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Associations of Depressive Symptoms with Regular Leisure Activity and Family Social Support among Japanese Workers

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Abstract: This study was performed to determine the associations of depressive symptoms with regular leisure activity and family social support among Japanese workers. The study participants consisted of 1,605 men and 348 women. Depressive symptoms were evaluated using the Center for Epidemiologic Studies Depression scale. Multiple logistic regression analysis was used to adjust for potentially associated variables. Depressive symptoms were associated with lack of regular leisure activity for men [odds ratio (OR) = 2.05, 95% confidence interval (CI) = 1.55–2.71] and for women (OR = 2.53, 95% CI = 1.30–4.95). Depressive symptoms were also associated with lack of family social support for men (OR = 1.87, 95% CI = 1.43–2.43). Although a cross-sectional study does not determine which factors are determinants or consequences, these findings suggest regular leisure activity for men and women and family social support for men are independently associated with depressive symptoms.

Key words: Depressive symptoms, Regular leisure activity, Family social support, Lifestyle

Depressive symptoms are common health problems in the workplace. Depressive symptoms can be a major cause of absenteeism and decrease work performance[1]. Thus, there is a need for solutions for managing workers' stress to prevent depressive symptoms.

In the analysis of the development of stress among workers, the roles of individual and situational factors are considered, even though working conditions play a primary role[2, 3]. Michie classified techniques for managing stress into "your self" and "your situation"[4]. The "your self" comprises lifestyle factors such as drinking, smoking, exercise and sleeping. Some studies have already demonstrated the association of these lifestyles with stress and depressive symptoms[5–7]. The leisure activity is also included in "your self". There are few studies of the association between regular leisure activity and depressive symptoms among Japanese workers.

The "your situation" comprises social support systems. Social support can be obtained from workplaces and families. The association of family social support with depressive symptoms has been assessed on the basis of marital status and cohabitation[8]. However, it is hypothesized that the subjective perception of family social support on depressive symptoms is different from marital status and cohabitation. Evidence of the association of depressive symptoms with the subjective perception of family social support is still lacking for Japanese workers.

The aim of this study was to determine the associations of depressive symptoms with regular leisure activity and the subjective perception of family social support among

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Japanese workers. We conducted a cross-sectional survey among employees in a manufacturing factory.

Data were collected between January and March in 2004 during a periodical health examination at the factory. The workforce was composed of assembly line and support workers. The study population was composed of permanent workers. There were no workers on shift work. A self-report questionnaire was sent to all the 2,217 workers (1,828 men and 389 women). Participation was voluntary. The safety and health committee of the company approved the implementation of this study and the publication of the results.

The questionnaire addressed four major sections: demographics, lifestyle, the subjective perception of family social support and the Center for Epidemiologic Studies Depression (CES-D) scale[9]. The questions on lifestyle were for smoking, the frequency of alcohol consumption, the daily hours of sleep, and regular leisure activity. The daily hours of sleep was categorized into 6 h or less, 7 h, and 8 h or more. Smoking status was classified as current smokers and nonsmokers. The frequency of alcohol consumption was defined as never, 3 times or less per week and 4 times or more per week. Concerning family social support and regular leisure activity, we asked the following questions: "Do you perceive social support for stress from your family? (yes/no)" and "Do you do any regular leisure activities? (yes/no)".

Many scales are used to measure depressive symptoms in the workplace. In this study, we used the CES-D scale to measure depressive symptoms. The CES-D scores ranged from 0 to 60, with higher scores indicating a higher severity of depressive symptoms. According to a tested Japanese version of the CES-D scale, having depressive symptoms is defined as a cut-off score of 16 or more[10].

All analyses were performed using SPSS for Windows, version 10[11]. Statistical significance was set at $p<0.05$. Chi-square tests were used for analyzing categorical variables. Multiple logistic regression analysis was used to adjust for potentially associated variables. Because age and lifestyle are associated with stress[5–8], they were examined as background factors. Multiple logistic regression analysis was conducted as follows: (i) adjusted for age (continuous) as Model 1 and (ii) adjusted for age (continuous), smoking, the frequency of alcohol consumption, and the daily hours of sleep as Model 2.

The participants comprised 1,605 men and 348 women from a total population of 2,217. The overall response rate was 88.1%. The mean age (SD, range) of the population was 41.8 (10.7, 20 to 69) for men and 35.0 (9.8, 22 to 61) for women. The demographic characteristics of the participants are shown in Table 1. The prevalences of depressive symptoms were 19.6% for men and 26.1% for women. There were few women more than 40 yr old than men.

Table 1. Characteristics of participants

	Men n (%)	Women n (%)
Number of total participants	1,605	348
Age		
20–29	198 (12.3)	133 (38.2)
30–39	559 (34.8)	128 (36.8)
40–49	358 (22.3)	42 (12.1)
50+	490 (30.5)	45 (12.9)
Depressive symptoms		
Depressed	315 (19.6)	91 (26.1)
Not depressed	1,290 (80.4)	257 (73.9)
Regular leisure activity		
Yes	1,224 (76.3)	289 (83.0)
No	381 (23.7)	59 (17.0)
Family social support		
Yes	847 (52.8)	240 (69.0)
No	758 (47.2)	108 (31.0)
Smoking		
Nonsmoker	954 (59.4)	310 (89.1)
Smoker	651 (40.6)	38 (10.9)
Frequency of alcohol consumption		
Never	315 (19.6)	145 (41.7)
3 times or less per week	641 (39.9)	165 (47.4)
4 times or more per week	649 (40.4)	38 (10.9)
Daily hours of sleep		
6 h or less	1,032 (64.3)	257 (73.9)
7 h	446 (27.8)	78 (22.4)
8 h or more	127 (7.9)	13 (3.7)

Table 2 shows the associations between the studied variables and depressive symptoms. There were significant differences of depressive symptoms with regular leisure activity for men and women and the subjective perception of family social support for men using the chi-square test. There were more women who perceived family social support than men.

Results of the multiple logistic regression analysis of the associations between depressive symptoms and the studied variables are shown in Table 3. In Model 1, there were significant associations of depressive symptoms with lack of regular leisure activity for men [odds ratio (OR) = 2.46, 95% confidence interval (CI) = 1.88–3.20] and women (OR = 3.37; 95% CI, 1.85–6.16) and lack of subjective perception of family social support for men (OR = 2.09; 95% CI, 1.62–2.69).

For men, there were significant associations between depressive symptoms and the daily hours of sleep for 6 h or

Table 2. The associations between studied variables and depressive symptoms

Variables	Men (n = 1,605)			Women (n = 348)		
	Depressed n (%)	Not-depressed n (%)	*p*-value	Depressed n (%)	Not-depressed n (%)	*p*-value
Regular leisure activity						
Yes	195 (15.9)	1,029 (84.1)	<0.01	63 (21.8)	226 (78.2)	<0.01
No	120 (31.5)	261 (68.5)		28 (47.5)	31 (52.5)	
Family social support						
Yes	120 (14.2)	727 (85.8)	<0.01	58 (24.2)	182 (75.8)	0.11
No	195 (25.7)	563 (74.3)		33 (30.6)	75 (69.4)	
Smoking						
Nonsmoker	185 (19.4)	769 (80.6)	0.51	75 (24.2)	235 (75.8)	0.06
Smoker	130 (20.0)	521 (80.0)		16 (42.1)	22 (57.9)	
Frequency of alcohol consumption						
Never	64 (20.3)	251 (79.7)	0.85	23 (15.9)	122 (84.1)	<0.01
3 times or less per week	128 (20.0)	513 (80.0)		46 (27.9)	119 (72.1)	
4 times or more per week	123 (19.0)	526 (81.0)		22 (57.9)	16 (42.1)	
Daily hours of sleep						
6 h or less	223 (21.6)	809 (78.4)	<0.01	76 (29.6)	181 (70.4)	0.02
7 h	58 (13.0)	388 (87.0)		11 (14.1)	67 (85.9)	
8 h or more	34 (26.8)	93 (73.2)		4 (30.8)	9 (69.2)	

p-values represent the chi-squares (cross-tabulated).

less (OR = 1.71; 95% CI, 1.30–2.26), 7 h (OR = 0.60; 95% CI, 0.44–0.81) in Model 1. For women, there were also significant associations of depressive symptoms with smoking (OR = 2.14; 95% CI, 1.04–4.40), alcohol consumption 4 times or more per week (OR = 5.25; 95% CI, 2.53–10.9), and the daily hours of sleep for 6 h or less (OR = 2.39; 95% CI, 1.28–4.46) and 7 h (OR = 0.38; 95% CI, 0.19–0.78) in Model 1.

Model 2 shows significant associations of depressive symptoms with lack of regular leisure activity for men (OR = 2.05; 95% CI, 1.55–2.71) and women (OR = 2.53; 95% CI, 1.30–4.95) and lack of subjective perception of family social support (OR = 1.87; 95% CI, 1.43–2.43) for men. There was also a significant association between depressive symptoms and alcohol consumption for 4 times or more per week (OR = 5.07; 95% CI, 2.27–11.3) for women.

Depressive symptoms are common among workers. The prevalence of depressive symptoms was 19.6% for men and 26.1% for women in this study. There are significant associations of depressive symptoms with lack of regular leisure activity for men and women and lack of subjective perception of family social support for men after adjusting for lifestyle factors.

Lack of regular leisure activity was significantly associated with depressive symptoms. No gender difference was observed. However, for women, because of the limited number of participants, the range of 95% CI was relatively wider. In this study, various leisure activities were reported including exercise, traveling and listening to music. Some studies have been conducted to identify specific aspects of leisure activities that contribute to stress reduction[12].

We found a gender difference between the association of depressive symptoms and lack of subjective perception of family social support. There was a significant association for men, but not for women. In this study, there were fewer women than men; thus the results might lose some statistical significance. There might also be a difference in the perception of family social support between men and women.

There are studies of the associations of depression with cohabitation and marital status[8]. Concerning living alone, Bildt showed that there is no significant association with mental health for men and women[13]. As regards marital status, previous studies showed that married workers have stronger family social support than single workers[8, 14]. Shigemi et al. showed that there is no significant association between job stress and feelings of dissatisfaction with family life[15]. In this study, we did not consider marital status and cohabitation because it was hypothesized that the subjective perception of family social support that could be obtained from parents, a spouse or children play an important role in stress management. In Japan, 2 to 5% of workers live away from their families due to company transfer (so-called "tanshinfunin")[16] and there has been an increasing trend toward the nuclear family. The subjective perception of

Table 3. Multiple logistic regression analysis regarding factors to depressive symptoms

,Variables	Model 1*		Model 2†	
	Men OR (95% CI)	Women OR (95% CI)	Men OR (95% CI)	Women OR (95% CI)
Regular leisure activity				
Yes	1.00	1.00	1.00	1.00
No	2.46 (1.88–3.20)	3.37 (1.85–6.16)	2.05 (1.55–2.71)	2.53 (1.30–4.95)
Family social support				
Yes	1.00	1.00	1.00	1.00
No	2.09 (1.62–2.69)	1.58 (0.94–2.65)	1.87 (1.43–2.43)	1.44 (0.80–2.59)
Smoking				
Nonsmoker	1.00	1.00	1.00	1.00
Smoker	1.02 (0.79–1.31)	2.14 (1.04–4.40)	0.98 (0.75–1.27)	1.57 (0.73–3.40)
Frequency of alcohol consumption				
Never	1.00	1.00	1.00	1.00
3 times or less per week	1.04 (0.80–1.35)	1.06 (0.64–1.73)	1.06 (0.74–1.49)	1.01 (0.58–1.74)
4 times or more per week	1.01 (0.78–1.32)	5.25 (2.53–10.9)	1.06 (0.74–1.50)	5.07 (2.27–11.3)
Daily hours of sleep				
6 h or less	1.71 (1.30–2.26)	2.39 (1.28–4.46)	1.64 (0.97–2.79)	1.17 (0.35–3.89)
7 h	0.60 (0.44–0.81)	0.38 (0.19–0.78)	1.01 (0.57–1.78)	0.41 (0.10–1.61)
8 h or more	1.00	1.00	1.00	1.00

*Model 1: adjusted for age (continuous).

†Model 2: adjusted for age (continuous) and lifestyles (smoking, frequency of alcohol consumption, daily hours of sleep).

family social support is to be considered for the analysis of depressive symptoms.

Previous studies showed that some lifestyles are also associated with depressive symptoms[7]. In this study, after adjusting for such lifestyles, there was a significant association between alcohol consumption for 4 times or more per week and depressive symptoms for women. Previous studies showed that women may be at greater risk for developing major depression due to alcohol consumption[17, 18]. Our results support these findings.

This study has a few limitations that should be considered when interpreting the results. First, because it is a cross-sectional study, it does not determine causation. We can only suggest that these factors are associated with workers' depressive symptoms. We cannot conclude whether the modification of these factors would improve the workers' symptoms of depression. Second, the data on overwork and job characteristics such as job strain and social support from colleagues at the workplace was not taken into consideration. Third, the association between the subjective perception of family social support and marital status was not assessed. Further studies are needed to take these factors into consideration.

Despite a few limitations, our study provides information on the associations of depressive symptoms with the lack of regular leisure activity for men and women, and the lack of subjective perception of family social support for men.

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