not provided answers to the question about paying attention to one's health. Employment type and occupation did not vary significantly. The odds ratio was significantly higher for men in companies with 1,000 or more employees than those with 1–29 employees, and significantly lower for women in companies with 300–999 employees than those with 1–29 employees.

Table 4 shows the odds ratios for receiving health guidance associated with each occupational class adjusted by age, marital status, self-rated health, outpatient visits, and other occupational class variables among male and female employees. The analysis did not include people who had not received advice regarding health guidance or had not provided answers to the question about receiving health guidance. There were no significant differences between employment types. The odds ratio was significantly higher for men working in companies with 300–999 and 1,000 or more employees than those working in the smallest companies (1.50 and 1.68). Compared with professionals and technicians, the odds ratios were significantly higher for managers (1.37), and significantly lower for sales and service workers (0.76) among men, and significantly higher for clerks (1.49) among women.

Table 5 shows the odds ratios for visiting a medical institution associated with each occupational class adjusted by age, marital status, self-rated health, outpatient visits, and other occupational class variables among male and female employees. The analysis did not include people who had not received advice regarding visiting a medical institution or had not provided answers to the question about visiting a medical institution. There were no significant differences between employment types and occupations. Women in companies with 30–299 employees were significantly less likely (odds ratio of 0.59) to visit a medical institution than those in companies employing 1–29 people.

Discussion

We observed significant associations between receiving a health examination and occupation, employment type and company size among both male and female employees. Similar observations have been reported by previous studies[6–8]. In the 2012 Survey on State of Employees' Health conducted by the Ministry of Health, Labour and Welfare of Japan, the proportion of employees receiving

Table 1. Characteristics, occupational class, and actions related to health examinations among male and female employees

	Male	Female
	No. (%)	No. (%)
Characteristics		
Age, years		
20–29	2,281 (17.6)	2,288 (20.8)
30–39	3,344 (25.8)	2,787 (25.3)
40–49	3,247 (25.1)	2,836 (25.7)
50–64	4,066 (31.4)	3,114 (28.2)
Marital status		
Currently married	8,820 (68.2)	6,528 (59.2)
Never married	3,690 (28.5)	3,413 (31.0)
Divorced/widowed	428 (3.3)	1,084 (9.8)
Self-rated health		
Good/above average/average	11,657 (90.1)	9,801 (88.9)
Not so good/poor	1,281 (9.9)	1,224 (11.1)
Outpatient visits		
Presence	3,639 (28.1)	3,360 (30.5)
Absence	9,299 (71.9)	7,665 (69.5)
Occupational class		
Employment type		
Permanent worker	10,966 (84.8)	5,101 (46.3)
Temporary/contract worker	973 (7.5)	1,222 (11.1)
Part-time worker	880 (6.8)	4,590 (41.6)
Other	119 (0.9)	112 (1.0)
Company size		
1–29 employees	2,579 (19.9)	3,114 (28.2)
30–299 employees	3,952 (30.5)	3,649 (33.1)
300–999 employees	1,921 (14.8)	1,433 (13.0)
1000 or more employees	3,210 (24.8)	1,859 (16.9)
Civil service	1,276 (9.9)	970 (8.8)
Occupation		
Professionals and technicians	3,809 (29.4)	2,848 (25.8)
Managers	1,343 (10.4)	114 (1.0)
Clerks	1,441 (11.1)	3,130 (28.4)
Sales and service workers	3,072 (23.7)	3,602 (32.7)
Production workers	2,940 (22.7)	947 (8.6)
Other	333 (2.6)	384 (3.5)
Actions related to health examination		
Received health examination		
Yes	11,051 (85.4)	8,383 (76.0)
No	1,887 (14.6)	2,642 (24.0)
Paid attention to one's health		
Yes	2,293 (53.3)	1,271 (56.6)
No	2,009 (46.7)	975 (43.4)
Received health guidance		
Yes	1,412 (55.4)	629 (58.5)
No	1,136 (44.6)	447 (41.5)
Visited medical institution		
Yes	1,305 (66.4)	834 (71.2)
No	659 (33.6)	337 (28.8)

Table 2. Odds ratios for receiving health examination associated with occupational class among male and female employees

Occupational class	Male employees[a]							Female employees[a]						
	N	No. of cases (%)	Odds ratio and 95% CI					N	No. of cases (%)	Odds ratio and 95% CI				
			Model 1[b]			Model 2[c]				Model 1[b]			Model 2[c]	
Employment type														
Permanent worker	10,966	9,676 (88.2)	1.00			1.00		5,101	4,383 (85.9)	1.00			1.00	
Temporary/contract worker	973	798 (82.0)	0.58	0.49	0.70	0.51	0.42 0.61	1,222	982 (80.4)	0.63	0.53	0.74	0.55	0.46 0.65
Part-time worker	880	494 (56.1)	0.22	0.19	0.25	0.35	0.30 0.42	4,590	2,935 (63.9)	0.24	0.22	0.27	0.33	0.30 0.38
Other	119	83 (69.7)	0.30	0.20	0.45	0.38	0.25 0.58	112	83 (74.1)	0.38	0.24	0.59	0.39	0.25 0.61
Company size														
1–29 employees	2,579	1,642 (63.7)	1.00			1.00		3,114	1,886 (60.6)	1.00			1.00	
30–299 employees	3,952	3,389 (85.8)	3.51	3.10	3.97	3.36	2.96 3.81	3,649	2,908 (79.7)	2.59	2.32	2.88	2.42	2.16 2.72
300–999 employees	1,921	1,790 (93.2)	7.99	6.56	9.73	7.71	6.30 9.44	1,433	1,188 (82.9)	3.32	2.83	3.88	3.02	2.57 3.56
1000 or more employees	3,210	3,028 (94.3)	9.06	7.63	10.76	8.55	7.16 10.22	1,859	1,551 (83.4)	3.43	2.98	3.96	3.51	3.02 4.08
Civil service	1,276	1,202 (94.2)	7.94	6.18	10.20	7.06	5.44 9.16	970	850 (87.6)	4.61	3.76	5.67	2.72	2.19 3.37
Occupation														
Professionals and technicians	3,809	3,373 (88.6)	1.00			1.00		2,848	2,397 (84.2)	1.00			1.00	
Managers	1,343	1,263 (94.0)	1.53	1.19	1.97	1.04	0.80 1.35	114	101 (88.6)	1.27	0.70	2.28	0.88	0.48 1.61
Clerks	1,441	1,288 (89.4)	1.01	0.83	1.23	0.79	0.64 0.97	3,130	2,539 (81.1)	0.79	0.69	0.91	0.82	0.71 0.95
Sales and service workers	3,072	2,378 (77.4)	0.47	0.41	0.53	0.59	0.51 0.68	3,602	2,357 (65.4)	0.34	0.30	0.39	0.50	0.43 0.57
Production workers	2,940	2,485 (84.5)	0.72	0.62	0.83	0.98	0.84 1.14	947	728 (76.9)	0.57	0.48	0.69	0.75	0.61 0.91
Other	333	264 (79.3)	0.50	0.37	0.66	0.79	0.58 1.09	384	261 (68.0)	0.36	0.29	0.46	0.54	0.42 0.70

CI: Confidence interval. [a]The analysis did not include people who had not provided answers to the question about receiving a health examination. [b]Independent variables were age, marital status, self-rated health, outpatient visits, and one of the occupational class variables. [c]Independent variables were age, marital status, self-rated health, outpatient visits and all occupational class variables.

Table 3. Odds ratios for paying attention to one's health associated with occupational class among male and female employees

Occupational class	Male employees[a]							Female employees[a]						
	N	No. of cases (%)	Odds ratio and 95% CI					N	No. of cases (%)	Odds ratio and 95% CI				
			Model 1[b]			Model 2[c]				Model 1[b]			Model 2[c]	
Employment type														
Permanent worker	3,836	2,027 (52.8)	1.00			1.00			1,151	602 (52.3)	1.00			1.00		
Temporary/contract worker	326	191 (58.6)	1.04	0.82	1.33	1.09	0.85	1.39	274	148 (54.0)	0.97	0.74	1.28	1.01	0.77	1.34
Part-time worker	116	60 (51.7)	0.91	0.62	1.34	1.02	0.69	1.51	799	506 (63.3)	1.18	0.96	1.43	1.15	0.93	1.43
Other	24	15 (62.5)	1.27	0.54	2.95	1.40	0.60	3.27	22	15 (68.2)	1.49	0.59	3.76	1.45	0.57	3.71
Company size																
1–29 employees	548	283 (51.6)	1.00			1.00			453	284 (62.7)	1.00			1.00		
30–299 employees	1,242	627 (50.5)	0.96	0.79	1.18	0.95	0.78	1.17	762	437 (57.3)	0.84	0.66	1.07	0.85	0.66	1.09
300–999 employees	681	354 (52.0)	1.05	0.83	1.32	1.03	0.82	1.30	296	150 (50.7)	0.68	0.50	0.92	0.69	0.50	0.94
1000 or more employees	1,268	730 (57.6)	1.30	1.06	1.60	1.26	1.03	1.56	448	240 (53.6)	0.81	0.62	1.07	0.82	0.62	1.08
Civil service	563	299 (53.1)	1.03	0.81	1.31	0.99	0.77	1.28	287	160 (55.7)	0.78	0.57	1.06	0.83	0.60	1.15
Occupation																
Professionals and technicians	1,306	694 (53.1)	1.00			1.00			639	340 (53.2)	1.00			1.00		
Managers	668	397 (59.4)	1.13	0.93	1.37	1.10	0.91	1.34	24	17 (70.8)	1.79	0.72	4.46	1.85	0.74	4.63
Clerks	546	297 (54.4)	0.99	0.81	1.22	0.99	0.81	1.22	677	368 (54.4)	1.10	0.87	1.37	1.09	0.86	1.37
Sales and service workers	881	449 (51.0)	0.90	0.76	1.07	0.90	0.75	1.07	613	367 (59.9)	1.14	0.90	1.44	1.07	0.83	1.39
Production workers	818	419 (51.2)	0.93	0.77	1.11	0.94	0.78	1.12	214	132 (61.7)	1.16	0.84	1.62	1.13	0.80	1.59
Other	83	37 (44.6)	0.66	0.42	1.04	0.67	0.42	1.05	79	47 (59.5)	1.07	0.66	1.75	0.99	0.60	1.62

CI: Confidence interval. [a]The analysis did not include people who had not received any comments about their health examination results or had not provided answers to the question about paying attention to one's health. [b]Independent variables were age, marital status, self-rated health, outpatient visits and one of the occupational class variables. [c]Independent variables were age, marital status, self-rated health, outpatient visits and all occupational class variables.

Table 4. Odds ratios for receiving health guidance associated with occupational class among male and female employees

Occupational class	Male employees[a]								Female employees[a]							
	N	No. of cases (%)	Odds ratio and 95% CI						N	No. of cases (%)	Odds ratio and 95% CI					
			Model 1[b]			Model 2[c]					Model 1[b]			Model 2[c]		
Employment type																
Permanent worker	2,266	1,267 (55.9)	1.00			1.00			515	298 (57.9)	1.00			1.00		
Temporary/contract worker	196	102 (52.0)	0.65	0.48	0.89	0.71	0.52	0.98	137	90 (65.7)	1.27	0.85	1.91	1.27	0.84	1.92
Part-time worker	69	33 (47.8)	0.65	0.39	1.07	0.87	0.52	1.46	414	236 (57.0)	0.75	0.57	1.00	0.81	0.59	1.10
Other	17	10 (58.8)	0.93	0.34	2.52	1.06	0.38	2.91	10	5 (50.0)	0.56	0.16	2.00	0.70	0.19	2.64
Company size																
1–29 employees	319	153 (48.0)	1.00			1.00			223	129 (57.8)	1.00			1.00		
30–299 employees	727	363 (49.9)	1.08	0.82	1.41	1.09	0.83	1.42	380	210 (55.3)	0.93	0.66	1.30	0.86	0.61	1.23
300–999 employees	404	233 (57.7)	1.50	1.11	2.03	1.50	1.11	2.05	129	75 (58.1)	1.09	0.69	1.71	0.98	0.61	1.55
1,000 or more employees	757	462 (61.0)	1.74	1.32	2.28	1.68	1.28	2.22	224	136 (60.7)	1.22	0.83	1.80	1.13	0.76	1.68
Civil service	341	201 (58.9)	1.47	1.07	2.02	1.43	1.03	1.99	120	79 (65.8)	1.38	0.86	2.22	1.30	0.78	2.15
Occupation																
Professionals and technicians	732	409 (55.9)	1.00			1.00			256	147 (57.4)	1.00			1.00		
Managers	406	273 (67.2)	1.46	1.13	1.90	1.37	1.05	1.78	15	8 (53.3)	0.98	0.34	2.84	1.04	0.35	3.06
Clerks	325	187 (57.5)	0.97	0.74	1.27	0.93	0.71	1.23	296	188 (63.5)	1.38	0.97	1.97	1.49	1.03	2.14
Sales and service workers	549	270 (49.2)	0.74	0.59	0.93	0.76	0.60	0.96	343	199 (58.0)	0.92	0.65	1.29	1.10	0.74	1.62
Production workers	488	271 (55.5)	0.99	0.79	1.26	1.06	0.83	1.35	124	71 (57.3)	0.87	0.55	1.36	1.03	0.64	1.67
Other	48	19 (39.6)	0.52	0.28	0.96	0.57	0.31	1.05	42	16 (38.1)	0.38	0.19	0.75	0.43	0.21	0.86

CI: Confidence interval. [a]The analysis did not include people who had not received advice regarding health guidance or had not provided answers to the question about receiving health guidance. [b]Independent variables were age, marital status, self-rated health, outpatient visits and one of the occupational class variables. [c]Independent variables were age, marital status, self-rated health, outpatient visits and all occupational class variables.

Table 5. Odds ratios for visiting a medical institution associated with occupational class among male and female employees

Occupational class	Male employees[a]							Female employees[a]						
	N	No. of cases (%)	Odds ratio and 95% CI					N	No. of cases (%)	Odds ratio and 95% CI				
			Model 1[b]			Model 2[c]				Model 1[b]			Model 2[c]	
Employment type														
Permanent worker	1,713	1,130 (66.0)	1.00			1.00		588	407 (69.2)	1.00			1.00	
Temporary/contract worker	173	126 (72.8)	1.01	0.68	1.50	1.05	0.70 1.57	115	85 (73.9)	1.21	0.75	1.94	1.22	0.75 1.98
Part-time worker	63	38 (60.3)	0.75	0.42	1.35	0.80	0.44 1.45	455	333 (73.2)	1.04	0.77	1.40	1.05	0.76 1.45
Other	15	11 (73.3)	1.33	0.37	4.75	1.32	0.36 4.84	13	9 (69.2)	1.03	0.29	3.60	0.95	0.27 3.36
Company size														
1–29 employees	269	173 (64.3)	1.00			1.00		257	196 (76.3)	1.00			1.00	
30–299 employees	578	381 (65.9)	1.04	0.74	1.46	1.06	0.75 1.49	397	262 (66.0)	0.58	0.40	0.84	0.59	0.41 0.86
300–999 employees	320	215 (67.2)	1.13	0.77	1.64	1.16	0.79 1.70	156	111 (71.2)	0.77	0.48	1.25	0.79	0.49 1.27
1,000 or more employees	527	357 (67.7)	1.26	0.90	1.78	1.30	0.91 1.84	219	154 (70.3)	0.74	0.48	1.14	0.73	0.47 1.13
Civil service	270	191 (70.7)	1.32	0.88	1.96	1.38	0.91 2.10	142	111 (78.2)	1.15	0.69	1.91	1.15	0.67 1.97
Occupation														
Professionals and technicians	539	350 (64.9)	1.00			1.00		330	230 (69.7)	1.00			1.00	
Managers	310	226 (72.9)	1.15	0.81	1.61	1.13	0.80 1.60	15	10 (66.7)	0.79	0.25	2.53	0.80	0.25 2.59
Clerks	244	163 (66.8)	0.90	0.63	1.28	0.87	0.61 1.24	310	222 (71.6)	1.07	0.74	1.53	1.10	0.76 1.59
Sales and service workers	434	279 (64.3)	0.88	0.65	1.18	0.91	0.67 1.22	346	252 (72.8)	1.00	0.70	1.42	1.07	0.72 1.59
Production workers	395	257 (65.1)	1.06	0.79	1.44	1.14	0.83 1.55	128	86 (67.2)	0.66	0.41	1.05	0.77	0.47 1.26
Other	42	30 (71.4)	1.58	0.74	3.36	1.67	0.77 3.59	42	34 (81.0)	1.61	0.69	3.73	1.65	0.70 3.92

CI: Confidence interval. [a]The analysis did not include people who had not received advice regarding visiting a medical institution or had not provided answers to the question about visiting a medical institution. [b]Independent variables were age, marital status, self-rated health, outpatient visits and one of the occupational class variables. [c]Independent variables were age, marital status, self-rated health, outpatient visits and all occupational class variables.

health examinations provided by their employer varied widely by occupation, employment type and company size[9]. For example, the proportion was 94.7% among professionals and technicians and 72.9% for sales and service workers, 94.9% among permanent workers and just 58.9% among part-time workers, and 93.2% in companies with 1,000–4,999 employees compared with 80.2% in companies with 10–29 employees. Our results confirmed that receiving a health examination was associated with occupation, employment type and company size among both male and female employees, adjusting by covariates including age, marital status, self-rated health, outpatient visits, and other occupational factors.

This study found significant associations between company size and receiving health guidance. The proportion of male employees receiving health guidance increased with company size. Information on health guidance in our study was obtained from a question asking if respondents had "received health guidance on improvement of lifestyle behavior from health experts (medical doctors, public health nurses, managerial dieticians, or others)." Such health guidance may differ from the Specific Health Guidance provided via the nationwide lifestyle intervention program in Japan[5]. Japan's Industrial Safety and Health Act and related regulations mean that industrial health professionals are appointed in all workplaces with 50 or more regular employees[15]. The employees in these companies can therefore obtain health guidance from health professionals in their workplace. This may explain the association between receiving health guidance and company size observed among male employees. A similar association was observed among female employees, but not at significant levels. It is possible that for women, receiving health guidance might be affected by other factors apart from company size, but these factors are unknown.

We also found significant associations between occupation and receiving health guidance among both male and female employees. Compared with professionals and technicians, a higher proportion of male managers and female clerks received health guidance. These findings might be associated with sex differences in working conditions and roles in work and family[16]. Further studies are warranted to explore this issue in greater depth.

This study had some limitations. The data used were from a self-administered questionnaire survey[13]. However, as data were drawn from a large-scale national survey, the sample was likely to be nationally representative of employees. As non-responses were not available in our analysis, the results might be biased. The questions used were limited, and the reasons for not doing any of the actions related to health examinations were not available[13]. Although the behavior "paying attention to one's health" might include actions relating to "improvement of lifestyle behavior" which was included in the question about receiving health guidance, this was unclear. The classifications used were limited, and the classification of a company size of 0–49 employees was not available. The adjusted factors were drawn from previous studies, and included age, marital status, self-rated health and outpatient visits[8, 10, 14, 17]. It might have been helpful to add other factors (e.g. income and education), which may also have an influence[14, 18]. It may also be important to consider the other current health status and past medical history in further studies. Possible residual confounding cannot be ruled out in the present study.

In conclusion, our results confirmed that receiving a health examination was associated with occupational factors, and suggested that receiving health guidance as a result of health examination results was associated with occupation and company size.

Funding

This study was supported by JSPS KAKENHI Grant Number JP17K09138.

Conflict of Interests

None declared.

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