原　著

醫院員工工作壓力與健康相關生活品質之探討—以台中某醫學中心爲例

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目標：本研究目的旨在探討某醫學中心員工之工作壓力與健康相關生活品質。**方法**：採橫斷式調查研究並利用自填式問卷調查法蒐集相關資料，以中文版工作特質量表及台灣版世界衛生組織生活品質問卷分別測量工作壓力與健康相關生活品質。研究母群爲台中某醫學中心之員工，採分層抽樣方法選取樣本500人進行問卷施測。**結果**：有關工作壓力部分，將近10%的員工屬於高壓力族群。而整體健康相關生活品質量表之得分爲51.56，各分量表之得分爲以生理健康範疇最高，環境範疇最低。將工作壓力與健康相關生活品質進行相關分析，結果顯示各分量表間大多數有顯著相關，且發現高壓力群之心理層面生活品質較低壓力群爲差。再分析健康相關生活品質之預測因子，發現工作控制度、社會支持度、工作年資，以及職務之虛擬變項中護理人員與醫師等變項的影響達顯著水準，可以解釋48.2%的變異量。**結論**：衛生主管機關及醫務管理者應重視醫院員工之壓力問題，並提出有效的壓力管理策略，以預防壓力對醫院員工身心健康的傷害，並增進其身心健康與福祉。(台灣衛誌2004；**23(2)**：108-120)

關鍵詞：工作壓力、健康相關生活品質、醫院員工

Job strain and health-related quality of life of hospital employees: case of a medical center in Tai-Chung

Objectives: The purpose of this study was to explore job strain and health related quality of life (HRQOL) for hospital employees in a medical center. **Methods:** A cross-sectional survey by self-administered questionnaires using the Chinese Version of the Job Content Questionnaire (C-JCQ) and the World Health Organization Quality of Life (WHOQOL) Taiwan version to measure job strain and HRQOL, respectively. Using stratified random sampling procedure, the survey data was collected from 500 employees working in a medical center located in Tai-Chung. **Results:** Slightly less than 10% of the employees in the sample had high-strain jobs. The overall score of HRQOL was 51.56, among four subscales, these employees scored highest on the physical health subscale and lowest on the environment subscale. The C-JCQ subscales and WHOQOL subscales were found to have a significantly highly correlation, and the high strain group was as likely to report a lack of quality of life on the psychological scale than the low strain group. In examining the predictors of HRQOL, it was found seniority, job control, work-related social support, physician dummy variable, and nurse dummy variable explained 48.2% of the variance in HRQOL. **Conclusions:** the findings in this study can help management executives and cabinet policy-makers to pinpoint the problem of job strain. They should build effective stress management strategies to avoid the stress hazards affect on the mental and physical health of employees, and to thereby improve employees' health and well-being. *(Taiwan J Public Health. 2004;**23(2)**:108-120)*

Key Words: Job stress, Health-related quality of life, Hospital employee

Introduction

Society today is running in a fast pace. Almost everything is needed sooner than its demand; this overwhelming pressure is most people's consistent nightmare, both in work and at home. Stress has become one of the most serious health issues in the 21 century. The American Medical Association stated that stress was the cause of 80 to 85 percent of all human illness and disease or at the very least had a detrimental effect on our health [1]. As a negative influence, stress can result in feelings of distrust, rejection, anger, and depression, which in turn can lead to health problems such as headaches, upset stomach, rashes, insomnia, ulcers, high blood pressure, heart disease, and stroke. Stress problem not just for individuals in terms of physical and mental disability, but also for employers and governments who have started to assess the financial damage due to the stress of personnel. Cahill, Landsbergis and Schnall estimated that job stress has been estimated to cost American industry $150 billion per year in absenteeism, diminished productivity, compensation claims, health insurance and direct medical expenses. Occupational stress has serious consequences for both individual employees and organizations [2,3].

Job stress (e.g., work stress, occupational stress, etc.) is difficult to measure. The measurement of job stress - known as the demand-control model, is the most popular one [4]. In 1979, Karasek presented one of the most significant occupational stress models in recent times. It incorporates control as a major component in the stress process. Karasek's job demand—control model hypothesizes that there are two elements of the work environment---job demands and work control--- that impact on an individual's level of well-being and the quality of his or her working life [5, 6]. Based on this two-dimensional model, all jobs can be classified into four types: 'high-strain jobs' (high demand/low control), 'low-strain jobs' (low demand/high control), 'active jobs' (high demand/high control), and 'passive jobs' (low demand/low control) (Figure 1). High occupational stress, presumed more prevalent in 'high-strain jobs', has been linked to psychological (i.e. depression, job dissatisfaction), physiological (i.e. headaches, heart disease) and behavioral (i.e. absenteeism, drug consumption) effects [7]. Most of the studies have been broadly consistent with Karasek's hypothesis, showing associations of high levels of job strain with increasing risks of various health problems [8-13]. The demand/control model has also been extended to incorporate work-related social support as a third dimension. The primary hypothesis, that jobs which are high in demands, low in control, and also low in social support at work carry the highest risk of illness, has been empirically successful in a number of chronic disease studies. The other studies have consistently shown greater effects of high strain job on workers with poor social support at work [8,14].

A large number of literatures on job strain and its psychological and physical sequel have made us aware of the significant influence of the psychosocial work environment on health [15]. Concerning health issues, many studies not only focus on physical health, but also explore health-related quality of life (HRQOL). The overall goals of the national health objectives for 2010 are to increase the quality and years of healthy life and eliminate health disparities in the U.S. population [5].

HRQOL has emerged as a conceptualization of health that can be measured and used as a quality indicator. HRQOL and its determinants have evolved since the 1980s to encompass those aspects of overall quality of life that can be clearly shown to affect health—either physical

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or mental. HRQOL indicators usually encompass a person's ability to function effectively physically, emotionally, and socially and to maintain a sense of well-being [15-17]. In public health and in medicine, the concept of HRQOL refers to a person or group's perceived physical and mental health over time. Physicians have often used HRQOL to measure the effects of chronic illness in their patients in order to better understand how an illness interferes with a person's day-to-day life. Similarly, public health professionals use HRQOL to measure the effects of numerous disorders, short- and long-term disabilities, and diseases in different populations. Tracking HRQOL in different populations can identify subgroups with poor physical or mental health and can help guide policies or interventions to improve their health [18].

Ever since late 1980s, the health services industry in Taiwan has changed dramatically. With advancing medical technology and the built-up of Nation Health Insurance (NHI), the hospitals have been confronting harsh competition. Owing to the healthcare environments increasing complexity and competition, the hospital employees have been faced with the strain of heavy workloads and psychosocial demands. Therefore, the problem of job stress in healthcare organizations is becoming a matter of greater concern. Previous studies on the health effects of job strain have all been emphasized on worker's population or health professionals in Taiwan. Neither the job strain study nor its health side effect has been surveyed in all hospital employees. This study builds directly upon Karasek's demand—control model, examining the applicability of the job strain hypothesis and associated measures to hospital employees. It was also asked whether workplace supports buffer health differences attributable to job strain, and assessed job strain's contribution to health-related quality of life.

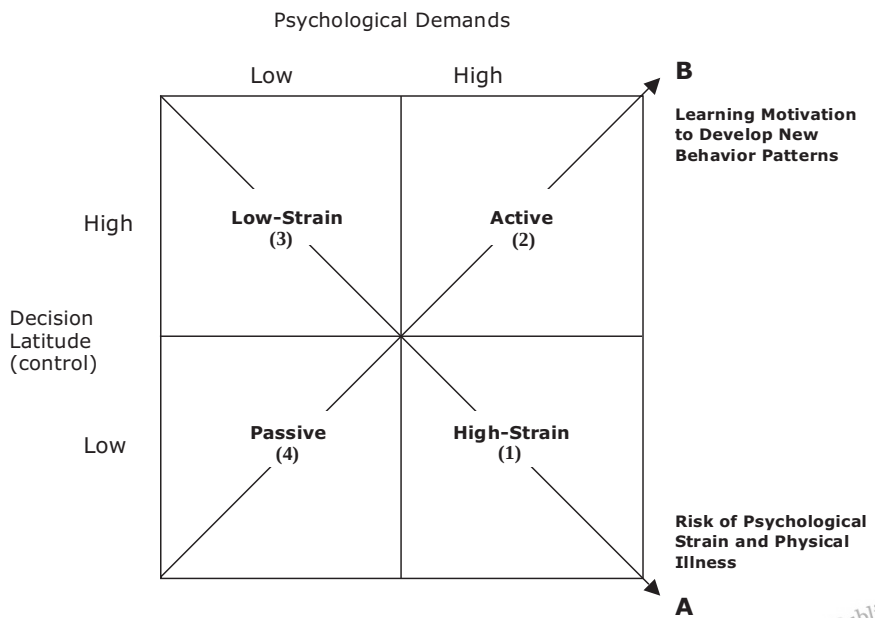

Figure 1. Psychological demand-decision model

Source: Theorell T, Kaeasek RA. Current Issues Relating to Psychosocial Job Strain and Cardiovascular Disease Research. J Occup Psych 1996; **1(1)**:9-26.

Materialrs & Methods

Sample

This study is a cross-sectional survey. The subjects are the employees working in a medical center located in Tai-Chung. There are 1785 employees at the hospital and a total of 862 beds. 500 employees were sampled using the stratified random sampling procedure. The populations were first divided into four strata (physician, nurse, medical technician, and administration staff) based on their position and then randomly selected from each stratum given the number of people based on proportions to the total group. The populations and sample size of each stratum are displayed in table 1.

Instruments

The data was collected between January and February 2003 by self-administered questionnaires. The questionnaires taken included:

1. Demographic characteristics. Personal information consisting of age, sex, education, marital status, religion, family size, seniority (years in the current job), position (type of the current job), work shift, and the average working time per week.
2. Chinese-Job Content Questionnaire. The Job Content Questionnaire (JCQ) based on Karasek's demand-control model is a self-administered instrument designed to measure social and psychological characteristics of the jobs. The JCQ has been translated into over a dozen languages [14]. Cheng had translated the original questionnaire into Chinese named Chinese-Job Content Questionnaire (C-JCQ); we then adopted it to measure job strain in this study. The C-JCQ includes 22 items, which consist of a minimum set of questions for assessment of three major JCQ subscales---job control, psychological demands, and work-related social support. Job control is defined as the working individual's potential control over his tasks and his conduct during the working day [20]. The job control scale is the sum of two subscales: skill discretion, measured by six items that assess the level of skill and creativity required on the job and flexibility permitted the worker in deciding what skill to employ, and decision authority, measured by three items that assess the organizationally mediated possibilities for a worker to make decision about their work [14]. Psychological demands is to measure the psychological stressors involved in accomplishing the workload, stressors related to unexpected tasks, and stressors of job-related personal conflict by five items [20]. Work-related social support is to measures overall levels of “helpful” social interaction available on the job [21]. The work-related social support scale is the sum of two subscales: support from supervisors (four items) and support from coworkers (four items). For each item, the respondents could choose from one of four responses ranging from strongly disagree to strongly agree. The total sores for each subscale is equivalent to the sum of individual question scores [8,9].
3. WHOQOL-Taiwan versions. Health-related quality of life was measured with the WHOQOL-Taiwan versions developed by The WHOQOL-Taiwan Group according to the WHOQOL-BREF [22]. The WHOQOL-Taiwan contains 26 questions and two culture-specific questions. For each question, the response was recorded on a five-point Likert scale, ranging from 1(strongly unsatisfied) to 5 (strongly satisfied). The WHOQOL-Taiwan consists four subscales measuring domains of physical health, psychological, social relationship and environment. The measure facts of physical health domains are included activities of daily living, dependence on medicinal substances and medical aids, energy and fatigue,

mobility...etc. The measured facts of psychological domains include bodily image and appearance, negative feelings, positive feelings, self-esteem...etc. The measured facts of social relationships domain include personal relationships, social support, and sexual activity. The measured facts of environment domains included financial resources, freedom, physical safety and security, opportunities for acquiring new information and skills, participation in and opportunities for recreation / leisure activities...etc [23]. The score of each subscale is the mean of all items multiply by four and the overall score is the sum of four subscales. A higher scorer indicates ranking in upper levels to quality of life.

Cronbach's alphas were calculated to assess internal consistency for the scales above. As shown in Table 3, Cronbach's alphas were acceptable for all measures expected psychological demands (0.43). A lower alpha (α) value means that the job strain in this dimension is weak.

Statistical Analysis

The SPSS (10.0) software program was used in all aspects of analyses. Following the calculation of descriptive statistics, the reliability (internal consistency) of the measures was determined. Demographic characteristics difference among the job strain and HRQOL were tested with one-way ANOVA. Two-way ANOVA was used to determine if job strain groups and work support groups jointly influence HRQOL. Thereafter, Pearson's product-moment correlation was used to assess whether there is a relationship between C-JCQ subscales and WHOQOL subscales. Multiple-regression (stepwise model) was used to determine the best set of variables for predicting health related quality of life.

Results

Three hundred and fifty-nine questionnaires were returned giving a 71.8% response rate. The response rates varied by subgroups: 32/79(40.5%) of physicians; 213/241(88.4%) of nurses; 50/92(54.3%) of medical technicians, and 64/87 (73.6%) of administration staffs (see Table 1). Babbie (1973) is often quoted as recommending a 50% response rate. Low response rate create the possibility for response bias since the results may reflect an inordinate percentage of a particular demographic portion of the sample [24]. The response rate of physician was less than 50% in this study because it is very difficult to encourage physicians to participate in survey. Differences in response rates among subgroups can result in some groups being over-represented or underrepresented in the total sample. Due to limited human resources and time constrain, the demographics of the respondents and the non-respondents were not compared in order to examine response bias. This may have affected the survey's results.

Table 1. Population size, sample size and number responding for position

Strata	Populations	Sampled	Returned	Response (%)
Physician	282	79	32	40.5
Nurse	863	241	213	88.4
Medical technician	329	92	50	54.3
Administration staff	311	87	64	73.6
Total	1785	500	359	71.8

Demographic characteristics of study sample

The respondents consisted of 32 physicians (8.9% of the sample), 213 nurses (59.4 %), 50 medical technicians (13.9%), and 64 administration staff members (17.8%). There were more female than male respondents, with a mean age of 29.3 years. The majority (40.9%) was between 26 and 30 years of age. Over 98% of the subjects have college degrees; meaning that mostly well-educated people were sampled. Over 61% of them were unmarried. 69.1% of them had been working for less than 5 years on the current job. 57.9% of the surveyed sample worked the day shift, 17.9% in evening/night shift, and 22.6% in take-turn shifts (see Table 2).

Description statistics for C-JCQ and WHO-QOL-Taiwan scores

Table 3 presents the mean, standard deviations, and cronbach's alpha of C-JCQ and WHOQOL-Taiwan. The mean of the C-JCQ subscale scores indicate the following: skill discretion was 31.94, decision authority was 30.88, job control was 62.82 (job control is the sum of skill discretion and decision authority), psychological demands was 34.54, supervisor support was 10.54, coworker support was 12.04, and work-related social support was 22.57(work-related social support scale is the sum of support

Table 2. Sample characteristics

Variable	N	%	Mean	SD
Gender			-	-
Male	57	15.9		
Female	302	84.1		
Age			29.46	5.94
Education			-	-
Under 12 grds	6	1.7		
12grds to college	336	93.6		
Graduate and over	17	4.7		
Martial status			-	-
Single	219	61.0		
Married	130	36.2		
Other	10	2.7		
Position			-	-
Physician	32	8.9		
Nurse	213	59.4		
Medical technician	50	13.9		
Administration staff	64	17.8		
Seniority			6.52	5.67
Work shift			-	-
Day shift	208	57.9		
Evening shift	34	9.5		
Night shift	30	8.4		
In shifts	81	22.6		
Average working time per week			46.84	10.85

Table 3. Descriptive statistics for C-JCQ and WHOQOL subscales

Subscales	Mean	SD	Possible Range	Actual Range	Cronbach's Alpha
C-JCQ					
Job control	62.82	7.57	24-96	34-86	0.56
Skill discretion	31.94	3.61	12-48	18-42	
Decision authority	30.88	5.33	12-48	12-48	
Psychological demands	35.54	4.36	12-48	24-48	0.43
Work-related social support	22.57	2.90	8-32	12-32	
Supervisor support	10.54	2.17	4-16	4-16	0.89
Coworker support	12.04	1.46	4-16	4-16	0.88
WHOQOL	51.56	7.13	16-80	16-78	0.88
Physical health	13.66	1.92	4-20	4-18	0.55
Psychological	12.52	2.24	4-20	4-20	0.58
Social relationships	13.16	2.11	4-20	4-20	0.73
Environment	12.22	2.03	4-20	4-20	0.79

Table 4. Mean and Standard Deviations of WHOQOL subscales by Job-Strain Groups

			Job-Strain Groups								
	Total Sample (n=359)		Passive (n=174)		Low Strain (n=131)		High Strain (n=34)		Active (n=20)		
HRQOL Measure	M	SD	M	SD	M	SD	M	SD	M	SD	F value
Physical health	13.66	1.92	13.49	1.87	13.99	1.84	13.35	2.24	13.54	2.10	2.04
Psychological	12.52	2.24	12.36	2.27	12.94	2.08	11.73	2.54	12.56	1.97	3.28*
Social relationships	13.16	2.11	12.95	2.06	13.50	2.12	12.68	2.28	13.55	1.82	2.56
Environment	12.22	2.04	12.00	1.98	12.64	1.92	11.70	2.35	12.13	2.30	3.38*
Overall	51.58	7.13	50.82	6.94	53.07	6.89	49.51	8.42	51.84	6.59	3.56*

* p value<0.05 (one-way ANOVA for difference of group means)

Table 5. Mean of overall WHOQOL by Job-Strain Groups and Work Support

	Job-Strain Groups				
Work-related social support	Passive (n=174)	Low Strain (n=131)	High Strain (n=34)	Active (n=20)	Mean
Low (n=189)	49.48	52.11	47.59	49.27	49.96
High (n=170)	52.73	53.68	54.63	54.16	53.36
Mean	50.82	53.07	49.51	51.84	51.58

from supervisors and support from coworkers).

Four job-strain groups were created by dividing the distributions of the demand and control dimensions at their respective medians, thereby constructing a high and low group for each dimension, and cross classifying subjects. Scores located on the demand and/or control medians were classifying as “low” [15]. Slightly less than 10% of the employees in our sample were found to have high-strain jobs. Nearly one half (48.5%) had passive jobs, 36.5% had low-strain jobs, and 5.6% had active jobs.

The overall score of WHOQOL-Taiwan was 51.56 (see Table 3). Among the four subscales measuring domains of interest, employees scored highest on the physical health domains (M＝13.66, SD＝1.92) and lowest on the environment domains (M＝12.22, SD＝2.04). Table 4 lists the mean values and standard deviations of WHOQOL subscales separated by job-strain groups. The mean WHOQOL overall and subscales scores were consistently lowest among subjects on the high-strain jobs. In comparison with the mean of job-strain groups with one-way ANOVA, the overall WHOQOL, psychological, and environment subscales were statistically significant differences between the groups' mean scores. Used Scheffes Test to identify any significant differences, it can be seen that low-strain jobs were significantly higher than high-strain jobs on psychological; low-strain jobs were significantly higher than passive jobs on environment; and low-strain jobs were significantly higher than passive jobs and high-strain jobs on overall WHOQOL score.

The addition of work-related social support as a third dimension was expanded to discuss the differential impact of HRQOL. The samples were divided into ‘high’ and ‘low’ groups by medians on work support. Table 5 displays the overall mean score of WHOQOL separated by job-strain and work support groups. We can see the mean score of high work support group was consistently higher than low work support group in four job-strain groups. Two-way ANOVA was performed with job-strain groups and work support groups as the explanatory variables and the HRQOL variable as dependent variable. From the results, a significant main effect was found for work support groups (F＝13.98, p＜0.000), but not for job-strain groups (F＝1.69, p＝0.169) or for interaction (F＝1.33, p＝0.265).

The correlation between job strain and HRQOL

The Pearson’s correlation coefficients pairs of C-JCQ subscales and WHOQOL subscales were found to be highly significant statistically (Table 6). The overall score of WHOQOL was correlated with the following three subscales of the C-JCQ: Job control (r＝0.286, p＜0.01), psychological demands (r＝-0.157, p＜0.00), and work-related social support (r＝0.634, p＜0.01). Aside from psychological demands, there were mostly positive correlations, indicating that employees higher psychological demands in work was associated with lower health-related quality of life. Furthermore, on the four subscales of WHOQOL, Job control and work-related social support were positively correlated with physical health, psychological, social relationships, and environment respectively. Psychological demands and environment had a negative correlation (r＝-0.169, p＜0.01), but psychological demands had little or nothing to do with other subscales.

Predictors of health-related quality of life

Stepwise multiple regression analysis was conducted to examine the predictors of health-related quality of life. It was decided to enter the variables that were associated with health-related quality of life in the study variables. Demographic characteristics included age, education, martial status, position, seniority, and work shift;

C-JCQ subscales included job control, psychological demands, and work-related social support. Dummy variables were created to allow the effects of non-numeric variable predicators to be included in the regression model.

Regression assumptions were checked as the analysis was being performed. Standardized residual test displayed 1 observation that is considered to be a potential outlier because the standardized residual value was above 3. It did not fit in with the assumption of the residuals are distributed normally, so it was excluded in the regression analysis. All the regressions except the first one had high values for VIF (variance inflation factor) indicating a high degree of multicollinearity. The VIF values were between 1.110 and 1.245, revealing that all explanatory variables did not have the presence of colinearity in the regression model. A Durbin-Watson value of 1.894; revealing the regression equation didn't contain the presence of first-order autocorrelation in the residuals.

As for the results of all the variables, only five emerged as significant predictors of total health related quality of life ($F=65.594$, $p<0.01$): they were seniority, job control, work-related social support, the physician dummy variable, and the nurse dummy variable (We formed three dummy variables included physician, nurse, and medical technician for the position, with administration staff as reference category). These accounted for 48.2% of the variance. With all variables entered, work-related social support had the largest influence on overall HRQOL ($\beta=0.621$, $R^2=0.403$); therefore, work-related social support was considered the best predictor of HRQOL within the model. All other variables were removed during the regression analysis. The parameters in Table 7 show that longer seniority, higher job control, and higher work-related social support integrated to increase the level of health-related quality of life. In comparison with the administration staff, nurse and physician had worse health-related quality of life. The fitted least-squares regression model is:

HRQOL＝23.156－0.0877(Seniority)＋0.119(Job control)＋1.038(Work-related social support)－1.773(Physician)－2.798(Nurse)

Table 6. Correlation matrix of C-JCQ and WHOQOL

	1	2	3	4	5	6	7	8	9	10	11
1.Job control											
2.Skill discretion	.768**										
3.Decision authority	.901**	.414**									
4.Psychological demands	-.130*	-.014	-.176**								
5.Work-related social support	.228**	.165**	.212**	-.140**							
6.Supervisor support	.263**	.153**	.270**	-.217**	.877**						
7.Coworker support	.056	.099	.012	.052	.671**	.233**					
8.WHOQOL	.286**	.231**	.249**	-.157**	.634**	.537**	.456**				
9.Physical health	.187**	.152**	.162**	-.060	.162**	.112*	.155**	.732**			
10.Psychological	.169**	.148**	.140**	-.058	.112*	.052	.148**	.738**	.589**		
11.Social relationships	.175**	.116*	.170**	-.082	.192**	.104	.228**	.630**	.558**	.604**	
12.Environment	.222**	.195**	.183**	-.169**	.241**	.221**	.148**	.807**	.586**	.641**	.595**

* $p<0.05$ **$p<0.01$

Discussions

This study elaborates a survey for the association between job strain and health-related quality of life, and the findings were generally congruent with the major predictions of the job strain model.

The mean scores of the C-JCQ subscales in the study population were compared with previous studies of Cheng et al. [8] and Karasek et al. [15]. Cheng studied 1584 workers of four private factories in southern Taiwan to examine the reliability and validity of C-JCQ. Karasek et al. compared mean values, reliability, and validity of the JCQ scales against some studies conducted in different countries. The study population scored slightly higher than Taiwanese workers in Cheng's study, but lower than most of the Western populations on job control. The psychological demands score in this study was higher than Taiwanese workers and most of the Western populations, yet the work-related social support was worse. Apparently, these results reveal that hospital employees have high control in jobs because their job functions are franchised. However, for hospital employees, healthcare jobs tend to impact higher psychological pressure.

The mean score of overall WHQOL in the study population was 51.56. Among four subscales, these employees scored highest among the physical health subscale, and are the lowest on the environment subscale. With these results, it can be speculated that hospital employees have medical knowledge and background. Therefore, hospital employees are agile in illness symptom. The low environment rating might be due to the employees' regarding their working environments as unsafe, in lack of time for recreation, wages not meeting their needs, and low job security.

Mean scores of job strain and HRQOL were stratified across demographics by using the one-way ANOVA (data is not presented in this article). The results showed that work overload caused increasing psychological demands at work. The employees who worked over 61 hours a week had significantly higher psychological demands than the others. Therefore, human resource department in hospitals should allocate all employees' workload as a whole and scientifically distribute jobs to sooth work overload. Furthermore, it is apparent that physicians had less work-related social support than nurses and administration staffs. Therefore, when physicians are facing emotional problems or personal plight, they rarely get support from supervisors and colleagues. Organizations should give more sup-

Table 7. Predictors of HRQOL by stepwise multiple regression

Variables	Unstandardized Coefficients B	Standardized Coefficients Beta	t value	R^2	Adj. R^2	F value
Constant	23.156		9.656**			
Social support	1.038	0.621	15.367**	0.403	0.401	239.871**
Nurse†	-2.798	-0.230	-5.337**	0.447	0.444	143.762**
Job control	0.119	3.606	3.606**	0.470	0.465	104.565**
Seniority	8.770E-02	2.020	2.020*	0.477	0.471	80.352**
Physician†	-1.773	-1.978	-1.978*	0.482	0.475	65.594**

* $p<0.05$ ** $p<0.01$

† Dummy variables: physician (1:yes, 0:no); nurse (1:yes, 0:no)

port and encouragement to new physicians and establish physician-supporting groups to boost experience sharing between attending physicians and residents. This helps a neophyte physician easily adapt to the job, improving physician's quality of life. We also found that day shift workers have higher scores than those of night shift ones. This finding indicates that night shift workers lack regular rest leading to an imbalanced life, such as poor quality in sleeping. All these factors cause tremendous impact to night shift workers, both psychologically and physically. Therefore, establishing a pertinent shift-rotation system is crucial in helping new hospital employees adapt to the job.

According to the job demand—control model hypotheses, individuals who report high psychological job demands while simultaneously experiencing low levels of job control (high strain) will suffer greater psychological strain than those who experience higher levels of job control [10]. In this study, the high strain group was more likely to report a lack of quality of psychological life than the low strain group. This result is consistent with previous studies [14,15]. This finding can be used by employers as incentive for restructuring jobs to give more workplace control to employees. If workers are able to participate in decision making and have some flexibility and control over their jobs, then employers would be rewarded with better psychological health of employees. In addition to the psychological aspect, the overall HRQOL and environment subscales had significant differences between the four groups (low strain, high strain, passive, and active). The combined effects of psychological job demands, job control, and work-related social support on HRQOL were also examined. It was found that there is no interaction between job strain groups and work support groups.

This study shows that different job nature brought different level of stress to employees. Thus, health administration organization should establish a well-and-complete management system to prevent illness caused by job stress on hospital employees. On the other hand, the well-and-complete management system provides advice from medical professionals to employees, greatly improves the hospital employees' quality of life, and speeds-up the transition into a new working environment.

The relationship between job strain and health-related quality of life has been documented [14,15]. As in other research, this study has shown how job strain is associated with four components of health-related quality of life: physical health, psychological, social relationships, and environment. Thus, high demand, low control, and low work-related social support all contributed to lower WHOQOL scores. In order to gain further understanding of the complex relationship between the job strain variables and levels of HRQOL, regression analysis was carried out. It was found that work-related social support is a positive predicting factor of HRQOL. This result is a lesson for employers: to alleviate stress levels in your staffs, not only individual therapies but also the support from superiors and coworkers. Having social support at work from coworkers or supervisors can help alleviate the effects of high demand and low control. Employees with supportive supervisors reported significantly higher job satisfaction, trust of managers and commitment to the organization, and less work overload, job stress, depression, poor health, work-life interference, fatigue, absenteeism and intention to leave the organization [25]. Constable & Russell reported that lack of supervisor support correlated with burnout. The authors also reported that support from work related sources was more beneficial than support from outside the working environment [26]. Thus, hospital managers should be good listeners, give positive feedback, and take an active role in coaching and mentoring employees. The results

did not account for as much variance in HRQOL as expected. Seniority, job control, work-related social support, physician dummy variable, and nurse dummy variable did explain 48.2% of the variance in HRQOL, but 51.8% was not explained by these predicting factors. There were a few factors affecting health and quality of life, which were not included in this research and should be taken into consideration in further studies.

Several limitations should be considered in the interpretation of these findings. The overall response rate was only 71.8%, which might cause some measurement error. Furthermore, the study had limited cross-sectional data and only obtained data from one medical center; also both the HRQOL and job strain variables were based on self-report. Nevertheless, the HRQOL is associated with a range of objectively and subjectively assessed health measures and thus should be relatively free of bias. Further research can implement longitudinal, evaluated, stress interventions based upon evidence-led approaches to establishment of job strain as a risk factor for health-related quality of life.

In summary, the findings in this study can help psychologists, physicians, managerial executives and cabinet policy-makers to pinpoint the problem of job stress. They should build effective stress management strategies, improving employees' health and well-being. Current solutions to reduce job stress target individuals rather than their social environment and tend to deal with symptoms instead of causes. Job stress has multiple interwoven causes; therefore it needs multiple measures to solve it. Interventions with the individual worker alone will not solve the problems of occupational stress, thus organizational change is required as well. That is, hospital managers should develop and implement organizational and individual change strategies to ameliorate employees' job strain. Such as making a solid commitment in stress reduction, offering an occupational stress workshop, increasing the skill levels of employees, increasing levels of social support at work, improving physical working conditions, and maintaining job demands at healthy levels.

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