

## Psychological stress of young dietitians working in hospitals

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病院に勤務する若年管理栄養士の精神的ストレス

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### Abstract

**Aim:** Although the stress levels of medical doctors and nurses have often been studied, those of hospital registered dietitians (HRDs) have not. In the present study, we examined the levels of psychological stress of young HRDs in comparison with registered dietitians working at places other than hospitals (other registered dietitians; ORDs).

**Methods:** The subjects were 343 female registered dietitians (RDs) who graduated from Yasuda Women's University in Hiroshima. The questionnaires were sent to them by mail. The General Health Questionnaire 30 (GHQ-30) was used to evaluate their levels of psychological stress. Their levels of satisfaction with work-life balance (WLB) were also examined.

**Results:** Of the 343 subjects, 197 returned the questionnaires. Among them, 47 subjects were excluded from the analysis due to missing information. Thus, data from 150 subjects (44 HRDs and 106 ORDs) were used for the analysis. The total GHQ-30 score of HRDs was similar to that reported for other healthcare professionals and was significantly higher than that of ORDs ( $P = 0.03$ ). The total GHQ-30 score significantly correlated with the levels of satisfaction with one factor of WLB (personal activities, e.g. hobbies) in HRDs but not in ORDs.

**Conclusions:** The present study demonstrated for the first time that the stress levels of HRDs are as high as those of other healthcare professionals.

**Key words:** psychological stress, registered dietitians (RDs), General Health Questionnaire 30 (GHQ-30)

## Introduction

Work-related stress is involved in the onset of several diseases, including psychiatric disorders and cardiovascular disease.<sup>1)-3)</sup> In many cases, such conditions cause working difficulties and sometimes result in suicide.<sup>2)</sup> Recently, the number of Japanese people in their twenties and thirties who have developed psychiatric disorders caused by work-related stress has increased.<sup>2),4)</sup> Work-related stress often derives from working conditions (working hours, number of holidays, place of work, position, income and shift work) and a lack of work-life balance (WLB).<sup>3),5)</sup> In terms of occupational categories, healthcare professionals, including medical doctors, nurses and midwives, suffer from a high amount of stress worldwide.<sup>6),7)</sup>

Among all occupational categories, Japanese women working in the fields of medical care, health and welfare most frequently develop psychiatric disorders.<sup>2)</sup> The level of satisfaction with WLB in medical doctors and nurses is low because they spend so much time working at night and frequently experience shift work.<sup>5),8)</sup> In addition, those who work in stressful conditions, such as in the medical intensive care unit and the emergency care centre, are susceptible to burnout.<sup>9)</sup> Young workers, especially those who work at night and for long hours with limited work experience, are especially prone to developing burnout.<sup>10)</sup> The stress levels of medical doctors and nurses have often been studied because healthcare professionals exposed to extensive stress tend to make more medical mistakes or have negative effects on patients.<sup>11),12)</sup> Further, although a few studies have reported the burnout of registered dietitians (RDs),<sup>13)-15)</sup> the stress levels of RDs have not yet been measured.

In Japan, hospital registered dietitians (HRDs) have several job responsibilities, including performing patient nutritional management, education and food service management. Therefore, it is quite possible that HRDs are exposed to the same high levels of work-related stress as other healthcare professionals, including nurses, midwives. In the present study, we examined the levels of psychological stress and the levels of satisfaction with three factors of WLB<sup>16)</sup> (work, family life and personal activity) in the Japanese HRDs.

## Methods

The subjects were 343 female RDs who had graduated from the Department of Nutritional Sciences of Yasuda Women's University (Hiroshima, Japan). We mailed the General Health Questionnaire 30 (GHQ-30)<sup>17)</sup> and other questionnaires to them, requesting information about demographic characteristics, working places (hospital or places other than hospitals such as elderly facilities, pharmacies and companies), working conditions and their levels of satisfaction with the three factors of WLB<sup>16)</sup> (work, family life and personal activity) from November 2015 to January 2016. A letter explaining the purpose of our study was attached to the questionnaires, and the return of the questionnaires was considered consent. The protocol of the present study was approved by the Institutional Review Board of Yasuda Women's University.

We evaluated the level of psychological stress using the GHQ-30 developed by Goldberg.<sup>17)</sup> The Japanese version of GHQ-30 has acceptable reliability and validity.<sup>18)</sup> GHQ-30 consists of six items: illness in general, somatic symptoms, sleep disorder, social dysfunction, anxiety and dysphoria and suicidal ideation and depression. Each item was scored from 0 to 5, and the total scores of six items ranged from 0 to 30. Total scores equal to or greater than 7 (GHQ  $\geq$  7) indicate the presence of a mental problem.<sup>17)</sup> Levels of satisfaction with each of the three factors of WLB<sup>16),19)</sup> were evaluated by a questionnaire designed on the basis of previous studies.<sup>20)</sup> Thus, the levels of satisfaction with work, family life and personal activity were scored from 1 to 5 (1 = the lowest satisfaction level, 5 = the highest satisfaction level). The questionnaires about working conditions asked for total working hours, overtime working hours, the number of holidays, the irregularity of holidays, workplace, position, income of previous financial year and the presence or absence of shift work.

The statistical analysis was performed using SPSS, version 23.0 (SPSS Inc., Chicago, IL, USA). The data were presented as means  $\pm$  standard deviations (SDs).

The stress levels (the total score of GHQ-30) of HRDs were compared with those of the RDs working in a place other than hospital (ORDs) by Student's unpaired t-test. The levels of satisfaction with the three factors of WLB, working hours and the number of holidays were also compared between HRDs and ORDs using Student's unpaired t-test. The proportions of those in managerial or non-managerial positions, each range of income in the previous financial year and those on shift work were compared between HRDs and ORDs using the chi-squared test. The relationships of the total score of GHQ-30 with working hours and the levels of satisfaction with each of the three factors of WLB were examined using Pearson's correlation. The relationships of the total score of GHQ-30 with the levels of satisfaction with work and personal activity among HRDs were analysed using multiple regression analysis.

## Results

Of the 343 RD subjects, 197 returned the questionnaires (response rate, 57%). Forty-seven questionnaires were not included in the analysis due to incomplete responses; thus, 150 questionnaires (response rate, 44%) from 44 HRDs and 106 ORDs were analysed. Age, body mass index (BMI), marital status and household status were not different between HRDs and ORDs (Table 1). Total working hours, overtime working hours and the number of holidays per month were not different between HRDs and ORDs (Table 1). The proportions of those on shift work and those with irregular holidays were not significantly different between HRDs and ORDs (Table 1). The workplaces of ORDs were elderly facilities (29.5%), pharmacies (20.0%), companies (36.2%), company cafeterias (2.9%) and schools (1.0%). Among both HRDs and ORDs, most positions were non-managerial (Table 1). The most frequent income range of the previous financial year was \$17,600–\$26,300 (2–3 million yen) for both HRDs and ORDs (Table 1), which was similar to the average annual income of Japanese female dietitians in their 20s (\$22,038–\$25,725).<sup>21)</sup>

Table 1 The demographic characteristics and Working conditions on HRDs and ORDs \*.

	HRDs (n = 44)	ORDs (n = 106)	P-value
Age (years)	25.3 ± 2.2	25.1 ± 2.3	0.69
BMI (kg/m <sup>2</sup> )	19.5 ± 1.8	19.9 ± 2.5	0.34
Marriage status, n (%)			0.61
Unmarried	37 (84.1)	93 (87.7)	
Married	7 (15.9)	12 (11.3)	
Other	0 (0)	1 (0.9)	
Household status, n (%)			0.15
Single	7 (15.9)	36 (34.0)	
Couple without children	6 (13.6)	11 (10.4)	
Couple with children	1 (2.3)	2 (1.9)	
With Parents	30 (68.2)	54 (50.9)	
Other	0 (0)	3 (2.8)	
Working hours			
Total working hours (h/week)	43.6 ± 8.3	44.8 ± 9.3	0.37
Overtime working hours (h/week)	3.4 ± 3.5	4.7 ± 5.2	0.12
Number of holidays (days/Month)	8.5 ± 1.0	8.5 ± 1.2	0.44
Shift work, n (%)	29 (65.9)	62 (58.5)	0.18
Irregularity of holidays, n (%)	27 (61.4)	53 (50.0)	0.28
Workplace, n (%)			
Hospital	44 (100)	0 (0)	
Elderly facility	0 (0)	31 (29.5)	
Pharmacy	0 (0)	21 (20.0)	
Company	0 (0)	38 (36.2)	
Company cafeteria	0 (0)	3 (2.9)	
School	0 (0)	1 (1.0)	
Other	0 (0)	11 (10.5)	
Employment position, n (%)			0.63
Managerial	2 (4.5)	3 (2.8)	
Non-managerial	42 (95.5)	103 (97.2)	
Income of previous financial year (\$) †, n (%)			0.66
0	6 (13.6)	18 (17.0)	
Under 8800	2 (4.5)	7 (6.6)	
8800-11 400	0 (0)	1 (0.9)	
11 400-17 600	3 (6.8)	13 (12.3)	
17 600-26 300	23 (52.3)	44 (41.5)	
26 300-35 100	8 (18.2)	21 (19.8)	
35 100-43 900	2 (4.5)	1 (0.9)	
43 900-52 700	0 (0)	1 (0.9)	

\* The values of age, BMI, working hours and number of holiday are means ± standard deviations (SDs).

† Income was expressed as \$ at \$1=113.87 yen.

BMI; body mass index, HRDs; hospital registered dietitians, ORDs; other registered dietitians.

The mean  $\pm$  SD of total GHQ-30 score of HRDs was  $8.3 \pm 5.1$ , which was significantly higher than that of ORDs ( $6.5 \pm 4.6$ ) ( $P = 0.03$ ) (Table 2). Although a higher percentage of HRDs (59%) than ORDs (45%) had mental problems (GHQ-30  $\geq 7$ ), the difference was not statistically significant (Table 2). With regard to each item of the GHQ-30, the score of suicidal ideation and depression was significantly higher in HRDs than in ORDs ( $P = 0.03$ ) (Table 2). The levels of satisfaction with WLB (work, family life, personal activity) were not different between HRDs and ORDs (Table 2).

Table 2 Total GHQ-30 score and the levels of satisfaction with WLB (work, family, personal activity) in HRDs and ORDs.\*

	HRDs (n = 44)	ORDs (n = 106)	P-value
<GHQ-30 >			
Total GHQ-30 score	$8.3 \pm 5.1$	$6.5 \pm 4.6$	0.03
Total GHQ-30 score $\geq 7$ , n (%) †	26 (59)	48 (45)	0.12‡
Illness in general	$1.6 \pm 1.3$	$1.6 \pm 1.3$	0.98
Somatic symptoms	$1.6 \pm 1.4$	$1.2 \pm 1.4$	0.17
Sleep disorder	$1.5 \pm 1.1$	$1.2 \pm 1.0$	0.06
Social dysfunction	$1.1 \pm 1.4$	$0.7 \pm 1.4$	0.52
Anxiety and dysthymia	$2.0 \pm 1.8$	$1.6 \pm 1.6$	0.18
Suicidal ideation and depression	$0.5 \pm 1.0$	$0.2 \pm 0.7$	0.03
<Satisfaction with WLB>			
Work	$2.8 \pm 1.1$	$3.0 \pm 0.9$	0.58
Family life	$3.5 \pm 1.0$	$3.5 \pm 0.9$	0.77
Personal activity	$2.8 \pm 1.0$	$3.1 \pm 1.0$	0.68

\* The scores of GHQ-30 and the levels of satisfaction with three factors of WLB are means  $\pm$  standard deviations (SDs).

† The number (%) of the subjects with total GHQ-30 score  $\geq 7$  is shown. ‡:chi-square test.

GHQ-30; The General Health Questionnaire 30, WLB; work-life balance, HRDs; hospital registered dietitians, ORDs; other registered dietitians.

Among HRDs, the total GHQ-30 score negatively and significantly correlated with the levels of satisfaction with two factors of WLB: work ( $\beta = -0.341$ ,  $P = 0.012$ ) and personal activity ( $\beta = -0.466$ ,  $P = 0.002$ ), but not in ORDs (data not shown). To determine which of these two factors of WLB (work, personal activity) contributes to the increase in total GHQ-30 score in HRDs, a multiple regression analysis including both these factors was performed. The results showed that the level of satisfaction with personal activity significantly correlated with the total GHQ-30 score, but that the level of satisfaction with work did not (Table 3).

The total GHQ-30 score did not correlate with any of the working conditions, including total working hours, overtime working hours, number of holidays per month, workplace, position, income of previous financial year, presence or absence of shift work and irregularity of holidays in HRDs and ORDs (data not shown).

Table 3 Multiple regression analysis for total GHQ-30 score with the levels of satisfaction with WLB (work, personal activity) in HRDs.

	<i>Beta</i>	<i>P-value</i>
Satisfaction with work	-0.192	0.203
Satisfaction with personal activity	-0.393	0.011

GHQ-30; The General Health Questionnaire 30, WLB; work-life balance, HRDs; hospital registered dietitians, ORDs; other registered dietitians.

## Discussion

In the present study, we found that the total score of GHQ-30 in HRDs was significantly higher than that in ORDs, indicating higher stress levels in HRDs than in ORDs. The total GHQ-30 score of HRDs was similar to the previously reported score of nurses and midwives.<sup>22)</sup> In addition, 59% of HRDs had mental health problems (GHQ-30  $\geq$  7), and this proportion is also similar to that reported for nurses and medical doctors.<sup>6),23)</sup>

The limitations of the present study are as follows. The number of subjects was small, and the subjects were all females. The age range of the subjects was restricted to the 20s. All the subjects graduated from the same university. Therefore, the findings of the present study may not be generalized to male RDs, older age RDs and those graduated from other universities. The uniform background of the subjects in the present study, however, may have somewhat contributed to the formal comparison of the stress levels between HRDs and ORDs.

Human service workers, such as healthcare workers and teachers, have been found to be susceptible to burnout.<sup>9),24)</sup> HRDs are also considered human service workers because they provide diet counselling, taking into account the feelings and private problems of the patients. HRDs need advanced nutritional knowledge and skills and the ability to build good relationships with patients. The HRDs in this study were young and had little work experience, but they bear the same responsibility as experienced HRDs. Moreover, because the employment of HRDs is heavily outnumbered by that of medical doctors and nurses, there are not many seniors to supervise young HRDs in the workplace. These working conditions may cause emotional exhaustion in young HRDs. The absence of senior doctors has been reported to cause burnout in less-experienced doctors.<sup>25)</sup> In nurses, however, the incidence of burnout was reported to decrease as employment years increase.<sup>10)</sup> Therefore, the psychological stress of young HRDs may also decrease as their work experience increases.

It may be valuable to note that the level of psychological stress of HRDs correlated with the levels of satisfaction with one factor of WLB (personal activity, including hobbies), but not with working conditions, including working hours and the number of holidays. Such correlation of psychological stress with the satisfaction of personal activity was not observed in ORDs. Although the mechanism for the correlation is not clear, the stress from hospital work itself may decrease the level of satisfaction with personal activity, and the opposite may also be true, resulting in a vicious cycle. The level of occupational stress in surgeons has been

reported to be lower in those who had a hobby than in those who did not.<sup>26)</sup> The Japanese Ministry of Health, Labour, and Welfare recommends that workers have personal hobbies unrelated to work to improve their capabilities of coping with stress.<sup>27)</sup>

### Conclusion

The present study demonstrated for the first time that the level of physiological stress of HRDs is high and comparable with those of other healthcare professionals.

### A statement regarding transparency declaration

The lead author affirms that this manuscript is an honest, accurate and transparent account of the study being reported, that no important aspects of the study have been omitted and that any discrepancies from the study as planned have been explained.

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