

# Factors Affecting Nurses' Mental Health Status: A Comparative Cross-sectional Survey

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## Abstract

**Background:** Nursing-a crucial human service occupation-involves significant mental health risk. Nurses' mental health status is impacted by both job- and family-related stress. Nurses employed at home healthcare and nursing homes tend to be older than hospital nurses; therefore, family-related stress may vary depending on their workplace.

**Purpose:** This study aimed to clarify the difference in the magnitude of the impact of job- and family-related stress on nurses' mental health status, and identify the differences among factors affecting mental health of nurses working at hospital, home healthcare, and nursing homes.

**Methods:** This cross-sectional study included nurses from hospitals, home healthcare facilities, and nursing homes in Japan. Participants responded to a questionnaire that measured their job- and family-related stress, as well as mental health status. Hierarchical regression analysis was performed wherein, the independent variables were job-related stress factors (job demand, job control, and job support) and family-related stress factors(work-family culture, family stress, and work-family conflict). Additionally, mental health level (GHQ-12 score) was the dependent variable.

**Results:** Job- and family-related stress factors showed similar impact on all nurses. The factors with the greatest impact was job demand, followed by job control. Focusing on nurses' workplace revealed that work-family culture and family stress did not affect hospital nurses' mental health. Only job demand indicated a weak prediction among job-related stress variables, whereas family-related stress (family stress, work-family culture, and work-family conflict) significantly impacted the mental health status of home healthcare nurses.

**Conclusion:** Interventions to reduce family-related stress may be effective in improving nurses' mental health. Such interventions may be especially effective for home healthcare nurses.

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## Introduction

Nurses perform the crucial role of maintaining or promoting peoples' health; therefore, they must maintain good personal health themselves. Several studies have reported that nurses' poor mental health status is associated with occasional medical errors, raising concerns about patient safety [1,2]. Nursing-a human service occupation involves a high mental health risk [3]; in fact, low levels of nurses' mental health status have been reported in many studies [4, 5].

As a predictor of nurses' mental health, high job-stress significantly deteriorates their mental health. Job-stress includes role workload, role insufficiency, role ambiguity, role limit, responsibility, physical environment [6], high psychological job demands, low job control [7], and low job support [8,9]. However, nurses' mental health status is not affected by job-related stress alone. A South-African study [10] revealed that personal stress, including family-related stress, better predicts nurses' mental health status than their job stress. Additionally, in Japan, Okada et al. [11] reported that nurses with a child indicated lower levels of mental health than nurses without children this might be attributable to family demand. The most representative and investigated stress factor related to job and family is the concept of work-family conflict, which arises from competing responsibilities toward work and family. It comprises work interference with family and family interference with work [12,13], and negatively impacts nurses' mental health [14,15].

The burden of family demands varies among nurses of different ages: young nurses aged 30-40 years are often responsible for caring for their children, whereas nurses aged over 50 do not require long periods for childcare. At Present, nurses work in a range of healthcare settings, such as public health, home healthcare, or as nursing residents [16]. Most graduated nurses' primary workplace are hospitals; however, as home healthcare nurses are required to have significant nursing experience [17], their mean age is more than that of hospital nurses. Moreover, several nurses who previously worked in hospitals find employment at nursing homes [18]; therefore, nursing home nurses tend to be older than their hospital counterparts. Nurses' age variations among different healthcare settings may explain the differences in their family-related stress levels.

The purpose of this study is to clarify the impact and magnitude of both job- and family-related stress on nurses' mental health status, and identify whether nurses' factors affecting mental health vary according to workplace (Figure 1).

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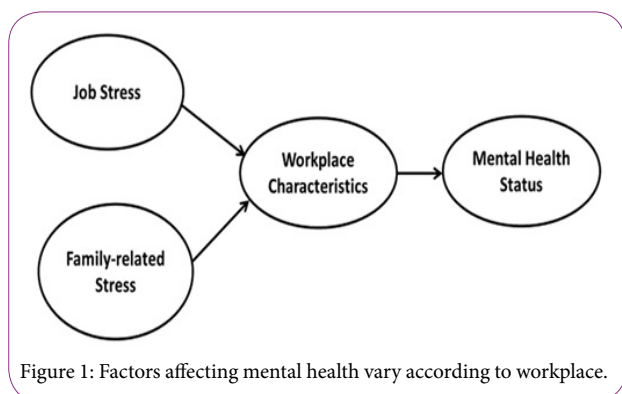


Figure 1: Factors affecting mental health vary according to workplace.

## Materials & Methods

### Design and setting

This study applied a cross-sectional design. The data were collected through self-report questionnaire completed by nurses in hospitals, home healthcare facilities, and nursing homes in Kyusyu district, Japan. The data were collected from October 1, 2013–October 26, 2014.

In Japan, approximately 70% of nurses work in hospitals—significantly exceeding the proportion of their counterparts in home healthcare facilities and nursing homes. As an equal sample was required for comparing each workplace: hospital, home healthcare facility, and nursing home, we randomly selected 32 hospitals in the target district and requested the nurses to participate in the survey. Thereafter, we requested all 672 home healthcare facilities and all 1,507 nursing homes in the target area to participate in the survey. Consent was received from nine hospitals (agreement rate, 32%), 86 home healthcare facilities (agreement rate, 0.13%), and 107 nursing homes (agreement rate, 0.07%).

The survey procedure was as follows: first, each target organization's representative consent for the survey was confirmed; second, questionnaire packs including the explanation of the study purpose and questionnaire were delivered to target nurses. Finally, completed questionnaires were returned by mail individually by participants or by the participating institution.

### Ethical Consideration

Participating organizations signed an agreement declaring their consent for the study; individual participants' consent was confirmed when they submitted completed questionnaires. To ensure participants' privacy, questionnaires were anonymous and placed within envelopes. This study was approved by the ethics committee of the University of Kyushu (No. 25-160, Date: 13/9/2013).

### Sample

A total of 2177 questionnaires were delivered, and 1788 were returned (return rate: 82%). A total of 1,461 completed questionnaires were analyzed: 596 from hospital nurses, 408 from home healthcare nurses, and 457 from nursing home nurses. Inclusion criteria: full- or part-time nurses working during the survey period; exclusion criteria: nurses who quit their workplace during the survey period.

## Measures

### Job stress

We measured participants' level of job stress using the Japanese version of the Job Content Questionnaire, which is based on the theory of the job-demand-control-support model [19]. This model is widely applied to research on the mental health of nurses and/or employees [20,21]. The original questionnaire is in English; the Japanese version was created by Dr Kawakami [22].

The questionnaire comprised 22 items covering three subscales: job demand, job control, and job support. Participants responded used a 4-point scale (1 = strongly disagree, 4 = strongly agree). Job demand refers to the job's psychological demands; sample items include, "My job requires me to work very fast," and "I am free from conflicting demands made by others" (reverse-coded item). Job control implies skill discretion and decision autonomy, and measured items include, "My job requires that I learn new things" (skill discretion) and "My job allows me to make a lot of decisions on my own" (decision autonomy). Job support, that is, support from coworkers and supervisors, is measured using items such as, "People I work with take a personal interest in me" (coworker support) and "My supervisor is concerned about the welfare of those working under him" (supervisor support). Cronbach's  $\alpha$  were 0.67, 0.68, and 0.89 for job demand, job control, and job support, respectively in this study.

### Family-related stress

Work–family culture, family stress, and work–family conflict was measured as family-related stress variables in this study.

**Work–family culture:** As work–family culture, the level of target nurses' perception about their organizations' understanding regarding their family role was measured, using one item: "Your organization understands your family role." Responses used a 4-point scale (1 = there is no understanding, 4 = there is understanding). Higher scores signified participants' stronger belief that their organizations understood their family role.

**Family stress:** As family stress, the frequency of feeling stress related to family members was assessed. One item was used: "Do you feel stress when you are with your family?" Responses used a 3-point scale (0 = never, 2 = always); a higher score indicated that the target nurses felt stronger family-related stress.

**Work–family conflict:** The target nurses' level of work–family conflict was measured using the Japanese version of the multi-dimensional Work-Family Conflict Scale [23]; the original version of this scale is in English [24]. This scale was widely used to measure Japanese nurses' level of work–family conflict [25, 26]. It comprises 18 items encompassing two dimensions: work interference with family (9 items); and family interference with work (9 items). Sample items include: "My work keeps me from my family activities more than I would like" (work interference with family), and "The time I spend on family responsibilities often interferes with my work responsibilities" (family interference with work). Responses used a 5-point scale (1 = strongly disagree, 5 = strongly agree). Higher scores indicated greater work–family conflict. The Cronbach's  $\alpha$  score of this study were 0.89 and 0.87 for work interference with family and family interference with work, respectively.

## Mental health status

The Japanese version of the General Health Questionnaire-12 (GHQ-12) [27] was applied for assessing participants' mental health status; the original version of this scale is in English [28]. The Japanese version of GHQ-12, which has been widely used [29, 30], comprises 12 items; one sample item states, "I feel stress more than usual," with responses selected from 4 options (1 = never, 2 = rarely, 3 = sometimes, 4 = often). In this study, the GHQ scoring system was applied, wherein the answers 1 (never) and 2 (rarely) were equivalent to a score of 0, whereas answers 3 (sometimes) and 4 (often) equaled 1. Thereafter, each participant's GHQ score was summed up, ranging from 0 to 12 [31]; higher scores indicated participants' poor mental health status. Cronbach's  $\alpha$  was 0.81 in this study.

## Characteristics of nurses

We targeted nurses' age, job tenure, qualification (e.g., registered nurse, enrolled nurse), working style, childrearing role, and whether living with family.

## Analysis

Hierarchical regression analysis was conducted to identify variables affecting the GHQ-12 score. In the first regression analysis, individual variables were job stress variables of job demand, job control, and job support. The next regression analysis of independent variables was of family-related variables including work-family culture, family stress, work interference with family, and family interference with work. In the final analysis, independent variables included both job- and family-related stress variables. Subsequently, the participating nurses were divided into three groups: hospital, home healthcare, and nursing home, and thereafter, repeatedly conducted the abovementioned analysis to examine the differences in the factors affecting each workplace.

All statistical analyses were performed using the Japanese version of SPSS for Windows 24. We verified our sample's statistical adequacy by conducting post-hoc examination, using G\*Power 3. The statistical analyses showed a significance of  $p < .05$ .

## Results

### Summary of target nurses

A total of 1,461 nurses completed the survey: 596 hospital nurses, 408 home healthcare nurses, and 457 nursing home nurses. Their mean age was 43.3 years ( $\pm 10.6$ ), and hospital nurses were younger than home healthcare and nursing home nurses. Furthermore, more part-time nurses worked in home healthcare than in hospitals and nursing homes, and more enrolled nurses worked in nursing homes than in hospitals or home healthcare (Table 1). The mean ( $\pm$ SD) score of job-or-family stress variables and the GHQ, and the correlations between measured stress variables and GHQ scores, are shown in Table 2. The mean score of GHQ was 4.97 ( $\pm 3.23$ ), and all stress variables were significantly related to the GHQ scores.

### Job-or-family stress variables affecting the GHQ score of all nurses

All measured job-or-family stress variables significantly related to the total GHQ score for all participants, and job and family stress variables showed similar coefficients of determination (job stress variables, adjusted  $R^2 = .193$ ; family-related stress variables, adjusted

$R^2 = .196$ ). Job demand, family stress, work interference with family, and family interference with work were significantly and positively related to nurses' GHQ scores. In contrast, job control, job support, and work-family culture were significantly negatively associated with nurses' GHQ scores. The strongest prediction was job demand ( $\beta = .211$ ,  $p < .000$ ,  $R^2 = .272$ , ES:  $f^2 = 1.6103$ ,  $(1 - \beta) = 1.0000$ ), followed by job control ( $\beta = -.153$ ,  $p < .000$ ,  $R^2 = .272$ , ES:  $f^2 = 1.6103$ ,  $(1 - \beta) = 1.0000$ ) (Table 3).

### Variables affecting GHQ score for hospital, home healthcare, and nursing home nurses

Regarding hospital nurses, neither work-family culture nor family stress was significantly related to GHQ scores, and family interference with work did not predict nursing home nurses' GHQ scores. Notably, home healthcare nurses showed a unique relationship between their job-or-family stress variables and their GHQ scores. The determined coefficient of family-related stress variables was larger than for job stress variables (family-related stress variables, adjusted  $R^2 = .270$ ; job stress variables; adjusted  $R^2 = .110$ ), and their strongest predictor was family stress ( $\beta = .220$ ,  $p < .000$ , adjusted  $R^2 = .279$ , ES:  $f^2 = 2.1907$ ,  $(1 - \beta) = 1.0000$ ). However, the job stress variables of job control and job support were not significantly related to home healthcare nurses' GHQ scores (Table 4).

## Discussion

### Affecting factors of nurses' mental health status

For the entire group of participants, all measured job- or family-related stress variables showed significant correlation to their mental health status. In job stress, job demand was positively related and job control or job support were negatively related to target nurses' mental health status—findings were consistent with those of previous studies [32,33]. This result supports the theory of the job-demand-control-support model.

Similar to job stress, family-related stress variables were also significantly related to nurses' mental health. In terms of work-family conflict, results indicate that both work interference with family and family interference with work were impediments to nurses' healthy mental status, consistent with extant research [34,35]. Contribution ratios of job- and family-related stress were similar. However, the final regression analysis showed that the most impactful factor was job demand, followed by job control. This indicates that nurses' mental health status can be predicted by their job status.

### Differences among nurses in hospitals, home healthcare, and nursing homes

In terms of workplace, the nurses indicated different results of factors affecting their mental health status. Regarding job stress, unlike hospitals and nursing home nurses, home healthcare nurses showed interesting results. Home healthcare nurses' mental health was not affected by job control and job support; additionally, the power of job demand was insignificant. Neel-Boylan [36] had highlighted the difference between institutional nursing (e.g., hospitals or nursing homes) and home healthcare nursing; this difference is attributed to the different work environment and nursing characteristics. Home healthcare nurses, basically, work alone and value their autonomy [36,37]; they enjoy significant control over decision-making in patient-care. This is a possible reason why job control or job support did not appear to impact the mental health of home healthcare nurses.

	Overall <i>n</i> = 1461		Hospital <i>n</i> = 596		Home healthcare <i>n</i> = 408		Nursing home <i>n</i> = 457	
Age (average)	43.3	±10.6	38.4	±10.0	45.9	±8.2	47.5	±10.5
Job tenure	19.2	±10.3	15.8	±10.0	20.5	±8.4	22.6	±10.8
Qualification								
Registered Nurse	1143	(78.2)	542	(90.9)	376	(92.2)	225	(49.2)
Enrolled Nurse	318	(21.8)	54	(9.1)	32	(7.8)	232	(50.8)
Work Style								
Full time	1272	(87.1)	574	(96.3)	287	(70.3)	411	(89.9)
Part time	189	(12.9)	22	(3.7)	121	(29.7)	46	(10.1)
Role of raising child								
Yes	784	(53.7)	280	(47.0)	283	(69.4)	221	(48.4)
No	677	(46.3)	316	(53.0)	125	(30.6)	236	(51.6)
Living with family								
Yes	1181	(80.8)	427	(71.6)	364	(89.2)	390	(85.3)
No	280	(19.2)	169	(28.4)	44	(10.8)	67	(14.7)

Table 1: Summary of Participants' Characteristics in a Survey of Nurses' Mental Health Status. Data are the number, (%), mean, SD.

	Mean	SD	1	2	3	4	5	6	7
1 Job demand	34.19	±5.3							
2 Job control	68.24	±8.0	.050						
3 Job support	23.68	±4.0	-.177**	.318**					
4 Work-family culture	3.48	±0.7	-.270**	.218**	.350**				
5 Family stress	0.79	±0.6	.040	-.022	-.086**	-.085**			
6 Work Interference with Family	2.97	±0.8	.393**	-.155**	-.264**	-.299**	.246**		
7 Family Interference with Work	2.34	±0.6	.138**	-.126**	-.200**	-.147**	.281**	.642**	
8 GHQ	4.97	±3.2	.318**	-.232**	-.305**	-.283**	.208**	.385**	.312**

Table 2: Correlation, Means, and Standard Deviations of Stress Variables and GHQ Scores in a Survey of Nurses. Pearson's correlation coefficient, \*\*  $p < .01$

	<i>t</i>	$\beta$	<i>t</i>	$\beta$	<i>t</i>	$\beta$
Job stress						
Job demand	12.161	.292**			8.339	.211**
Job control	-7.385	-.184**			-6.345	-.153**
Job support	-7.660	-.194**			-4.859	-.122**
Family related stress						
Work family culture			-7.633	-.188**	-3.147	-.086**
Family stress			4.246	.104**	4.906	.115**
Work interference with family			7.389	.235**	3.766	.123**
Family interference with work			3.355	.104**	3.844	.116**
<i>R</i> <sup>2</sup>		.195**		.198**		.272**
Adjusted <i>R</i> <sup>2</sup>		.193**		.196**		.268**
<i>ES: f</i> <sup>2</sup>						1.6103
1- $\beta$						1.0000

Table 3: Factor relating to the GHQ score of all nurses in a study of nurses mental health. Dependent variable: GHQ. Hierarchical multiple regression analysis, \*\*  $p < .01$

N = 1461

	Hospitals n = 596			Home healthcare n = 408			Nursing homes n = 457			
	t	β	t	β	t	β	t	β	t	β
Job stress										
Job demand	8.041	.293**	6.253	.233**	5.045	2.42**	2.391	.113*	6.061	.272**
Job control	-5.762	-.221**	-5.077	-.189**	-2.608	-.127**	-1.133	-.051	-3.893	-.180**
Job support	-5.636	-.216**	-3.784	-.148**	-3.318	-.163**	-1.121	-.052	-3.913	-.183**
Family related stress										
Work-family culture										
Family stress										
Work interference with family										
Family interference with work										
$R^2$		.219**		.187**		.116**		.291**		.168**
adjusted $R^2$		.215**		.182**		.110**		.279**		.163**
ES: f				1.5821				2.1907		
I-β				1.0000				1.0000		

Table 4: Factors related to the GHQ scores for hospital nurses, home healthcare nurses, and nursing home nurses.

Dependent variable: GHQ  
 Hierarchical multiple regression analysis  
 \* $p < .05$ , \*\* $p < .01$

This work characteristic also could explain why job stress had a weak effect on the mental health status of home healthcare nurses.

Regarding family-related stress, hospital nurses, home healthcare nurses, and nursing home nurses showed varied results. Work-family culture and family stress were not indicated as having affected hospital nurses' mental health, whereas, for home healthcare nurses, the family-related stress variables had the greatest magnitude of influence among the mental health status variables. In Japan, nurses who prioritize work-life balance tend to prefer working as home healthcare nurses [38,39]. In this study, many home healthcare nurses perceived their family role as significant; therefore, it is reasonable that their mental health would be affected by work-family culture and family stress. However, our results related to work-family conflict indicated that work interference with family did not relate to mental health among home healthcare nurses, and family interference with work did not affect mental health among nursing home nurses. They indicated family-related stress (family stress, work interference with family, and family interference with work) but low or little effect on their mental health status. It is possible that home healthcare nurses enjoy better work-life balance because of greater control over their work. They may have adjusted the impact of their working life on their family life by choosing to work as home healthcare nurses.

Regarding the relative lack of work- and family-related stress for nursing home nurses, it was observed that their average age was 47.5 ( $\pm 10.5$ ), suggesting that they had moved beyond their childrearing roles. Thus, nurses whose children are older or no longer living with them may experience less family-related pressure compared to younger nurses.

### Practical implications

Both job- and family-related stress were shown to deteriorate nurses' mental health status. Psychological job demand was shown to be the most obstructive factor for nurses' positive mental health, indicating that reducing nurses' psychological job-demands may be the most effective intervention for improving their mental health. If nursing managers could adjust workloads for each nurse and unify the instruction system for each nursing team, it may effectively improve nurses' mental health status. Similar to job stress, interventions reducing family-related stress may also be effective in improving nurses' mental health; however, implementing interventions to reduce family-related stress may be more difficult. Nevertheless, the results of this study clarify the need for certain interventions by nursing managers. To create a positive work-family culture, nursing managers should ensure that nurses perceive that their organization understands their family role; additionally, nursing managers should, indeed, have concern for staff nurses' family roles. If nursing managers can sympathize with nurses' struggles with work and family roles, it could improve their work-family balance. The results of this study indicate that this intervention would be especially effective for home healthcare nurses, who showed little significant effect of work stress or work interference on their family role.

### Strengths and Limitations

This study has the following strengths and limitations. First, the rates of agreement from home healthcare and nursing homes were 0.13% and 0.07%, respectively; these low rates imply that the present study lacks generalizability in Japan. However, the return rate of complete questionnaires was high (82.0%); this would imply our results reflect truth of study participants, additionally, the sample size was sufficient for data analysis.

Second, both work–family culture and family stress were measured using a single item created by the researchers; thus, it could not fully capture both study variables. Nevertheless, the results showed that both work–family culture and family stress are key influencing stress variables for, especially, home healthcare nurses' mental health. Therefore, in future research, the effects of work–family culture and family stress on nurses' mental health should be explored with verified measurement tools. These changes are necessary to strengthen and confirm the results of similar studies.

## Conclusion

Job- and family-related stress were shown to predict nurses' mental health status, and contribution ratios of both stress variables were similar. The strongest variable indicated among all measured job- and family-related stress variables was job demand.

Focusing on nurses' workplace, the results showed that hospital nurses, home healthcare nurses, and nursing home nurses have different predicting variables for the relationship of their job-or-family stress with their mental health. Work–family culture and family stress did not significantly impact hospital nurses' mental health. Only job demand indicated weak prediction among job stress variables, whereas family-related stress (family stress, work-family culture, and family interference with work) showed a high magnitude of impact on mental health status among home healthcare nurses. Regarding nursing home nurses, family interference with work did not affect their mental health status.

## Competing Interest

The authors declare that they have no competing interests.

## Author Contributions

Study design: Yoshiko Yamaguchi

Data collection: Yoshiko Yamaguchi, Takahiro Inoue

Data analysis: Yoshiko Yamaguchi, Takahiro Inoue

Manuscript writing: Yoshiko Yamaguchi

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