

# Original Article

## Job stress in a multinational corporation: cross-country comparison between Japan and Vietnam

Odgerel Chimed-Ochir<sup>1</sup>  | Tatsuhiko Kubo<sup>1</sup> | Oyundari Batsaikhan<sup>1</sup> | Yui Yumiya<sup>1</sup> | Koji Mori<sup>2</sup>  |  
Ning Liu<sup>3</sup> | Tetsuya Morita<sup>4</sup> | Fuyu Miyake<sup>5</sup> | Yoshihisa Fujino<sup>5</sup> 

<sup>1</sup>Department of Public Health and Health Policy, Graduate School of Biomedical and Health Sciences, Hiroshima University, Hiroshima, Japan

<sup>2</sup>Department of Occupational Health Practice and Management, Institute of Industrial Ecological Sciences, University of Occupational and Environmental Health, Japan, Kitakyushu, Japan

<sup>3</sup>Department of Public Health, University of Occupational and Environmental Health, Japan, Kitakyushu, Japan

<sup>4</sup>Department of Mental Health, Institute of Industrial Ecological Sciences, University of Occupational and Environmental Health, Japan, Kitakyushu, Japan

<sup>5</sup>Department of Environmental Epidemiology, Institute of Industrial Ecological Sciences University of Occupational and Environmental Health, Japan, Kitakyushu, Japan

### Abstract

**Objective:** The current study aimed to identify workplace stress and how stress factors differed in employees of a multinational company's subsidiaries in Japan and Vietnam. **Methods:** For the study, a total of 340 Japanese and 379 Vietnamese workers were included from their corresponding subsidiaries of a multinational company headquartered in Japan. The data were anonymously collected via an online pre-administered questionnaire between November 2021 and February 2022. A brief Job Stress Questionnaire was used to assess the job stress. Doubly robust estimation combines a multivariate regression model with a propensity score model to identify the adjusted difference of job stress between workers in two companies. **Results:** Japanese employees included 292 males and 48 females, with an average age of 45.5 years. Vietnamese workers comprised 91 males and 288 females, with an average age of 36.5 years. Japanese workers reported higher level of job stress (odds ratio [OR] 1.37,  $p < .001$ ), family dissatisfaction (OR 1.25,  $p < .001$ ), and job dissatisfaction (OR 1.31,  $p < .001$ ) than Vietnamese workers. Supervisor support had the lowest ranking in both countries (Mean 2.61; SD, 1.14 in Japan and mean 2.08; SD, 1.34 in Vietnam). The largest score differences between Japanese and Vietnamese workers were observed for family support (Diff = -1.25,  $p < .001$ ) and colleague support (Diff = -1.20,  $p < .001$ ). **Conclusion:** Although we have herein focused on the factors with the poorest perception and the highest gaps between the two countries, the managers in each country should be mindful of the other factors that appeared to be significant job stressors in their subsidiaries for further prevention of job stress.

**Keywords:** Japan, occupational health, occupational stress, Vietnam

(Received May 29, 2023; Accepted September 9, 2023; Published online in J-STAGE November 29, 2023)

## Introduction

In today's globalized world, the workforce constitutes a fundamental pillar of economic and social development. The well-being and health of employees hold paramount significance, not only for the individuals themselves but also for the overall productivity and

### Correspondence

Odgerel Chimed-Ochir: Department of Public Health and Health Policy, Graduate School of Biomedical and Health Sciences, Hiroshima University, Hiroshima, Japan  
E-mail: odgerel@hiroshima-u.ac.jp



This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made. © 2023 The Authors.

growth of corporations at large. The International Labor Organization Convention (No.161 of 1985)<sup>1)</sup> and World Health Organization (WHO) Global Strategy of 1995<sup>2)</sup> identified as objectives the development of healthy work environments and practices through the principle “for all with equity”. In the Sixtieth World Health Assembly, the WHO emphasized the need for collaborative efforts from Member States in addressing the holistic well-being of workers. This transcends the prevention of occupational diseases and injuries, extending to encompass mental health, health promotion, and general wellness of workers at workplace<sup>3)</sup>. However, the application of this principle has varied between and within countries, by different types of workplaces between and within private and public sectors, and between different groups of workers, creating great inequity in well-being among working people<sup>2,4)</sup>. Particularly, mental health disparities, including stress levels within the workforce, persist as a challenging issue, shaped by a complex interplay of physical and non-physical working environment and personal factors (Figure 1)<sup>5)</sup>. Hence, we seek to delve into the realm of disparities of stress level and its influencing factors among employees in a multinational corporation with over 200 subsidiaries across the globe. In all subsidiaries, organizational policies are held at a similar level. Therefore, by focusing on a corporation that has embraced analogous organizational policies, we intend to decipher the roles of physical and non-physical factors influencing for disparity of workers’ stress. In the current study, we selected

Japanese and Vietnamese subsidiaries of a multinational corporation headquartered in Japan. Occupational stress is becoming a serious problem among Japanese workers. Previous studies found that more than 60% of Japanese workers reported experiencing work-related stress, and the number of workers with mental health problems has been rapidly increasing<sup>6)</sup>. Vietnam has one of the fastest-growing economies among all countries and is on track to become a high-income country by 2045<sup>7)</sup>. However, along with this economic growth, Vietnam is facing issues with occupational health, such as physical and emotional burnout. A systematic review found that the prevalence of occupational stress among Vietnamese factory workers ranged from 20.7% to 89.6%<sup>8)</sup>. Therefore, we believe that Japan and Vietnam are compelling cases for this comparative analysis, and we aimed to examine the inequities in occupational stress among workers in their respective subsidiaries of a multinational corporation, despite the implementation of similar organizational policies.

## Methods

### Subjects

The data were collected at Japanese and Vietnamese subsidiaries of a multinational company headquartered in Japan. The data were anonymously collected via an online pre-administered questionnaire with the support of a professional company, between November 2021 and February 2022.


Concept	Develop healthy work environment and practice through the principle <b>“for all with equity”</b> (ILO Convention M161 of 1995; WHO Global Strategy 1995)			
	Traditional OH: Occupational injury, Exposure to workplace hazard...  General Wellness: Health promotion, <b>Mental health (Job stress)</b> , Physical health	 (Sixtieth World Health Assembly. Workers’ health Global Plan of Action)		
Location/area OH inequity may exist	Geographical location: Between regions, <b>Between countries</b> , Within countries Type of workplace: <table border="1" data-bbox="312 1541 1445 1727"> <tr> <td data-bbox="312 1541 858 1727"> <b>Public:</b> <ul style="list-style-type: none"> <li>By level of government (federal, state, local government agencies)</li> <li>By function (education, healthcare, law, environment ...)</li> <li>By size (small, medium, large)</li> <li>By organizational structure (hierarchical, flat, matrix)</li> <li>By funding source (tax-funded, grants and donation-relied)</li> <li>By legal stats (government agencies, public corporations)</li> </ul> </td> <td data-bbox="858 1541 1445 1727"> <b>Private:</b> <ul style="list-style-type: none"> <li>By ownership (sole proprietorship, partnership firms, or companies)</li> <li>By industry (retail, hospitality, aviation, construction, financial services...)</li> <li>By size (small, medium, <b>large</b>)</li> <li>By legal structure (limited liability companies, <b>corporations</b>, partnerships, or sole proprietorships)</li> <li>By market presence local, national, or <b>multinational companies</b></li> </ul> </td> </tr> </table>		<b>Public:</b> <ul style="list-style-type: none"> <li>By level of government (federal, state, local government agencies)</li> <li>By function (education, healthcare, law, environment ...)</li> <li>By size (small, medium, large)</li> <li>By organizational structure (hierarchical, flat, matrix)</li> <li>By funding source (tax-funded, grants and donation-relied)</li> <li>By legal stats (government agencies, public corporations)</li> </ul>	<b>Private:</b> <ul style="list-style-type: none"> <li>By ownership (sole proprietorship, partnership firms, or companies)</li> <li>By industry (retail, hospitality, aviation, construction, financial services...)</li> <li>By size (small, medium, <b>large</b>)</li> <li>By legal structure (limited liability companies, <b>corporations</b>, partnerships, or sole proprietorships)</li> <li>By market presence local, national, or <b>multinational companies</b></li> </ul>
<b>Public:</b> <ul style="list-style-type: none"> <li>By level of government (federal, state, local government agencies)</li> <li>By function (education, healthcare, law, environment ...)</li> <li>By size (small, medium, large)</li> <li>By organizational structure (hierarchical, flat, matrix)</li> <li>By funding source (tax-funded, grants and donation-relied)</li> <li>By legal stats (government agencies, public corporations)</li> </ul>	<b>Private:</b> <ul style="list-style-type: none"> <li>By ownership (sole proprietorship, partnership firms, or companies)</li> <li>By industry (retail, hospitality, aviation, construction, financial services...)</li> <li>By size (small, medium, <b>large</b>)</li> <li>By legal structure (limited liability companies, <b>corporations</b>, partnerships, or sole proprietorships)</li> <li>By market presence local, national, or <b>multinational companies</b></li> </ul>			
Potential factors influencing on <b>JOB STRESS</b>	<ul style="list-style-type: none"> <li><b>Physical working environment</b> (safety, interior, layout, noise, dust ....)</li> <li><b>Non-physical working environment</b> <ul style="list-style-type: none"> <li><b>Organizational policy</b> <ul style="list-style-type: none"> <li>Workload and work demand (high workload, time pressure, difficult or complex tasks, and lack of breaks, unclear work or conflicting roles)</li> <li>Degree of control /Autonomy (lack of control over one's work or decision-making)</li> <li>Managerial support</li> <li>Colleague support</li> <li>Social factors (social support, work culture, harassment)</li> </ul> </li> <li>Personal factors (financial problems, health issue, work-life balance, family conflict)</li> </ul> </li> </ul>			

Fig. 1. Research framework

The minimum required sample size was calculated with the formula<sup>9)</sup>:

$$N = 2 \left[ (1.96 + 0.842)^2 \delta^2 \right] / (m_1 - m_2)^2$$

where N is the minimum sample size of each group, 1.96 is the multiplier for an alpha of 0.05, 0.842 is the multiplier for a power of 0.80,  $\delta^2=4$  is the population variance (square of the standard deviation),  $m_1$  is the population mean in Japan,  $m_2$  is the population mean in Vietnam, and  $m_1 - m_2$  (0.5) is the minimal difference of interest. Using this equation, the minimum sample size was calculated as 251 per country ( $251 = 2[(1.96 + 0.842)^2 \times 2^2] / 0.5^2$ ).

For the study, a total of 340 Japanese workers and 379 Vietnamese workers were included.

#### Assessment tool

The Brief Job Stress Questionnaire (BJSQ) was used to measure occupational stress in both countries. The BJSQ instrument is free for use, not copyrighted, and does not require permission for use or licensing fees. The BJSQ uses 57 items to assess job stressors (Part A, 17 items: eg, psychological job demands, job control), stress responses (Part B, 29 items: eg, psychological and physical stress reactions), and buffering factors (Parts C and D, 11 items: eg, social support at work) (eTable 1). We followed the stress-check manual developed by the Ministry of Health, Labour and Welfare of Japan<sup>10)</sup> to identify the level of overall stress and level of job stressors. All items were measured with scores from a four-Likert scale (from 1 = low stress to 4 = high stress) and we summed the item scores to calculate the overall stress level. The scores ranged from 29 to 116 for stress reactions (Part B) and from 26 to 104 for job stressors (Parts A and C). The presence of high stress was defined as follows: i) total score of Part B  $\geq 77$ ; or ii) total score of Part B  $\geq 63$  or sum of total scores of Parts A and C  $\geq 76$ . If criterion (i) or criterion (ii) was met, the participant was classified as high stress. To calculate the level of job stressors, the four-point Likert scale (from 1 = low stress to 4 = high stress) was reversely converted to the five-point Likert scale (from 1 = high stress to 5 = low stress), such that that highest score indicated the lowest stress in accordance with the scoring guideline of BJSQ provided by the Ministry of Health, Labour and Welfare of Japan<sup>10)</sup>.

We downloaded the Vietnamese version of BJSQ that had been translated and confirmed by the multiple experts in occupational diseases research group of Ministry of Health, Labour and Welfare of Japan<sup>11)</sup>. After that, the back translation was performed by a native Vietnamese-speaking researcher to ensure the equivalence between the original Japanese version and the translated Japanese version. No conceptual and contextual differences from original Japanese version were found. The reliability and validity of the BJSQ was previously confirmed for

Japanese workers<sup>12,13)</sup>, and this scale has been used in international contexts<sup>14,15)</sup>.

#### Data analysis

Sociodemographic variables, including sex, age, education level, marital status, and annual income, as well as work related variables, including work type, number of working years, and type of work contract, were descriptively analyzed for Japanese and Vietnamese workers. Means and standard deviations (SDs) of scores for job stressors were calculated, and independent t-test was used to compare the means of job stressors between the two countries. A chi-square test was used to examine the differences among overall stress levels, family satisfaction, and job satisfaction. The doubly robust estimation method was applied to infer the independent association between countries and outcome variables, including the presence of stress, job stressors, and dissatisfaction with family and work. Doubly robust estimation combines a multivariate regression model with a propensity score model to estimate the association and casual effect of an exposure on an outcome. This method aims to mitigate potential biases arising from model misspecification and confounding variables, providing more reliable causal effect estimates<sup>16,17)</sup>. The treatment effect function of STATA (StataCorp, College Station, TX, USA) was used for doubly robust estimation. The country entered as a treatment variable, and age, sex, and type of work were entered as treatment independent variable. For binary outcome variables, such as presence of stress and family/work dissatisfaction, the logit function was employed for outcome modeling. For numerical outcome variables, such as job stressors, a linear function was employed. Age, sex, and type of work were adjusted in the outcome model. The covariate balance was assessed with an over-identification test, confirming that the treatment model balanced the covariates ( $p > 0.05$ ). Significance was set at the 5% level ( $p < 0.05$ ). STATA version was used to analyze the data.

## Results

Table 1 shows the sociodemographic characteristics of the participants. The Vietnamese workers were predominately female (76.0%), while the Japanese workers were predominantly male (85.9%). The Vietnamese employees were considerably younger than the Japanese workers; the average age was 36.5 and 45.5 years, respectively, and the proportion of workers aged  $> 50$  years was 4.2% and 40.9%, respectively. Desk workers made up the majority of Japanese participants (68.5%), while labor workers made up the majority of Vietnamese participants (69.1%). The average number of working years was 22.7 and 12 years in the Japanese and Vietnamese companies, respectively.

**Table 1.** Sociodemographic information of study participants

	Japan (N= 340)		Vietnam (N= 379)		<i>p</i> -value
	N	%	N	%	
<b>Sex</b>					
Male	292	85.9%	91	24.0%	<.001
Female	48	14.1%	288	76.0%	
<b>Age, years, mean</b>	45.5		36.5		<.001
<b>Age group, years</b>					
10–19	0	0.0%	3	0.8%	<.001
20–29	19	5.6%	67	17.7%	
30–39	81	23.8%	176	46.4%	
40–49	101	29.7%	117	30.9%	
50–59	124	36.5%	16	4.2%	
≥60	15	4.4%	0	0.0%	
<b>Education level</b>					
Junior high school	2	0.6%	38	10.0%	<.001
High school	188	55.3%	192	50.7%	
College	21	6.2%	73	19.3%	
University	127	37.4%	56	14.8%	
Others	2	0.6%	20	5.3%	
<b>Marital status</b>					
Single	68	20.0%	47	12.4%	<.001
Married	247	72.6%	317	83.6%	
Divorced	24	7.1%	10	2.6%	
Widow	0	0.0%	5	1.3%	
Other	1	0.3%	0	0.0%	
<b>Annual income (in million JPY)<sup>a</sup></b>					
1,50–3,99 ( <i>≤1,50</i> )	35	10.3%	297	78.4%	
4,0–7,9 ( <i>1,50–1,99</i> )	166	48.8%	65	17.2%	
8,00–9,99 ( <i>2,00–2,50</i> )	67	19.7%	5	1.3%	
≥10,00 ( <i>≥2,50</i> )	72	21.2%	12	3.2%	
<b>Work type</b>					
Desk work	233	68.5%	117	30.9%	<.001
Service work	4	1.2%	0	0.0%	
Laborous work	103	30.3%	262	69.1%	
<b>Working years, mean</b>	22.7		12		<.001
<b>Working years</b>					
0–4	18	5.3%	105	27.7%	<.001
5–9	29	8.5%	31	8.2%	
10–19	103	30.3%	161	42.5%	
20–29	63	18.5%	80	21.1%	
>30	127	37.4%	0	0.0%	
<b>Type of work contract</b>					
Regular	318	93.5%	374	98.7%	<.001
Non-regular (temporary labor, contract employees)	15	4.4%	2	0.5%	
Part time workers	2	0.6%	0	0.0%	
Freelancer	0	0.0%	0	0.0%	
Contract (outsourcing)	1	0.3%	1	0.3%	
Commissioned work	4	1.2%	0	0.0%	
Others	0	0.0%	2	0.5%	

<sup>a</sup> Classification in *Italic* corresponds to Vietnamese workers  
JPY- Japanese Yen

Table 2 shows the results for the stress levels, job stressors, mental and physical reactions caused by stress, and family and job satisfaction of workers in the two

companies, and unadjusted differences of all job stressors between the two countries. In Japan, the quantity work-load (Mean 2.86; SD, 1.04), physical work environment

**Table 2.** Job stress scores and their crude differences between studied countries

	Japan		Vietnam		Mean difference	p-value
	Mean or %	SD	Mean or %	SD		
<b>% of workers with stress</b>	28.24%	NA	4.22%	NA		<.001
<b>Causes of stress</b>						
Quantity workload	2.86	(1.04)	2.95	(1.08)	-0.09	.296
Quality workload	2.98	(0.87)	2.22	(0.93)	0.76	<.001
Physical burden	3.06	(0.83)	2.36	(1.02)	0.70	<.001
Degree of control	2.91	(0.82)	3.98	(1.05)	-1.08	<.001
Skill utilization	2.99	(0.80)	2.88	(1.13)	0.12	.112
Interpersonal stress	3.47	(0.95)	3.99	(0.97)	-0.52	<.001
Physical work environment	2.76	(0.70)	2.87	(0.97)	-0.10	.107
Job fitness	2.99	(0.97)	4.20	(1.15)	-1.20	<.001
Sense of reward	2.98	(1.01)	4.03	(1.17)	-1.05	<.001
<b>Mental and physical reactions caused by stress</b>						
Vigor	2.99	(1.10)	3.86	(0.97)	-0.87	<.001
Irritation	3.25	(1.09)	3.97	(0.92)	-0.72	<.001
Fatigue	3.12	(1.05)	3.96	(0.99)	-0.83	<.001
Anxiety	3.19	(1.06)	4.01	(0.90)	-0.82	<.001
Depression	3.33	(1.18)	4.20	(0.93)	-0.87	<.001
Physical complaints	2.96	(1.06)	3.49	(0.89)	-0.53	<.001
<b>Other factors that affect stress response</b>						
Supervisor's support	2.61	(1.14)	2.08	(1.34)	0.53	.002
Colleagues' support	3.07	(1.12)	4.43	(0.78)	-1.35	<.001
Families' support	3.36	(1.33)	4.73	(0.61)	-1.37	<.001
<b>Satisfaction</b>						
Job satisfaction						
Satisfied	70.29%	NA	95.51%	NA		<.001
Dissatisfied	29.71%	NA	4.49%	NA		
Family life satisfaction						
Satisfied	79.12%	NA	98.94%	NA		<.001
Dissatisfied	20.88%	NA	1.06%	NA		

NA, not applicable; SD, standard deviation.

stress (Mean 2.76; SD, 0.70), and supervisor support (Mean 2.61; SD, 1.14) shows to be highest stress factor, while in Vietnam the workload quality (Mean 2.22; SD, 0.93), physical burden (Mean 2.36; SD, 1.02), and supervisor support (Mean 2.08; SD, 1.34) shows to be highest stress factor.

The quantity workload, skill utilization, and working environment did not significantly differ between the two countries. The highest score differences between Japanese and Vietnamese employees were observed in family support (Diff=-1.37,  $p<.001$ ), colleague support (Diff=-1.35,  $p<.001$ ), and job fitness (Diff=-1.20,  $p<.001$ ). Japanese employees (28.24%) were much more likely than Vietnamese workers (4.22%) to report feeling stressed at work. Job dissatisfaction was higher among Japanese workers (29.71%) than Vietnamese workers (4.49%). Japanese employees (20.88%) expressed more dissatisfaction with family life than Vietnamese workers

(1.06%).

In doubly robust estimation, the largest score differences between Japanese and Vietnamese workers were observed for family support (Diff=-1.25; 95% confidence interval [CI], -1.48 to -1.02;  $p<.001$ ) and colleague support (Diff=-1.20; 95% CI, -1.46 to -0.94;  $p<.001$ ). Compared to Vietnamese workers, Japanese workers had greater odds of having job stress (odds ratio [OR] 1.37; 95% CI, 1.24-1.51), job dissatisfaction (OR 1.25; 95% CI, 1.13-1.39), and family dissatisfaction (OR 1.31; 95% CI, 1.17-1.47) (Table 3).

Table 4 shows the significant factors influencing workers' job stress in both countries' workers. Among Japanese workers, colleague support, job satisfaction, and family satisfaction had preventive effect for job stress. Among Vietnamese workers, increase of working years, family support, and job satisfaction had preventive effect for job stress.

**Table 3.** Adjusted differences in job stressors between Japanese and Vietnamese workers

	Coefficient/OR <sup>a</sup>	95% CI (LI, UI)	<i>p</i> -value
<b>Job stress</b>			
<b>Existence of job stress<sup>†</sup></b>	1.37 <sup>†</sup>	(1.24, 1.51)	<.001
Causes of stress			
Quantity workload	0.14	(-0.15, 0.43)	.332
Qualitative workload	0.84	(0.68, 1.01)	<.001
Physical burden	0.29	(0.10, 0.48)	.003
Degree of control	-0.93	(-1.18, -0.68)	<.001
Skill utilization	-0.19	(-0.41, -0.03)	.090
Interpersonal stress	-0.74	(-0.98, -0.49)	<.001
Workplace stress	-0.21	(-0.38, -0.04)	.018
Job fitness	-1.14	(-1.38, -0.90)	<.001
Sense of reward	-1.11	(-1.37, -0.85)	<.001
Mental and physical reactions caused by stress			
Vigor	-0.99	(-1.23, -0.74)	<.001
Irritation	-0.73	(-1.04, -0.41)	<.001
Fatigue	-1.05	(-1.27, -0.83)	<.001
Anxiety	-0.82	(-1.04, -0.59)	<.001
Depression	-0.97	(-1.22, -0.72)	<.001
Physical complaints	-0.78	(-1.03, -0.53)	<.001
Other factors that affect stress response			
Supervisor's support	0.71	(0.40, 1.02)	<.001
Colleagues' support	-1.20	(-1.46, -0.94)	<.001
Families' support	-1.25	(-1.48, -1.02)	<.001
Satisfaction			
Job dissatisfaction <sup>†</sup>	1.25 <sup>†</sup>	(1.13, 1.39)	<.001
Family dissatisfaction <sup>†</sup>	1.31 <sup>†</sup>	(1.17, 1.47)	<.001

CI, confidence interval; OR, odds ratio; LI, lower interval; UI, upper interval.

<sup>a</sup> OR is derived from doubly robust estimation regression. A logit function was applied in the outcome model.

Coefficient is calculated from doubly robust estimation with a linear function and all coefficients indicate the adjusted differences of items between two countries unless indicated as<sup>†</sup>

Vietnam is taken as a reference in treatment variable in doubly robust estimation.

**Table 4.** Factors affecting to job stress

Factors	AOR	95% CI (LI, UI)	<i>p</i> -value
<b>Japan</b>			
Colleague support	0.57	(0.83, 2.27)	<.001
Job satisfaction (Ref: Job dissatisfaction)	0.38	(1.37, 4.90)	.001
Family satisfaction (Ref: Job dissatisfaction)	0.46	(2.70, 6.70)	.015
<b>Vietnam</b>			
Working year	0.90	(0.24, 1.75)	.012
Supervisor support	1.77	(0.08, 0.34)	.012
Family support	0.49	(0.42, 2.37)	.014
Job satisfaction (Ref: Job dissatisfaction)	0.19	(0.28, 7.33)	.017

AOR, adjusted odds ratio; CI, confidence interval; LI, lower interval; Ref, reference; UI, upper interval.

OR (odds ratio) was calculated from logistic regression and adjusted (AOR) with age, sex, physical health and other stress factors.

Dependent variable is dummy variable: Stress and No stress

Probability modeled is "Being stressed" with reference to "No stress".



## Discussion

The current research delved into the disparities in occupational stress experienced by employees in the Japanese and Vietnamese subsidiaries of a multinational corporation, even in light of the implementation of the same organizational policies. The study revealed a notable divergence in the levels of job-related stress and the underlying factors shaping this stress among the workforce in these two subsidiaries. In general, Japanese workers were more prone than Vietnamese workers to reporting higher levels of job stress, family dissatisfaction, and job dissatisfaction.

Stress cannot be defined by a single item, and even the relevant items can vary depending on contextual factors, such as the country and work type. Therefore, after adjusting these factors in the doubly robust estimation model, the quantity workload and skill utilization were found to be similar between the two countries. Overall, compared to Vietnamese workers, Japanese employees had less favorable perceptions of all studied factors except for supervisor support, physical burden, and qualitative workload.

Here, we will discuss the factors with similar perceptions, factors with the least favorable perception in both countries, and those with the highest gap between countries. We will then address possible policy implications.

The workers of both countries had similar perceptions of quantity workload. Globalization has led to a developing concern for work overload stress in developing countries<sup>18-20</sup>. While people in developed nations are used to dealing with work overload stress, those in developing nations are deficient in this<sup>18</sup>. Previous studies found that Vietnamese people are more prone to workload stress than those of developed countries, including Germany, Oman, and Japan<sup>18-20</sup>. However, the current study found that the Japanese and Vietnamese participants perceived their workload quantities similarly. This could reflect that the Vietnamese and Japanese subsidiaries involved in the current study had better task management and legal compliance with working hours compared to local Vietnamese companies and other small- and medium-sized Japanese enterprises, respectively.

Among the studied factors, supervisor support showed the least favorable perception in both countries. According to Putter, supervisor support can be emotional or instrumental<sup>21</sup>. The BJSQ used in the current study primarily assesses how an employee perceives their supervisor's level of emotional support, including whether the employee can speak freely, the supervisor's reliability, and how well the supervisor listens when the employee asks for advice. The poor perception of supervisor support in both countries could be explained in several ways. For example, Japanese stoicism, which would likely prevent people from seeking help<sup>22</sup>, could contribute to the

poor perception of supervisor support among Japanese employees. Furthermore, both countries are considered to be very hierarchical<sup>20,23</sup>, and this structure could contribute to the poor perception of supervisor support. The employer-employee relationship is acknowledged more formally in hierarchical countries compared to non (or less)-hierarchical countries<sup>24</sup>. Employees also tend to feel more distant from their employers when there is more a power distance<sup>25</sup>. Hierarchy can make people afraid to speak out, lessen management's empathy toward employees, and distort communication patterns<sup>26</sup>.

Although workers in both countries appeared to have poor perceptions of supervisor support, our study revealed that Vietnamese workers had a considerably worse perception than Japanese workers. A previous study from Vietnam found that many employees felt the most stress around their relationships with senior counterparts, reflecting the Vietnamese cultural emphasis on hierarchy<sup>27</sup>. Although both Japanese and Vietnamese people respect hierarchical positions in society, Vietnam has a higher level of hierarchy than Japan<sup>20</sup>. This may contribute to the disparity in perceived supervisor support observed herein. Increased awareness of supervisor support for subordinates is essential because it is related to the intention to leave job<sup>28</sup>. Naturally, it is difficult to alter the cultural context to enable workers of both countries to have a more favorable perception of supervisor support. However, the late Robert Blake, who was a pioneer in the field of conflict management, pointed out that having both production- and employee-centered leadership is highly rated by employees<sup>29</sup>. Thus, managers may seek to improve their supervision and leadership through combining these two leadership styles.

Support from colleagues and family were the factors perceived most positively in both countries, but these factors also had the biggest perception gap between employees in the two countries, with Vietnamese workers having a better perception than Japanese workers.

According to Hofstede<sup>30</sup>, a nation tends to define its society either as a group (ie, as a collectivized society) or an individual (ie, as an individualist society). In general, Vietnam and Japan both demonstrate many traits of a collectivistic society, such as an "in-groups" thinking style, a preference for group activities, and decision making that benefits the group rather than personal goals<sup>31,32</sup>. However, Japan is not as collectivistic as Vietnam<sup>20</sup>. Japanese people tend to be more private and reserved than most other Asians. Vietnamese society, meanwhile, places strong stress on cooperation and unity within groups<sup>33</sup>. These cultural contexts might have helped Vietnamese employees perceive their colleague support more favorably.

The perception of family support was generally positive in both countries, but Vietnamese workers had a significantly greater perception of family support and

a higher family satisfaction than Japanese workers. There could be several explanations for why Japanese people perceive less support and satisfaction related to their families. In Japan, the man's family role is almost exclusively that of the breadwinner<sup>34)</sup>; as a result, rather than placing strong emphasis on romance and happiness, Japanese men frequently view marriage as a means to achieve economic and social prestige<sup>35,36)</sup>. Additionally, "tanshin funin", a practice whereby workers are required to reside away from their families because they have been transferred to a different office, is quite common among Japanese people, especially in large companies. Numerous reports indicate that living a "tanshin funin" lifestyle causes loneliness and feelings of unhappiness<sup>37)</sup> and has a detrimental effect on families<sup>38)</sup>. In contrast, familial ties remain a very strong element of Vietnamese society. Families in Vietnam can live apart while still participating in a variety of supportive activities, such as sharing work and resources<sup>39)</sup>.

Degree of control, which was defined in the BJSQ as being able to work at one's own pace, choose the work order, and provide input on workplace policy, was among the factors that differed widely between workers of the two countries: Japanese workers perceived themselves as having a much lower degree of control than Vietnamese workers. Japanese society is characterized by the desire to avoid uncertainty, whereas Vietnamese society does not exhibit a high degree of avoiding uncertainty. While Japanese people have a culture of obedience and relative passivity, which has evolved as a result of people being accustomed to having their lives governed by rules<sup>20)</sup>, Vietnamese people tend to have a more relaxed attitude, and deviance from the norm is more readily tolerated. These cultural traits might have contributed to the disparity in the level of job control between the two nations.

Japanese participants expressed considerably more job dissatisfaction than Vietnamese people. The potential causes of job satisfaction were not thoroughly examined in the present research. However, a previous study found that workers in foreign-invested companies in Vietnam reported greater job satisfaction than employees of domestic companies<sup>40)</sup>. This could potentially contribute to the higher level of job satisfaction among Vietnamese employees of the Japan-headquartered corporation studied herein.

Although we have herein focused on the factors with the poorest perception and the highest gaps between the two countries, the managers in each country should be mindful of the other factors that appeared to be significant job stressors in their subsidiaries irrespective of the results for these factors among the other respondents.

The current study has strengths and limitations. Regarding strengths, this is the first cross-country comparison between two subsidiaries of a multinational company. Regarding limitations, the BJSQ has not been

validated in Vietnamese workers. However, it was previously found to be valid for use in international contexts in several other languages, including in China<sup>14)</sup> and Indonesia<sup>15)</sup>. Also, we note that the current research was conducted during the novel coronavirus disease 2019 pandemic, which is likely to have impacted the results.

The findings of the current research provide a compelling basis for the individual subsidiaries to initiate tailored management strategies on occupational stress within their respective workplaces. By tailoring this strategy, the potential to improve employees' overall mental health becomes more attainable.

Furthermore, on a broader scale, this research offers valuable insights to the multinational corporation as a whole. It serves as a wake-up call, highlighting the existence of significant disparities in job-related stress levels among their employees across different global locations. Armed with this knowledge, the corporation gains the opportunity to take a more proactive and inclusive stance toward employee well-being on a global level. In addition, by fostering a culture of awareness and support, the corporation can work towards achieving a more equitable distribution of job stress and, subsequently, an enhanced quality of work life for all employees, regardless of their geographical location. Future research could involve more cross-cultural comparisons of employees from other subsidiaries of the company to determine their occupational stress and whether it may be due to unequal management and to learn more about how cultural differences affect occupational stress.

## Conclusion

The investigation of the workplace stress, the causes of workplace stress, and how these factors differed in employees of a multinational corporation's subsidiaries in Japan and Vietnam found that Japanese workers were more prone than Vietnamese workers to reporting higher levels of job stress, family dissatisfaction, and job dissatisfaction. Supervisor support had the lowest ranking in both countries. Although we have herein focused on the factors with the least favorable perception and the highest gaps between the two countries, the managers in each country should be mindful of the other factors that appeared to be significant job stressors in their subsidiaries for further prevention of job stress. This research not only empowers individual subsidiaries to craft targeted solutions for their employees' mental health challenges, but also empowers the multinational corporation to adopt a comprehensive approach in addressing global job stress disparities.

### Funding

This research was funded by the Japan Society for the Promotion of Science KAKENHI 20K10520.



### Ethical approval

The study was approved by the Epidemiological Research Ethics Review Committee of Hiroshima University, Japan (E-2602) on 17 September 2021.

### Informed consent

As stated in the questionnaire's background information, the data was gathered anonymously, and respondents were taken to have consented to taking part in the survey.

### Conflicts of interest

Authors declare that they have no conflict of interest.

### Authors' contribution

OC collected, analyzed the data and wrote manuscript; TK and YF provided critical feedback on the analysis; OB contributed to writing the manuscript; TM and FM collected the data and reviewed the manuscript; KM, YY and NL reviewed the manuscript.

### ORCID

Odgerel Chimed-Ochir

 <https://orcid.org/0000-0003-0159-3701>

Koji Mori

 <https://orcid.org/0000-0002-8821-4438>

Yoshihisa Fujino

 <https://orcid.org/0000-0002-9126-206X>

## References

1. International Labor Organization. NORMLEX Information system on international labour standards: C161 - Occupational Health Services Convention, 1985; (No. 161). [https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0:NO:P12100\\_ILO\\_CODE:C161](https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0:NO:P12100_ILO_CODE:C161). Accessed February 20, 2023.
2. World Health Organization. Global Strategy on Occupational Health for All: the Way to Health at Work. [https://apps.who.int/iris/bitstream/handle/10665/36845/WHO\\_OCH\\_95.1.pdf?ua=1](https://apps.who.int/iris/bitstream/handle/10665/36845/WHO_OCH_95.1.pdf?ua=1). Published 1995. Accessed February 20, 2023.
3. World Health Organization. Workers' health: global plan of action. World Health Organization. [https://apps.who.int/gb/ebwha/pdf\\_files/wha60/a60\\_r26-en.pdf](https://apps.who.int/gb/ebwha/pdf_files/wha60/a60_r26-en.pdf). Published May 23, 2007. Accessed July 13, 2023.
4. Rantanen J, Lehtinen S, Iavicoli S. Occupational health services in selected International Commission on Occupational Health (ICOH) member countries. *Scand J Work Environ Health*. 2013; 39(2): 212-216. [Medline] [CrossRef]
5. Wadsworth EJK, Chaplin KS, Smith AP. The work environment, stress and well-being. *Occup Med (Lond)*. 2010; 60(8): 635-639. [Medline] [CrossRef]
6. Hara Y. Mental disorders among today's labor force and preventive measures. *Jpn Lab Rev*. 2014;11(5). [https://www.jil.go.jp/english/JLR/documents/2014/JLR41\\_hara.pdf](https://www.jil.go.jp/english/JLR/documents/2014/JLR41_hara.pdf).
7. The World Bank. The World Bank In Vietnam. <https://www.worldbank.org/en/country/vietnam/overview>. Published November 7, 2022. Accessed February 20, 2023.
8. Nguyen AN, Nguyen LN, Hoang PV, Le XTT. A Review of Occupational Stress among Certain Jobs in Vietnam. <https://core.ac.uk/download/pdf/268085701.pdf> [CrossRef]
9. Florey CD. Sample size for beginners. *BMJ*. 1993; 306(6886): 1181-1184. [Medline] [CrossRef]
10. Ministry of Health. Labour and Welfare, Japan. Stress Check System Implementation Manual. <https://www.mhlw.go.jp/bunya/roudoukijun/anzenisei12/pdf/150803-1.pdf>
11. Ministry of Health, Labour and Welfare, Japan. Measurement against stress overwork in the workplace. Ministry of Health, Labour and Welfare, Japan. <https://www.mhlw.go.jp/content/000821257.pdf>. Accessed August 1, 2023.
12. Endo M. Recurrent sickness absence due to depression: A two-year cohort among Japanese employees. *Int J Epidemiol*. 2015; 44(suppl 1): i48.
13. Yoshino K, Suzuki S, Ishizuka Y, Takayanagi A, Sugihara N, Kamijyo H. Relationship between job stress and subjective oral health symptoms in male financial workers in Japan. *Ind Health*. 2017; 55(2): 119-126. [Medline] [CrossRef]
14. Hidaka Y, Watanabe K, Imamura K, Tatha O, Kawakami N. Reliability and validity of the Chinese version of the New Brief Job Stress Questionnaire (New BJSQ) among workers in China. *Ind Health*. 2022; 60(5): 407-419. [Medline] [CrossRef]
15. Purnawati S, Kawakami N, Shimazu A, Sutjana DP, Adiputra N. Effects of an ergonomics-based job stress management program on job strain, psychological distress, and blood cortisol among employees of a national private bank in Denpasar Bali. *Ind Health*. 2016. [Medline] [CrossRef]
16. Funk MJ, Westreich D, Wiesen C, Stürmer T, Brookhart MA, Davidian M. Doubly robust estimation of causal effects. *Am J Epidemiol*. 2011; 173(7): 761-767. [Medline] [CrossRef]
17. McCaffrey DF, Griffin BA, Almirall D, Slaughter ME, Ramchand R, Burgette LF. A tutorial on propensity score estimation for multiple treatments using generalized boosted models. *Stat Med*. 2013; 32(19): 3388-3414. [Medline] [CrossRef]
18. Nguyen LD, Mujtaba BG, Boehmer T. Stress, task, and relationship orientations across German and Vietnamese cultures. *Int Bus Manag*. 2012; 5(1): 10-20. [CrossRef]
19. Nguyen LD, Tanner T, Pham LNT. Cross-culture management: an empirical examination on task and relationship orientations of Japanese and Omani working adults. *Int J Hum Resour Dev Manage*. 2019; 19(1): 92-103. [CrossRef]
20. Nguyen LD, Mujtaba BG, Pham LNT. Cross-culture management: an examination on task, relationship and work overload stress orientations of Japanese and Vietnamese. *Int J Strategic Chang Manag*. 2013; 5(1): 72-92. [CrossRef]
21. Making Training Stick: A Close Examination of How Trainee Readiness, Supervisor Support, and Practice Foster Transfer in a Mobile Technology-Based Training Program. 2013. <https://search.proquest.com/openview/2fb9cf9f3a6cf56529ad2130c0e5cce2/1?pq-origsite=gscholar&cbl=18750>.
22. Bracke D. Japan's Extreme Work Culture. Arcadia. <https://www.byarcadia.org/post/japan-s-extreme-work-culture-might-be-coming-to-an-end>. Published February 15, 2022. Accessed February 20, 2023.

23. Hofstede Insights. Country comparison tool. <https://www.hofstede-insights.com/>. Accessed February 21, 2023.
24. Sagie A, Aycan Z. A cross-cultural analysis of participative decision-making in organizations. *Hum Relat.* 2003; 56(4): 453-473. [CrossRef]
25. Tran TTQ, Admiraal W, Saab N. Work-related values in international workplaces in Vietnam: cross-cultural differences between employers and employees. *Open Journal of Business and Management.* 2020; 8(4): 1567-1586. [CrossRef]
26. Lee MY. How to become less-hierarchical within a hierarchical structure. <https://www.michaelylee.co/blog/2019/12/28/how-to-become-less-hierarchical-within-a-hierarchical-structure>. Published online December 30, 2019.
27. Van Thanh L. Relationship at work as a cause of occupational stress: the case of academic women in Vietnam. *Int J Ment Health Syst.* 2016; 10(1): 42. [Medline] [CrossRef]
28. Yamaguchi Y, Inoue T, Harada H, Oike M. Job control, work-family balance and nurses' intention to leave their profession and organization: A comparative cross-sectional survey. *Int J Nurs Stud.* 2016; 64: 52-62. [Medline] [CrossRef]
29. Robert Blake JM. Managerial facades. *Advanced Management Journal.* 1966; 3(31): 30-37.
30. Hofstede G. Culture and organizations. *Int Stud Manage Organ.* 1980; 10(4): 15-41. [CrossRef]
31. Fan P, Zigang Z. Cross-cultural challenges when doing business in China. *Singap Manage Rev.* 2004; 26: 81-90.
32. Parks CD, Vu AD. Social dilemma behavior of individuals from highly individualist and collectivist cultures. *J Conflict Resolut.* 1994; 38(4): 708-718. [CrossRef]
33. Ralston DA, Terpstra-Tong J, Maignan I, Napier NK, Nguyen VT. Vietnam: A cross-cultural comparison of upward influence ethics. *J Int Manage.* 2006; 12(1): 85-105. [CrossRef]
34. Ishii-Kuntz M. Balancing fatherhood and work emergence of diverse masculinities in contemporary Japan. In: Roberson JE, Suzuki N, eds. *Men and masculinities in contemporary Japan: dislocating the salaryman doxa*. London: Routledge; 2002: 198-240.
35. Kaufman G, Taniguchi H. Gender and marital happiness in Japan. *Int J Sociol Fam.* 2009; 35(1): 69-87.
36. Inaba A. The Pattern of Marital Relationships and their Changes (Fufu kankei no patan to henka). In: Watanabe H, Inaba A, Shimazaki N, eds. *Structures and changes of contemporary Japanese families: Quantitative analyses of National Family Research (Gendai kazoku no kozo to henyō: Zenkoku kazoku chosa ni yoru keiryō bunseki)*. Tokyo: University of Tokyo Press; 2004: 261-276 (in Japanese).
37. Tanaka Y. [Transferred employees' psychological stress due to "tanshin-funin" family separation: a study of stress responses]. *Shinrigaku Kenkyū.* 1995; 65(6): 428-436. [Medline] [Cross-Ref]
38. Bassani CD. The Japanese *Tanshin Funin*. *Community Work Fam.* 2007; 10(1): 111-131. [CrossRef]
39. Hirschman C, Loi VM. Family and household structure in vietnam: some glimpses from a recent survey. *Pac Aff.* 1996; 69(2): 229-249. [CrossRef]
40. Anh N, Thi NNM, Thi TAN, Thi NPM. Job satisfaction in developing countries: an evidence from a matched employer-employee survey in Vietnam. *J Econ Stud.* 2019; 46(1): 192-210. [CrossRef]

**How to cite this article:** Chimed-Ochir O, Kubo T, Batsaikhan O, et al. Job stress in a multinational corporation: cross-country comparison between Japan and Vietnam. *Environ Occup Health Practice.* 2023; 5: eohp.2023-0009-OA.  
<https://doi.org/10.1539/eohp.2023-0009-OA>

## Appendix

**eTable 1.** Brief Job Stress Questionnaire

<b>Part A Quantity workload</b>	
1	I have an extremely large amount of work to do
2	I can't complete work in the required time
3	I have to work as hard as I can
<b>Quality workload</b>	
4	I have to pay very careful attention
5	My job is difficult in that it requires a high level of knowledge and technical skill
6	I need to be constantly thinking about work throughout the working day
<b>Physical burden</b>	
7	My job requires a lot of physical work
<b>Degree of control</b>	
8	I can work at my own pace
9	I can choose how and in what order to do my work
10	I can reflect my opinions on workplace policy
<b>Skill utilization</b>	
11	My knowledge and skills are rarely used at work
<b>Interpersonal stress</b>	
12	There are differences of opinion within my department
13	My department does not get along well with other departments
14	The atmosphere in my workplace is friendly
<b>Physical work environment</b>	
15	My working environment is poor (e.g. noise, lighting, temperature, ventilation)
<b>Job fitness</b>	
16	This job suits me well
<b>Sense of reward</b>	
17	My job is worth doing
<b>Part B Vigor</b>	
1	I have been very active
2	19. I have been full of energy
3	20. I have been lively
<b>Irritation</b>	
4	I have felt angry
5	I have been inwardly annoyed or aggravated
6	I have felt irritable
<b>Fatigue</b>	
7	I have felt extremely tired
8	I have felt exhausted
9	I have felt weary or listless
<b>Anxiety</b>	
10	I have felt tense
11	I have felt worried or insecure
12	I have felt restless

**Depression**

- 13 I have been depressed
- 14 I have thought that doing anything was a hassle
- 15 I have been unable to concentrate
- 16 I have felt gloomy
- 17 I have been unable to handle work
- 18 I have felt sad

**Physical complaints**

- 19 I have felt dizzy
- 20 I have experienced joint pains
- 21 I have experienced headaches
- 22 I have had a stiff neck and/or shoulders
- 23 I have had lower back pain
- 24 I have had eyestrain
- 25 I have experienced heart palpitations or shortness of breath
- 26 I have experienced stomach and/or intestine problems
- 27 I have lost my appetite
- 28 I have experienced diarrhea and/or constipation
- 29 I haven't been able to sleep well

**Part C Support from supervisor**

- 1 How freely can you talk with the Superiors?
- 4 How reliable are the Superiors when you are troubled?
- 7 How well will the Superiors listen to you when you ask for advice on personal matters?

**Support from co-workers**

- 2 How freely can you talk with the Co-workers?
- 5 How reliable are the Co-workers when you are troubled?
- 8 How well will the Co-workers listen to you when you ask for advice on personal matters?

**Support from friends, family**

- 3 How freely can you talk with the Spouse, family, friends, etc?
- 6 How reliable are the Spouse, family, friends, etc when you are troubled?
- 9 How well will the Spouse, family, friends, etc listen to you when you ask for advice on personal matters?

**Part D Job satisfaction**

- 1 I am satisfied with my job

**Family satisfaction**

- 2 I am satisfied with my family life
-