

**Field Study**

# Association of Occupation, Employment Contract, and Company Size with Mental Health in a National Representative Sample of Employees in Japan

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**Abstract: Association of Occupation, Employment Contract, and Company Size with Mental Health in a National Representative Sample of Employees in Japan: Akiomi INOUE, et al. Japan Society for the Promotion of Science—Objectives:** The purpose of this study was to investigate the cross-sectional association of employment contract, company size, and occupation with psychological distress using a nationally representative sample of the Japanese population. **Methods:** From June through July 2007, a total of 9,461 male and 7,717 female employees living in the community were randomly selected and surveyed using a self-administered questionnaire and interview including questions about occupational class variables, psychological distress (K6 scale), treatment for mental disorders, and other covariates. **Results:** Among males, part-time workers had a significantly higher prevalence of psychological distress than permanent workers. Among females, temporary/contract workers had a significantly higher prevalence of psychological distress than permanent workers. Among males, those who worked at companies with 300–999 employees had a significantly higher prevalence of psychological distress than those who worked at the smallest companies (with 1–29 employees). Company size was not significantly associated with psychological distress among females. Additionally, occupation was not significantly associated with psychological distress among males or females. Similar patterns were

observed when the analyses were conducted for those who had psychological distress and/or received treatment for mental disorders. **Conclusions:** Working as part-time workers, for males, and as temporary/contract workers, for females, may be associated with poor mental health in Japan. No clear gradient in mental health along company size or occupation was observed in Japan.

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**Key words:** Cross-sectional studies, Employment, Mental disorders, Social class

Low socioeconomic status (SES) is generally associated with poor mental health (e.g., psychological distress, psychiatric morbidity, and depression). Lorant *et al.*, in their meta-analysis, found that low SES was associated with an approximately 1.8 times greater risk for being depressed<sup>1</sup>. In previous research, several variables were used as SES indicators, e.g., income, education, and occupation<sup>2</sup>. Among others, occupation is an important variable for employees' social class. Several previous studies in Western countries (e.g., the UK, Finland, and New Zealand) reported that low-class occupations were significantly associated with depression<sup>3–7</sup>. In Japan, however, research on the association between occupation and mental health remains limited. Previous studies of civil servants reported a socioeconomic gradient in mental functioning among Japanese male employees<sup>8,9</sup>, while the association was weaker than that among British and Finnish employees. The pattern was not clear among female employees<sup>8</sup>.

The association between occupation and job stressors has also been examined. Several previous studies in

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Europe reported that employees with low-class occupations demonstrated lower reward (or higher effort-reward imbalance)<sup>10–13</sup>, which was reported as one of the major risk factors for common mental disorders and depression<sup>14, 15</sup>. In Japan, one study of company employees reported that job stressors were more prevalent among low-class occupations (such as production line operators and manual workers) and this association was quite similar to that observed in the EU<sup>16</sup>, while another study of civil servants reported that job stressors were less prevalent among production workers<sup>17</sup>. The generalization of these study findings is limited because these studies focused on specific workplaces in particular regions of Japan<sup>8, 9, 16, 17</sup>. To ensure generalizability, the association between employees' occupation and mental health needs to be examined in a nationally representative sample.

Employment contracts have recently been recognized as an important variable for employees' mental health due to an increased number of non-permanent workers, including temporary workers who contract with a temporary agency and are dispatched to a company, contract workers who are employed under a contract for a limited term, and part-time workers who work fewer than 40 hours per week (i.e., not full-time). In a previous study in Europe, mental health was poorer among temporary workers than among permanent workers<sup>18</sup>. In Japan, many employees were employed as permanent workers in the five decades following the end of World War II. After the economic crisis in the 1990s, however, employment contracts diversified and the proportion of non-permanent workers has increased<sup>19</sup>. Generally, non-permanent workers draw lower wages<sup>20</sup> and are easily dismissed<sup>21</sup>. In addition, the coverage of social insurance plans for non-permanent workers is limited in Japan<sup>22</sup>. Under such conditions, non-permanent workers may more frequently suffer from poor mental health such as depression and anxiety<sup>14</sup>, and the association between employment contract, as an occupational social class indicator, and mental health needs to be examined.

In addition to occupation and employment contracts, company size (i.e., the total number of employees in a company including headquarters, branch offices, and factories) has also been considered as an important indicator for employees' social class in Japan. Generally, Japanese employees in large companies draw higher wages<sup>20</sup> and have better job security due to lifetime employment than those in smaller companies<sup>23</sup>. Employees of smaller companies may also suffer from poor mental health. Thus, company size should also be considered as an indicator of social class, when investigating the disparity of employees' mental health among social classes in Japan. To date, two previous studies have investigated the relationship between worksite size (i.e., the number of employees at

headquarters, a branch office, or a factory) and employees' mental health, but not company size. One of these studies reported that employees in small and medium-sized worksites had poorer mental health than those in large-sized worksites<sup>24</sup>. However, this finding is questionable because the sample was not nationally representative and the results were not adjusted for basic demographic or occupational variables. The other study used a nationally representative sample and indicated that employees in medium-sized worksites (100–299 employees), in 1987, and large-sized worksites (5,000 or more employees), in 1992, had the highest proportions of self-reported work-related stress measured by a single-item question<sup>25</sup>. The association between company size and employees' mental health remains unclear and needs to be examined in a nationally representative sample using standardized measures of mental health.

The purpose of this cross-sectional study was to investigate the association of employment contract, company size, and occupation with employees' mental health in a nationally representative sample of the Japanese population using the nationwide survey of the 2007 Comprehensive Survey of Living Condition of the People on Health and Welfare by the Ministry of Health, Labour and Welfare, Japan<sup>26</sup>. For the current study, we used multiple indicators of mental health including psychological distress and receiving treatment for mental disorders. Using these two indicators complementary to each other, this study provides more concrete evidence of the association between occupational class and mental health because psychological distress is a popular measure of mental health, but is not necessarily related to a clinically significant impairment in mental health, while receiving treatment for mental disorders is related to a disabling condition, and this indicator is influenced not only by the presence of mental disorders but also by help-seeking behavior.

## **Participants and Methods**

### *Participants*

From June through July 2007, the Comprehensive Survey of Living Condition of the People on Health and Welfare, which covers households and household members nationwide, was conducted. Participants were chosen from areas randomly selected throughout Japan. From this survey, self-administered questionnaires (i.e., a household questionnaire and a health questionnaire) and interview questionnaires (i.e., income questionnaire) were used. Specifically, household questionnaires and health questionnaires were distributed to 287,807 households located in 5,440 unit areas that were selected from areas of the Population Census conducted in 2005. Members from 230,596 households (response rate 80.1%) completed the questionnaires, which were collected by survey staff. Survey staff visited all households

(n=36,285) located in 2,000 unit areas randomly selected from the primary 5,440 unit areas, and interviewed one member of each household to collect additional information on annual income of members of the household using an income questionnaire. The income questionnaire was completed for 24,578 households (response rate 67.7%). For the current study, we merged the datasets of these three questionnaires and created a database that included data from 47,479 individuals (22,674 males and 24,805 females) living in 23,513 households (64.8% of the primary target households of the income questionnaire). We excluded 27,953 individuals (11,842 males and 16,111 females), who were self-employed, were working in farming, fishing, and forestry occupations, or were currently unemployed. The reason for excluding those in the farming, fishing, and forestry occupations was because workers in these occupations are mostly self-employed or employed in a family business. We also excluded 2,348 participants (1,371 males and 977 females), who had at least one missing response for variables relevant to the study. The final analyses were conducted using 17,178 participants who were currently employed (9,461 males and 7,717 females) and aged from 15 to 83 years old. Detailed characteristics of the participants are shown in Table 1. The second author (NK) and the last author (HH) obtained permission to use individual data from the 2007 Comprehensive Survey of Living Condition of the People on Health and Welfare for purposes other than those intended by the Ministry of Health, Labour and Welfare, Japan.

### Measures

#### 1) Occupational class variables

For the household questionnaire, each participant was asked to answer questions about his/her employment contract with four response options (permanent workers, temporary/contract workers, part-time workers, and others); company size (i.e., the total number of employees in the participant's company, including headquarters, branch offices, and factories) with nine response options (1–4, 5–29, 30–99, 100–299, 300–499, 500–999, 1,000–4,999, 5,000 or more, or unspecified size if employed in a civil service office); and occupation (i.e., type of job) with nine response options (professionals and technicians, managers, clerks, sales, service, security/protective, transportation and communications, production process and related work occupations, and others). Employment contracts were classified using the original response options. Company size was classified into 1–29, 30–299, 300–999, and 1,000 or more, with reference to the definition of small and medium-sized companies in the Japan Small and Medium-sized Enterprise Basic Act. Civil service offices were classified as a separate category, regardless of their size because the original survey did

not ask the size of civil service offices. Occupation was classified into six groups based on previous studies<sup>8, 16</sup>: professionals and technicians, managers, clerks, sales and service workers including sales, service, and security/protective workers, production workers (i.e., manual worker) including transportation and communications and production process and related work occupations, and others for whom their occupation was not classifiable.

#### 2) Psychological distress and treatment for mental disorders

The health questionnaire included the K6 scale<sup>27, 28</sup>. The K6 scale, developed by Kessler *et al.*<sup>27</sup>, consists of six items and is used to measure the extent of psychological distress using a five-point response option from 0=*none of the time* to 4=*all of the time* (the range of the scale score, 0–24). The K6 scale was translated into Japanese and its internal consistency reliability and validity were reported to be acceptable for the Japanese version<sup>28</sup>. For the current study, participants were classified into two groups: those with and without psychological distress (a total K6 score of 5 or more, and 0–4, respectively) according to recommended cutoff points<sup>29</sup>.

In addition, the health questionnaire asked each participant whether he/she was currently being treated for depression or other mental disorders. Those who answered “Yes” to the question were defined as receiving treatment for mental disorders.

#### 3) Other covariates (demographic characteristics)

Other covariates included age, marital status, and household income. Age and marital status were assessed using the household questionnaire, and household income was assessed using the income questionnaire. Age was classified into six groups: 15–19 years old, 20–29 years old, 30–39 years old, 40–49 years old, 50–64 years old, and 65 years or older. Marital status was classified into three groups: currently married, never married, and divorced or widowed. Annual household income was classified into four groups according to the quartiles: low (4,340 thousand yen or less), low-medium (4,341–6,680 thousand yen), high-medium (6,681–9,650 thousand yen), and high (9,651 thousand yen or more).

### Statistical analysis

First, proportions of participants with psychological distress among groups classified by the demographic characteristics were calculated. Second, using the permanent workers, the smallest companies (i.e., companies with 1–29 employees), or sales and service workers as a reference, the odds ratios (ORs) and 95% confidence intervals (CIs) of psychological distress were estimated for other groups of employment contracts, company size, or occupation, respectively, in logistic

**Table 1.** Demographic characteristics, occupational class, and mental health indicators among employees who participated in the study

Characteristics	Male (N=9,461)		Female (N=7,717)	
	Average (SD)	n (%)	Average (SD)	n (%)
<b>Demographic characteristics</b>				
Age (years)	43.4 (12.8)		41.6 (12.6)	
15–19		107 (1.1)		128 (1.6)
20–29		1,408 (14.9)		1,522 (19.7)
30–39		2,438 (25.8)		1,819 (23.6)
40–49		2,195 (23.2)		1,894 (24.5)
50–64		2,902 (30.7)		2,168 (28.1)
65 or more		411 (4.3)		186 (2.4)
<b>Marital status</b>				
Currently married		6,620 (70.0)		4,651 (60.3)
Never married		2,496 (26.4)		2,247 (29.1)
Divorced/widowed		345 (3.6)		819 (10.6)
Household income (thousand yen/year)	7,486 (4,416)		7,428 (4,726)	
4,340 or less		2,183 (23.1)		2,126 (27.5)
4,341–6,680		2,522 (26.7)		1,763 (22.8)
6,681–9,650		2,455 (25.9)		1,838 (23.8)
9,651 or more		2,301 (24.3)		1,990 (25.8)
<b>Occupational class</b>				
<b>Employment contract</b>				
Permanent worker		7,855 (83.0)		3,550 (46.0)
Temporary/contract worker		729 (7.7)		788 (10.2)
Part-time worker		777 (8.2)		3,290 (42.6)
Others		100 (1.1)		89 (1.2)
<b>Company size (number of employees)</b>				
1–29		2,193 (23.2)		2,426 (31.4)
30–299		3,036 (32.1)		2,656 (34.4)
300–999		1,245 (13.2)		866 (11.2)
1,000 or more		1,925 (20.3)		1,055 (13.7)
Civil service		1,062 (11.2)		714 (9.3)
<b>Occupation</b>				
Professionals and technicians		2,918 (30.8)		1,878 (24.3)
Managers		787 (8.3)		73 (0.9)
Clerks		987 (10.4)		2,047 (26.5)
Sales and service workers		2,050 (21.7)		2,430 (31.5)
Production workers		2,510 (26.5)		1,065 (13.8)
Others		209 (2.2)		224 (2.9)
<b>Mental health indicators</b>				
Psychological distress (K6) <sup>†</sup>	3.04 (4.06)		3.68 (4.33)	
Distressed		2,530 (26.7)		2,558 (33.1)
Not distressed		6,931 (73.3)		5,159 (66.9)
<b>Receiving treatment for mental disorders</b>				
Yes		100 (1.1)		74 (1.0)
No		9,361 (98.9)		7,643 (99.0)

<sup>†</sup> Psychological distress was defined as scoring five or more on the K6 scale.

**Table 2.** Distributions of those with psychological distress by demographic characteristics (i.e., age, marital status, and household income) among employees who participated in the study †

Demographic characteristics	Male (N=9,461)			Female (N=7,717)		
	N	No. of case (%)	<i>p</i> value ‡	N	No. of case (%)	<i>p</i> value ‡
Age (years)			< 0.001			0.097
15–19	107	35 (32.7)		128	50 (39.1)	
20–29	1,408	373 (26.5)		1,522	515 (33.8)	
30–39	2,438	677 (27.8)		1,819	619 (34.0)	
40–49	2,195	645 (29.4)		1,894	619 (32.7)	
50–64	2,902	729 (25.1)		2,168	709 (32.7)	
65 or more	411	71 (17.3)		186	46 (24.7)	
Marital status			< 0.001			0.019
Currently married	6,620	1,678 (25.3)		4,651	1,489 (32.0)	
Never married	2,496	733 (29.4)		2,247	771 (34.3)	
Divorced/widowed	345	119 (34.5)		819	298 (36.4)	
Household income (thousand yen/year)			0.001			0.005
4,320 or less	2,183	658 (30.1)		2,126	767 (36.1)	
4,321–6,660	2,522	657 (26.1)		1,763	570 (32.3)	
6,661–9,620	2,455	633 (25.8)		1,838	604 (32.9)	
9,621 or more	2,301	582 (25.3)		1,990	617 (31.0)	

† Psychological distress was defined as scoring five or more on the K6 scale. ‡ *p* values were calculated by the chi-square test.

regression analysis. In the series of regression analyses, we first conducted crude analyses without any adjustment; then incrementally adjusted for age, marital status, and household income, and finally, other occupational class variables. Because there were different working patterns between males and females<sup>30)</sup>, each analysis was conducted separately for gender. In addition, analyses of the association between employment contract and psychological distress among working-age (i.e., 15–60-year-old) participants (8,604 males and 7,316 females) were conducted to examine the effects of unstable employment contracts among working people before their retirement age because those working part-time after their retirement should be distinguished from those with unstable employment. Additionally, similar analyses were conducted for those who had psychological distress and/or received treatment for mental disorders to see if these two indicators were complementary to each other.

Distributions of age, marital status, and household income may have had contextual effects on the associations between the occupational class variables and psychological distress, even though we adjusted for these variables in the analyses. For instance, working part-time for younger vs. older workers or for those with lower vs. higher household income could be differently associated with psychological distress. In addition, even if analyses indicate a similar association with psychological distress, these findings could have different practical implications. To clarify the background characteristics of each occupational class, we analyzed

age distributions by marital status, household income, and the occupational class variables (Appendix A). The distributions of marital status and household income by occupational class variables are shown in Appendix B. For these analyses, the levels of significance were less than 0.05 (two-tailed) and all statistical analyses were conducted using SPSS 17.0J for Windows.

## Results

### *Demographic characteristics and psychological distress*

Table 2 shows the distributions of those with psychological distress by demographic characteristics separated by gender. The youngest group, divorced/widowed group, and the lowest quartile of the household income group had significantly or marginally significantly higher proportions of participants suffering from psychological distress among both males and females.

### *Occupational class and psychological distress*

Among males, after adjusting for age, part-time workers had a significantly higher OR of psychological distress than permanent workers (OR, 1.34 [95% CI, 1.12–1.59]) (Table 3). This association remained significant after adjusting for all covariates (OR, 1.22 [95% CI, 1.01–1.46]). After adjusting for all covariates, males who worked at companies with 300–999 employees had a significantly higher OR of psychological distress than those at the smallest companies (with 1–29 employees) (OR, 1.19 [95% CI, 1.01–1.39]). Occupation was not significantly associated with psychological



**Table 3.** Prevalence odds ratios for psychological distress associated with occupational class among male employees (N=9,461): logistic regression analysis †

Occupational class	N	No. of case (%)	OR (95% CI) ‡		
			Crude	Age adjusted	Demographic adjusted §
Employment contract					
Permanent worker	7,855	2,099 (26.7)	1.00	1.00	1.00
Temporary/contract worker	729	178 (24.4)	0.89 (0.74–1.06)	1.01 (0.84–1.21)	0.94 (0.78–1.12)
Part-time worker	777	230 (29.6)	1.15 (0.98–1.36)	1.34 (1.12–1.59)	1.20 (1.01–1.44)
Others	100	23 (23.0)	0.82 (0.51–1.31)	0.96 (0.60–1.54)	0.87 (0.54–1.41)
Company size (number of employees)					
1–29	2,193	585 (26.7)	1.00	1.00	1.00
30–299	3,036	809 (26.6)	1.00 (0.88–1.13)	0.99 (0.87–1.12)	1.02 (0.90–1.16)
300–999	1,245	359 (28.8)	1.21 (0.95–1.30)	1.08 (0.93–1.26)	1.17 (0.99–1.37)
1,000 or more	1,925	511 (26.5)	0.99 (0.87–1.14)	0.95 (0.83–1.10)	1.05 (0.91–1.21)
Civil service	1,062	266 (25.0)	0.92 (0.78–1.09)	0.90 (0.76–1.06)	0.99 (0.83–1.18)
Occupation					
Professionals and technicians	2,918	771 (26.4)	0.98 (0.86–1.11)	0.96 (0.85–1.09)	0.99 (0.87–1.13)
Managers	787	187 (23.8)	0.85 (0.70–1.03)	0.86 (0.70–1.04)	0.92 (0.75–1.12)
Clerks	987	280 (28.4)	1.08 (0.91–1.27)	1.06 (0.89–1.26)	1.12 (0.94–1.33)
Sales and service workers	2,050	552 (26.9)	1.00	1.00	1.00
Production workers	2,510	681 (27.1)	1.01 (0.89–1.15)	1.01 (0.89–1.15)	1.00 (0.88–1.14)
Others	209	59 (28.2)	1.07 (0.78–1.47)	1.10 (0.80–1.51)	1.11 (0.81–1.52)

† Psychological distress was defined as scoring five or more on the K6 scale. ‡ OR: odds ratio; CI: confidence interval. § Adjusted for age, marital status, and household income. || Additionally adjusted for other occupational class variables.

**Table 4.** Prevalence odds ratios for psychological distress associated with occupational class among female employees (N=7,717): logistic regression analysis †

Occupational class	N	No. of case (%)	OR (95% CI)‡			
			Crude	Age adjusted	Demographic adjusted §	Fully adjusted
<b>Employment contract</b>						
Permanent worker	3,550	1,159 (32.6)	1.00	1.00	1.00	1.00
Temporary/contract worker	788	288 (36.5)	1.19 (1.01–1.40)	1.20 (1.02–1.40)	1.18 (1.00–1.38)	1.18 (1.01–1.39)
Part-time worker	3,290	1,087 (33.0)	1.02 (0.92–1.13)	1.04 (0.93–1.15)	1.03 (0.92–1.14)	1.04 (0.92–1.17)
Others	89	24 (27.0)	0.76 (0.47–1.22)	0.79 (0.49–1.26)	0.78 (0.49–1.25)	0.81 (0.50–1.30)
<b>Company size (number of employees)</b>						
1–29	2,426	792 (32.6)	1.00	1.00	1.00	1.00
30–299	2,656	894 (33.7)	1.05 (0.93–1.18)	1.04 (0.92–1.17)	1.04 (0.92–1.17)	1.02 (0.91–1.15)
300–999	866	309 (35.7)	1.15 (0.97–1.35)	1.13 (0.96–1.33)	1.15 (0.97–1.35)	1.13 (0.96–1.34)
1,000 or more	1,055	352 (32.4)	1.03 (0.89–1.20)	1.02 (0.87–1.19)	1.02 (0.88–1.19)	1.02 (0.87–1.19)
Civil service	714	211 (29.6)	0.87 (0.72–1.04)	0.86 (0.71–1.03)	0.89 (0.74–1.08)	0.88 (0.73–1.06)
<b>Occupation</b>						
Professionals and technicians	1,878	639 (34.0)	1.04 (0.92–1.18)	1.04 (0.91–1.18)	1.08 (0.94–1.23)	1.12 (0.97–1.29)
Managers	73	22 (30.1)	0.87 (0.52–1.45)	0.88 (0.53–1.46)	0.89 (0.54–1.49)	0.91 (0.54–1.51)
Clerks	2,047	654 (31.9)	0.95 (0.84–1.08)	0.94 (0.83–1.07)	0.96 (0.85–1.10)	0.98 (0.86–1.13)
Sales and service workers	2,430	805 (33.1)	1.00	1.00	1.00	1.00
Production workers	1,065	369 (34.6)	1.07 (0.92–1.25)	1.09 (0.93–1.27)	1.09 (0.94–1.27)	1.09 (0.93–1.27)
Others	224	69 (30.8)	0.90 (0.67–1.21)	0.93 (0.69–1.24)	0.93 (0.69–1.25)	0.95 (0.70–1.28)

† Psychological distress was defined as scoring five or more on the K6 scale. ‡ OR: odds ratio; CI: confidence interval. § Adjusted for age, marital status, and household income. || Additionally adjusted for other occupational class variables.

distress among males. When the analyses for employment contract were limited to working-age participants, similar patterns were observed (data not shown).

Among females, after adjusting for age, temporary/contract workers had a significantly higher OR of psychological distress than permanent workers (OR, 1.20 [95% CI, 1.02–1.40]) (Table 4). This association remained significant after adjusting for all covariates (OR, 1.18 [95% CI, 1.01–1.39]). Neither company size nor occupation was significantly associated with psychological distress among females. When the analyses for employment contract were limited to working-age participants, similar patterns were observed (data not shown).

A series of similar analyses were conducted using an alternative indicator of mental health, i.e., the proportion of those who had psychological distress and/or received treatment for mental disorders. The results were not largely different from the results obtained using psychological distress as an indicator of mental health (data not shown).

## Discussion

In the current study, male part-time workers had a significantly higher prevalence of psychological distress, while among females, temporary/contract workers had a significantly higher prevalence of psychological distress. Males working at companies with 300–999 employees had a significantly higher prevalence of psychological distress, while among females, the association between company size and psychological distress was not significant. Occupation was not significantly associated with psychological distress among males or females. Similar patterns were observed when the analyses used the composite indicator of psychological distress and/or treatment for mental disorders.

Part-time workers had a significantly higher prevalence of psychological distress than permanent workers among males. In Japanese society, the traditional gender-role ideology that males are expected to be the primary breadwinners still remains<sup>30</sup>. A previous national survey reported that, among male part-time workers, “sustaining our life as a primary breadwinner” was one of the most popular reasons for working<sup>31</sup>. Male part-time workers may be more psychologically distressed because they bear job insecurity with lower wages despite their expected role of supporting their family and their desire to be employed as permanent workers<sup>7</sup>. However, an alternative interpretation is that many male workers being treated for mental disorders are employed as part-time workers because, in general, people with mental disorders have difficulty working full-time<sup>32</sup>. On the other hand, there was no significant difference in the prevalence of psychological distress between permanent and temporary/contract male workers. One possible explanation for this

is that some companies provide similar salaries and fringe benefits to temporary/contract workers as they do for permanent workers, which may close the gap in mental health among the employment contracts, however, it should be noted that temporary/contract workers still might be disadvantaged in a long run.

Temporary/contract workers had a significantly higher prevalence of psychological distress than permanent workers among females. A previous national survey reported that female workers can be split into two groups: (1) those who work supplementarily as dependents in the social insurance program of their husbands; and (2) those who work in earnest<sup>33</sup>. According to other previous national surveys, many in the former group were employed as part-time workers<sup>34</sup> and reported that they were relatively satisfied with their working life<sup>35</sup>. On the other hand, a previous national survey reported that, among female temporary/contract workers, the majority responded that they worked as a temporary/contract worker “because there was no company at which I would be able to work as a permanent worker”<sup>36</sup>. Female temporary/contract workers who work in earnest and wish to work permanently may experience more psychological distress because working conditions (job security and wages) are generally poorer for temporary/contract jobs. We observed an interesting gender difference in this study: male part-time workers experienced higher psychological distress, while among females, temporary/contract workers did so. This may be attributable to different reasons for having a temporary/contract job between males and females, as reflected in different age-related patterns of employment contracts between males and females (Appendix A). While males tend to choose temporary/contract jobs to utilize their specialized skills and qualifications better, females tend to do so since they cannot find permanent jobs, as noted above<sup>36</sup>. The labor market structure in Japan, in which females are socially disadvantaged at finding permanent employment, seems a plausible reason for the observed gender difference.

In the current study, 66.9% of all employees in private companies (10,311 out of the 15,402 employees) worked at small or medium-sized (with 299 or less employees) companies, which corresponds to the findings of the previous national representative survey, which reported 66.2%<sup>37</sup>. The current study found a positive association between company size and household income (Appendix B) as in the previous survey<sup>20</sup>. However, contrary to our expectations, a non-linear association between company size and psychological distress was observed in the current study. Males who worked at a company with 300–999 employees had a significantly higher prevalence of psychological distress than those at the smallest companies with 1–29 employees. A similar, but non-significant, pattern was observed among females. The present findings are not concordant with previous research



that employees in small and medium-sized worksites<sup>24)</sup> or those in the largest-sized (with 5,000 or more employees) worksites<sup>25)</sup> had poorer mental health or higher work-related stress. This discrepancy may be attributable to the use of a different indicator (company size vs. worksite size) or to different survey years reflecting different economic situations. A 2007 national survey reported that employees of companies with 300–999 employees reported the longest working hours<sup>38)</sup>. Long working hours may explain greater psychological distress among employees at a company with 300–999 employees, possibly mediated by shorter sleep hours and/or a greater work-family conflict. Furthermore, another national survey reported that the communication in companies with 100–999 employees was the most inadequate<sup>39)</sup>. Larger-sized companies may have better-organized personnel systems, while smaller-sized companies may have closer relationships among employees, which may reduce employees' psychological distress. Among medium-sized companies, however, it is possible that neither the personnel system nor close relationships are well established. This may cause greater psychological distress owing to inadequate communication among employees. Unlike other social class indicators, company size may affect the mental health of employees, interacting with current business conditions and the labor market.

Occupation was not significantly associated with psychological distress among males or females. This finding is not consistent with previous observations that manual or production workers had a significantly higher prevalence of poor subjective health<sup>8)</sup> and job stressors<sup>16)</sup> in Japanese male and female workers. It is also inconsistent with previous observations in Europe and the US<sup>1)</sup>. One explanation for this discrepancy is that these previous studies, which reported occupational class gradients for health and job stressors, were conducted within specific workplaces. Within an organization, the occupational class structure may be clearer, which may lead to the disparity in health and stress. In addition, occupation was reported to account for only a small proportion of the variation of subjective social class in a national representative sample in Japan<sup>40)</sup>. Within Japanese society, occupation may not be a sensitive indicator of social class, however, it may affect employees' mental health depending on working conditions specific to a given occupation as well as employees' relative position within an organization.

In the current study, never married and divorced/widowed employees had a higher prevalence of psychological distress than married employees among both males and females. These findings are consistent with a previous study, which reported that never or previously married was associated with increased risk of mental disorders for both genders<sup>41)</sup>. Furthermore, the

negative association between household income and psychological distress observed among males and females in the current study is also consistent with previous findings<sup>42)</sup>. The current study confirmed these associations in a nationally representative sample of Japan.

Limitations of the current study should be noted. First, employees of lower occupational class who had psychological distress and/or received treatment for mental disorders may have been less likely to participate in this study. Second, we adjusted for age, marital status, and household income; however, the groups classified based on the selected occupational class variables had different patterns of the demographic characteristics, indicating that each group had a different background, in particular, each group was at a different stage in life. Such contextual effects were not adjusted for in this study and need to be considered in future research. For instance, conducting an analysis stratified by life stages, such as age groups or marital status, is needed. Third, we did not adjust for covariates that were possibly associated with both the occupational class indicators and the mental health measures, such as education. These factors, which were not measured in the current study, may confound the findings. For instance, people with low levels of education may be more likely to have a non-permanent job and experience greater psychological distress. Fourth, psychosocial factors at work (e.g., job demands, job control, coworker support, and supervisor support), which were reported as important mediators of association between SES and health outcomes<sup>43)</sup>, were not obtained in this study. The mechanism underlying the observed differences in mental health among occupations and employment contracts is not clear from this study. While some previous studies have examined the mediating roles of psychosocial factors at work, linking occupational class and health<sup>9)</sup>, research examining the mediating role of psychosocial factors at work on the association between employment contracts and mental health is also promising. Fifth, it is not clear whether contract workers answered the company size of their dispatch origin or destination, which may have affected the true association between company size and mental health outcomes. Sixth, it is sometimes difficult for respondents to distinguish their occupation (type of job) from the type of industry in which they are employed. Some participants may have answered their industry rather than their occupation, resulting in a less clear association between occupation and mental health indicators. Finally, a causal relationship cannot be determined since this study implemented a cross-sectional design. For instance, some people may have developed a mental disorder because of financial strain from being a contract worker, while others who were once permanent employees may have left their original workplace because they had a mental

disorder, and therefore began a new job as a contract worker. Furthermore, because of the cross-sectional nature of this study, results cannot reveal the mid or long-term effects of employment contract on psychological distress. For instance, although this study revealed no significant difference in the prevalence of psychological distress between permanent and temporary/contract male workers, temporary/contract workers may feel more job insecurity due to temporal economic fluctuations. A larger-sized prospective study is needed to clarify the causal association between occupational class and psychological distress or the treatment of mental disorders.

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## References

- 1) Lorant V, Deliège D, Eaton W, Robert A, Philippot P, Anseau M. Socioeconomic inequalities in depression: a meta-analysis. *Am J Epidemiol* 2003; 157: 98–112.
- 2) Winkleby MA, Jatulis DE, Frank E, Fortmann SP. Socioeconomic status and health: how education, income, and occupation contribute to risk factors for cardiovascular disease. *Am J Public Health* 1992; 82: 816–20.
- 3) Surtees PG, Dean C, Ingham JG, Kreitman NB, Miller PM, Sashidharan SP. Psychiatric disorder in women from an Edinburgh community: associations with demographic factors. *Br J Psychiatry* 1983; 142: 238–46.
- 4) Brown G, Harris T. Social origins of depression: a study of psychiatric disorder in women. London (UK): Tavistock Publications; 1984.
- 5) Romans-Clarkson SE, Walton VA, Herbison GP, Mullen PE. Marriage, motherhood and psychiatric morbidity in New Zealand. *Psychol Med* 1988; 18: 983–90.
- 6) Lehtinen V, Joukamaa M. Epidemiology of depression: prevalence, risk factors and treatment situation. *Acta Psychiatr Scand Suppl* 1994; 377: 7–10.
- 7) Lewis G, Bebbington P, Brugha T, et al. Socioeconomic status, standard of living, and neurotic disorder. *Lancet* 1998; 352: 605–9.
- 8) Martikainen P, Lahelma E, Marmot M, Sekine M, Nishi N, Kagamimori S. A comparison of socioeconomic differences in physical functioning and perceived health among male and female employees in Britain, Finland and Japan. *Soc Sci Med* 2004; 59: 1287–95.
- 9) Sekine M, Chandola T, Martikainen P, Marmot M, Kagamimori S. Socioeconomic inequalities in physical and mental functioning of Japanese civil servants: explanations from work and family characteristics. *Soc Sci Med* 2006; 63: 430–45.
- 10) Bosma H, Peter R, Siegrist J, Marmot M. Two alternative job stress models and the risk of coronary heart disease. *Am J Public Health* 1998; 88: 68–74.
- 11) Bruner EJ, Kivimäki M, Siegrist J, et al. Is the effect of work stress on cardiovascular mortality confounded by socioeconomic factors in the Valmet study? *J Epidemiol Community Health* 2004; 58: 1019–20.
- 12) Siegrist J, Marmot M. Health inequalities and the psychosocial environment—two scientific challenges. *Soc Sci Med* 2004; 58: 1463–73.
- 13) Siegrist J, Starke D, Chandola T, et al. The measurement of effort-reward imbalance at work: European comparisons. *Soc Sci Med* 2004; 58: 1483–99.
- 14) Stansfeld S, Candy B. Psychosocial work environment and mental health—a meta-analytic review. *Scand J Work Environ Health* 2006; 32: 443–62.
- 15) Netterstrøm B, Conrad N, Bech P, et al. The relation between work-related psychosocial factors and the development of depression. *Epidemiol Rev* 2008; 30: 118–32.
- 16) Kawakami N, Haratani T, Kobayashi F, et al. Occupational class and exposure to job stressors among employed men and women in Japan. *J Epidemiol* 2004; 14: 204–11.
- 17) Kawaharada M, Saijo Y, Yoshioka E, Sato T, Sato H, Kishi R. Relations occupational stress to occupational class in Japanese civil servants—analysis by two occupational stress models. *Ind Health* 2007; 45: 247–55.
- 18) Kompier M, Ybema JF, Janssen J, Taris T. Employment contracts: cross-sectional and longitudinal relations with quality of working life, health and well-being. *J Occup Health* 2009; 51: 193–203.
- 19) Cabinet Office, Government of Japan. Annual report on the Japanese economy and public finance 2006. Tokyo (Japan): National Printing Bureau; 2007 (in Japanese).
- 20) Ministry of Health, Labour and Welfare, Japan. Basic survey on wage structure 2008. Tokyo (Japan): Rodohorei Kyokai; 2009 (in Japanese).
- 21) Weathers C. Nonregular workers and inequality in Japan. *Soc Sci Jpn J* 2009; 12: 143–8.
- 22) Ishiguro K. Japanese employment in transformation: the growing number of non-regular workers. *Electron J Contemp Jpn Stud* 2008.
- 23) Hirakubo N. The end of lifetime employment in Japan. *Bus Horizons* 1999; 42: 41–6.
- 24) Ikeda T, Nakata A, Takahashi M, et al. Correlates of depressive symptoms among workers in small- and medium-scale manufacturing enterprises in Japan. *J Occup Health* 2009; 51: 26–37.
- 25) Shimizu Y, Makino S, Takata T. Employee stress status during the past decade (1982–1992) based on a nationwide survey conducted by the Ministry of Labour in Japan. *Ind Health* 1997; 35: 441–50.
- 26) Ministry of Health, Labour and Welfare, Japan. Comprehensive survey of living condition of the people

- on health and welfare 2007. Tokyo (Japan): Health and Welfare Statistics Association; 2008 (in Japanese).
- 27) Kessler RC, Andrews G, Colpe LJ, et al. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med* 2002; 32: 959–76.
  - 28) Furukawa TA, Kawakami N, Saitoh M, et al. The performance of the Japanese version of the K6 and K10 in the World Mental Health Survey Japan. *Int J Methods Psychiatr Res* 2008; 17: 152–8.
  - 29) Kawakami N, Kondo K, Yanagida K, Furukawa TA. Mental health research on the preventive measure against suicide in adulthood. In: Ueda S, editor. Report of the research grant for the implementation of preventive measure based on the current status of suicide from the Ministry of Health, Labour and Welfare, Japan FY 2004. Tokyo (Japan): Ministry of Health, Labour and Welfare, Japan; 2005 (in Japanese).
  - 30) Katsurada E, Sugihara Y. Gender-role identity, attitudes toward marriage, and gender-segregated school backgrounds. *Sex Roles* 2002; 47: 249–58.
  - 31) Ministry of Health, Labour and Welfare, Japan. General survey on part-time workers 2006. Tokyo (Japan): Ministry of Health, Labour and Welfare, Japan; 2007 (in Japanese).
  - 32) Marrone J, Foley S, Selleck V. How mental health and welfare to work interact: the role of hope, sanctions, engagement, and support. *Am J Psychiatr Rehabil* 2005; 8: 81–101.
  - 33) Ministry of Health, Labour and Welfare, Japan. Annual report on health, labour and welfare 2002. Tokyo (Japan): Gyosei; 2002 (in Japanese).
  - 34) Ministry of Labor, Japan. White paper on working women 1998. Tokyo (Japan): Japan Institute of Workers' Evolution; 1999 (in Japanese).
  - 35) Ministry of Health, Labour and Welfare, Japan. White paper on working women 2002. Tokyo (Japan): Japan Institute of Workers' Evolution; 2003 (in Japanese).
  - 36) Ministry of Health, Labour and Welfare, Japan. White paper on the labour economy 2003. Tokyo (Japan): The Japan Institute of Labour; 2003 (in Japanese).
  - 37) Ministry of Economy, Trade and Industry, Japan. White paper on small and medium enterprises in Japan 2009. Tokyo (Japan): Research Institute of Economy, Trade and Industry; 2009 (in Japanese).
  - 38) The Institute of Labor Administration. General survey on working hour FY 2007. *Rosei Jiho* 2007; 3711: 2–21 (in Japanese).
  - 39) Cabinet Office, Government of Japan. White paper on the national lifestyle 2007. Tokyo (Japan): Jijigahosha; 2007 (in Japanese).
  - 40) Kikkawa T. Changes in the determinants of class identification in Japan. *Int J Sociol* 2000; 30: 34–51.
  - 41) Scott KM, Wells JE, Angermeyer M, et al. Gender and the relationship between marital status and first onset of mood, anxiety and substance use disorders. *Psychol Med* (in press).
  - 42) Fukuda Y, Imai H. Review of research on social inequalities in health in Japan. *J Natl Inst Public Health* 2007; 56: 56–62 (in Japanese).
  - 43) Warren JR, Hoonakker P, Carayon P, Brand J. Job characteristics as mediators in SES—health relationships. *Soc Sci Med* 2004; 59: 1367–78.

**Appendix A.** Age distributions by marital status, household income, and occupational class (i.e., employment contract, company size, and occupation) among employees who participated in the study

Characteristics	N	Age (years)						65 or more n (%)	p value †
		15–19 n (%)	20–29 n (%)	30–39 n (%)	40–49 n (%)	50–64 n (%)			
Male (N=9,461)								< 0.001	
Marital status									
Currently married	6,620	1 (0.0)	307 (4.6)	1,630 (24.6)	1,782 (26.9)	2,533 (38.3)	367 (5.5)		
Never married	2,496	106 (4.2)	1,086 (43.5)	760 (30.4)	335 (13.4)	199 (8.0)	10 (0.4)		
Divorced/widowed	345	– (0.0)	15 (4.3)	48 (13.9)	78 (22.6)	170 (49.3)	34 (9.9)		
Household income (thousand yen/year)								< 0.001	
4,320 or less	2,183	24 (1.1)	430 (19.7)	634 (29.0)	390 (17.9)	543 (24.9)	162 (7.4)		
4,321–6,660	2,522	28 (1.1)	312 (12.4)	841 (33.3)	581 (23.0)	635 (25.2)	125 (5.0)		
6,661–9,620	2,455	23 (0.9)	275 (11.2)	583 (23.7)	700 (28.5)	802 (32.7)	72 (2.9)		
9,621 or more	2,301	32 (1.4)	391 (17.0)	380 (16.5)	524 (22.8)	922 (40.1)	52 (2.3)		
Employment contract								< 0.001	
Permanent worker	7,855	37 (0.5)	1,027 (13.1)	2,237 (28.5)	2,064 (26.3)	2,381 (30.3)	109 (1.4)		
Temporary/contract worker	729	8 (1.1)	132 (18.1)	109 (15.0)	74 (10.2)	286 (39.2)	120 (16.5)		
Part-time worker	777	60 (7.7)	239 (30.8)	81 (10.4)	42 (5.4)	197 (25.4)	158 (20.3)		
Others	100	2 (2.0)	10 (10.0)	11 (11.0)	15 (15.0)	38 (38.0)	24 (24.0)		
Company size (number of employees)								< 0.001	
1–29	2,193	30 (1.4)	402 (18.3)	541 (24.7)	419 (19.1)	645 (29.4)	156 (7.1)		
30–299	3,036	39 (1.3)	524 (17.3)	781 (25.7)	616 (20.3)	920 (30.3)	156 (5.1)		
300–999	1,245	13 (1.0)	189 (15.2)	355 (28.5)	304 (24.4)	345 (27.7)	39 (3.1)		
1,000 or more	1,925	25 (1.3)	220 (11.4)	513 (26.6)	551 (28.6)	586 (30.4)	30 (1.6)		
Civil service	1,062	– (0.0)	73 (6.9)	248 (23.4)	305 (28.7)	406 (38.2)	30 (2.8)		
Occupation								< 0.001	
Professionals and technicians	2,918	13 (0.4)	426 (14.6)	878 (30.1)	733 (25.1)	764 (26.2)	104 (3.6)		
Managers	787	– (0.0)	15 (1.9)	69 (8.8)	244 (31.0)	424 (53.9)	35 (4.4)		
Clerks	987	3 (0.3)	98 (9.9)	259 (26.2)	266 (27.0)	332 (33.6)	29 (2.9)		
Sales and service workers	2,050	49 (2.4)	414 (20.2)	541 (26.4)	406 (19.8)	525 (25.6)	115 (5.6)		
Production workers	2,510	36 (1.4)	420 (16.7)	635 (25.3)	516 (20.6)	795 (31.7)	108 (4.3)		
Others	209	6 (2.9)	35 (16.7)	56 (26.8)	30 (14.4)	62 (29.7)	20 (9.6)		

Appendix A. (continued)

Characteristics	N	Age (years)					65 or more n (%)	p value †
		15-19 n (%)	20-29 n (%)	30-39 n (%)	40-49 n (%)	50-64 n (%)		
<b>Female (N=7,717)</b>								
<b>Marital status</b>								
Currently married	4,651	4 (0.1)	212 (4.6)	1,106 (23.8)	1,482 (31.9)	1,742 (37.5)	105 (2.3)	< 0.001
Never married	2,247	124 (5.5)	1,282 (57.1)	557 (24.8)	180 (8.0)	97 (4.3)	7 (0.3)	
Divorced/widowed	819	- (0.0)	28 (3.4)	156 (19.0)	232 (28.3)	329 (40.2)	74 (9.0)	
<b>Household income (thousand yen/year)</b>								
4,320 or less	2,126	36 (1.7)	389 (18.3)	513 (24.1)	470 (22.1)	624 (29.4)	94 (4.4)	< 0.001
4,321-6,660	1,763	40 (2.3)	298 (16.9)	517 (29.3)	393 (22.3)	464 (26.3)	51 (2.9)	
6,661-9,620	1,838	30 (1.6)	354 (19.3)	452 (24.6)	512 (27.9)	469 (25.5)	21 (1.1)	
9,621 or more	1,990	22 (1.1)	481 (24.2)	337 (16.9)	519 (26.1)	611 (30.7)	20 (1.0)	
<b>Employment contract</b>								
Permanent worker	3,550	44 (1.2)	904 (25.5)	911 (25.7)	806 (22.7)	850 (23.9)	35 (1.0)	< 0.001
Temporary/contract worker	788	3 (0.4)	179 (22.7)	227 (28.8)	179 (22.7)	179 (22.7)	21 (2.7)	
Part-time worker	3,290	81 (2.5)	428 (13.0)	666 (20.2)	876 (26.6)	1,114 (33.9)	125 (3.8)	< 0.001
Others	89	- (0.0)	11 (12.4)	15 (16.9)	33 (37.1)	25 (28.1)	5 (5.6)	
<b>Company size (number of employees)</b>								
1-29	2,426	42 (1.7)	487 (20.1)	518 (21.4)	586 (24.2)	686 (28.3)	107 (4.4)	< 0.001
30-299	2,656	53 (2.0)	517 (19.5)	587 (22.1)	648 (24.4)	803 (30.2)	48 (1.8)	
300-999	866	14 (1.6)	197 (22.7)	253 (29.2)	186 (21.5)	197 (22.7)	19 (2.2)	
1,000 or more	1,055	19 (1.8)	237 (22.5)	271 (25.7)	266 (25.2)	254 (24.1)	8 (0.8)	
Civil service	714	- (0.0)	84 (11.8)	190 (26.6)	208 (29.1)	228 (31.9)	4 (0.6)	< 0.001
<b>Occupation</b>								
Professionals and technicians	1,878	8 (0.4)	420 (22.4)	480 (25.6)	482 (25.7)	460 (24.5)	28 (1.5)	< 0.001
Managers	73	- (0.0)	12 (16.4)	14 (19.2)	11 (15.1)	34 (46.6)	2 (2.7)	
Clerks	2,047	13 (0.6)	403 (19.7)	649 (31.7)	533 (26.0)	429 (21.0)	20 (1.0)	< 0.001
Sales and service workers	2,430	89 (3.7)	539 (22.2)	443 (18.2)	525 (21.6)	754 (31.0)	80 (3.3)	
Production workers	1,065	17 (1.6)	127 (11.9)	196 (18.4)	288 (27.0)	395 (37.1)	42 (3.9)	
Others	224	1 (0.4)	21 (9.4)	37 (16.5)	55 (24.6)	96 (42.9)	14 (6.3)	

† p values were calculated by the chi-square test.



**Appendix B.** Distributions of marital status and household income by occupational class (i.e., employment contract, company size, and occupation) among employees who participated in the study

Occupational class	N	Marital status			p value †	Household income (thousand yen/year)						p value †
		Currently married n (%)	Never married n (%)	Divorced/ widowed n (%)		4,320 or less n (%)	4,321– 6,660 n (%)	6,661– 9,620 n (%)	9,621 or more n (%)			
<b>Male (N=9,461)</b>												
Employment contract					<0.001							<0.001
Permanent worker	7,855	5,753 (73.2)	1,857 (23.6)	245 (3.1)		1,498 (19.1)	2,124 (27.0)	2,161 (27.5)	2,072 (26.4)			
Temporary/contract worker	729	461 (63.2)	227 (31.1)	41 (5.6)		280 (38.4)	195 (26.7)	133 (18.2)	121 (16.6)			
Part-time worker	777	340 (43.8)	385 (49.5)	52 (5.7)		358 (46.1)	174 (22.4)	142 (18.3)	103 (13.3)			
Others	100	66 (66.0)	27 (27.0)	7 (7.0)		47 (47.0)	29 (29.0)	19 (19.0)	5 (5.0)			
Company size (number of employees)					<0.001							<0.001
1–29	2,193	1,338 (61.0)	732 (33.4)	123 (5.6)		819 (37.3)	628 (28.6)	419 (19.1)	327 (14.9)			
30–299	3,036	2,007 (66.1)	898 (29.6)	131 (4.3)		813 (26.8)	922 (30.4)	711 (23.4)	590 (19.4)			
300–999	1,245	906 (72.8)	304 (24.4)	35 (2.8)		207 (16.6)	381 (30.6)	334 (26.8)	323 (25.9)			
1,000 or more	1,925	1,491 (77.5)	399 (20.7)	35 (1.8)		244 (12.7)	386 (20.1)	641 (33.3)	654 (34.0)			
Civil service	1,062	878 (82.7)	163 (15.3)	21 (2.0)		100 (9.4)	205 (19.3)	350 (33.0)	407 (38.3)			
Occupation					<0.001							<0.001
Professionals and technicians	2,918	2,098 (71.9)	738 (25.3)	82 (2.8)		568 (19.5)	765 (26.2)	810 (27.8)	775 (26.6)			
Managers	787	719 (91.4)	52 (6.6)	16 (2.0)		77 (9.8)	132 (16.8)	218 (27.7)	360 (45.7)			
Clerks	987	745 (75.5)	220 (22.3)	22 (2.2)		110 (11.1)	237 (24.0)	323 (32.7)	317 (32.1)			
Sales and service workers	2,050	1,317 (64.2)	642 (31.3)	91 (4.4)		616 (30.0)	568 (27.7)	496 (24.2)	370 (18.0)			
Production workers	2,510	1,597 (63.6)	784 (31.2)	129 (5.1)		745 (29.7)	768 (30.6)	562 (22.4)	435 (17.3)			
Others	209	144 (68.9)	60 (28.7)	5 (2.4)		67 (32.1)	52 (24.9)	46 (22.0)	44 (21.1)			
<b>Female (N=7,717)</b>												
Employment contract					<0.001							<0.001
Permanent worker	3,550	1,776 (50.0)	1,392 (39.2)	382 (10.8)		818 (23.0)	734 (20.7)	788 (22.2)	1,210 (34.1)			
Temporary/contract worker	788	412 (52.3)	285 (36.2)	91 (11.5)		254 (32.2)	169 (21.4)	188 (23.9)	177 (22.5)			
Part-time worker	3,290	2,412 (73.3)	544 (16.5)	334 (10.2)		1,033 (31.4)	840 (25.5)	836 (25.4)	581 (17.7)			
Others	89	51 (57.3)	26 (29.2)	12 (13.5)		21 (23.6)	20 (22.5)	26 (29.2)	22 (24.7)			
Company size (number of employees)					<0.001							<0.001
1–29	2,426	1,485 (61.2)	675 (27.8)	266 (11.0)		765 (31.5)	601 (24.8)	570 (23.5)	490 (20.2)			
30–299	2,656	1,574 (59.3)	777 (29.3)	305 (11.5)		766 (28.8)	620 (23.3)	631 (23.8)	639 (24.1)			
300–999	866	491 (56.7)	289 (33.4)	86 (9.9)		200 (23.1)	208 (24.0)	213 (24.6)	245 (28.3)			
1,000 or more	1,055	588 (55.7)	354 (33.6)	113 (10.7)		285 (27.0)	229 (21.7)	256 (24.3)	285 (27.0)			
Civil service	714	513 (71.8)	152 (21.3)	49 (6.9)		110 (15.4)	105 (14.7)	168 (23.5)	331 (46.4)			
Occupation					<0.001							<0.001
Professionals and technicians	1,878	1,147 (61.1)	581 (30.9)	150 (8.0)		388 (20.7)	387 (20.6)	419 (22.3)	684 (36.4)			
Managers	73	38 (52.1)	18 (24.7)	17 (23.3)		16 (21.9)	16 (21.9)	12 (16.4)	29 (39.7)			
Clerks	2,047	1,136 (55.5)	733 (35.8)	178 (8.7)		460 (22.5)	459 (22.4)	512 (25.0)	616 (30.1)			
Sales and service workers	2,430	1,428 (58.8)	704 (29.0)	298 (12.3)		838 (34.5)	568 (23.4)	571 (23.5)	453 (18.6)			
Production workers	1,065	746 (70.0)	175 (16.4)	144 (13.5)		345 (32.4)	276 (25.9)	271 (25.4)	173 (16.2)			
Others	224	156 (69.6)	36 (16.1)	32 (14.3)		79 (35.3)	57 (25.4)	53 (23.7)	35 (15.6)			

† p values were calculated by the chi-square test.