

Gender differences in occupational stress and health among legal professionals in Taiwan

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Objectives: This study sought to determine gender differences in occupational stress and health and to compare the strength of association between two occupational stress models, demand-control-support (DCS) and effort-reward imbalance (ERI), on poor health among male and female legal professionals. **Methods:** This cross-sectional study included 193 male and 170 female legal professionals from 6 district courts, 1 appeals court, 3 District Procurators Offices and 26 law firms. The Chinese versions of Karasek job content questionnaire (C-JCQ) and Siegrist effort-reward imbalance questionnaire (C-ERI) were used to evaluate occupational stress, and the International Quality of Life Assessment Short Form-36 (IQOLA SF-36) questionnaire to evaluate health. Multivariate logistic regression analysis was used to calculate the odds ratio of poor health among female legal professionals versus male legal professionals, and the gender-specific association between DCS and ERI models and poor health adjusted for age, marital status, job content, years of work experience, and working hours per day. **Results:** Male legal professionals scored significantly higher on job control (70.54 vs. 66.46) and job satisfaction (59.99 vs. 57.45) than did female legal professionals. Females scored significantly lower on physical function (90.23 vs. 93.80), bodily pain (72.73 vs. 77.68), social function (66.25 vs. 72.85) and mental health (58.02 vs. 62.41) than did males. There was a significant gender difference in the association between occupational stress and poor health. We found that men's poor health was more significantly related to job strain while effort-reward imbalance was associated equally with poor health in both males and females. **Conclusions:** Gender differences exist in occupational stress, health and the strength of association between occupational stress models and poor health among legal professionals in Taiwan. (*Taiwan J Public Health*. 2011;30(5):494-504)

Key Words: ERI, gender, JCQ, legal professional, occupational stress

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INTRODUCTIONS

Gender differences in work-related health issues are being increasingly recognized as an important occupational health issue in recent decades, due to the increase in the female work force. A World Health Organization report indicated that working and employment conditions differ by sex, and women usually



occupy lower-ranking jobs and tend to take more responsibility for a family domestic needs. Also, women experience more pressure from competition at work, higher job insecurity, limited possibilities for training and promotion, and inadequate social benefits[1]. In addition, previous studies have also shown that women have less job control and learning opportunities than men[2,3].

Most studies used demand-control-support (DCS)[4] and effort-reward imbalance (ERI)[5,6] models to measure occupational stress. The DCS model focuses on job strain caused by the joint effects of low job control and high psychological demand, with workplace social support playing a buffering role in the interactions between these factors. On the other hand, the ERI model emphasizes the non-reciprocal social exchange between costs and gains at work, which causes emotional distress and can lead to adverse health outcomes. The ERI model also takes into consideration the distinct personal pattern of coping with psychological demand, or over-commitment, which can exacerbate stressful conditions at work. Although ERI model was designed to evaluate the occupational stress of person-based service professions while the DCS model was developed during the 1970s to evaluate the occupational stress of blue-collar industrial workers, both models provided theoretical approach for understanding the occupational stress. Previous studies found that occupational stress is associated with recurrent coronary heart disease events, elevated blood pressure, musculoskeletal disorders, lifestyle cancer risk factors, and psychosomatic symptoms[7-11]. Several studies also showed that men usually experience higher job demand, greater effort and over-commitment, and lower social support at work than women. In contrast, women receive lower job control and less reward[12-14].

Previous studies on gender differences in occupational stress and health have proposed two hypotheses to explain women's relatively poor health: differential exposure and differential vulnerability[15,16]. The differential exposure hypothesis suggests that women report ill health more frequently than men because of higher demands and obligations in their social roles[17,18]. Alternatively, the differential vulnerability hypothesis indicates that women are more vulnerable to the effects of stress on health than men when given similar levels of exposure to occupational stress[19,20]. Studies on medical professionals found that female physicians reported higher overall stress, lower job control and lower job satisfaction than men in both Eastern and Western societies[13,21]. Previous studies also showed that legal professionals have the same occupational stress, such as high decision latitude and high psychological demands, as the physicians in Taiwan and the US[22-24]. However, it is not clear whether such gender difference in occupational stress and health functioning can exist among legal professionals in the Eastern Society. In order to shed light on this issue, this study was conducted to determine gender differences in occupational stress and self-reported health functioning and compare the explanatory power of two stress models, the DCS and ERI models, on poor health functioning among legal professionals.

MATERIALS AND METHODS

Subjects

We distributed a self-administered survey to legal professionals including judges, prosecutors and lawyers in Taiwan from October 2007 to January 2008 to assess their occupational stress and health status. Four hundred and twenty eight participants were randomly selected from 6 district courts, 1

appeal court, 3 District Prosecutors office and 26 law firms. Out of 428 legal professional invited to participate, 363 completed and returned their questionnaire surveys, the response rate was 85%.

Work-related individual characteristics including job content (judge, prosecutor or lawyer), age, gender, years of work experience, educational level, marital status, working hours per day and working days per week were all obtained from the survey. Written informed consent was obtained from the subjects before their voluntary participation. The Institutional Review Board of College of Public Health, National Taiwan University, approved the research protocol.

Occupational Stress

Two standardized questionnaires were used to evaluate occupational stress: the Chinese version of Job Content Questionnaire (C-JCQ)[25] based on Karasek's demand-control-support (DCS) model and the Chinese version of Effort-Reward Imbalance questionnaire (C-ERI)[26] based on Siegrist's ERI model. These two questionnaires have been both translated and validated by Taiwanese researchers and have been used in various studies in Taiwan with strong validity and reliability[25,26].

There are 3 scales termed job control, psychological demand and workplace social support in the 22-item C-JCQ questionnaire. The job control scale is the sum of two subscales: skill discretion measured by 6 items and decision authority measured by 3 items. The psychological demand scale is measured by 5 items. The workplace social support scale is the sum of two subscales: coworker support measured by 4 items and supervisor support measured by 4 items. The supplementary scale job satisfaction was also measured on a 5-item

scale. Cronbach's α coefficients of job control, psychological demands, workplace social support and job satisfaction are 0.70, 0.81, 0.84 and 0.57, respectively.

There are 3 scales in the 23-item C-ERI questionnaire: 'effort' estimated by 6 items, 'reward' estimated by 11 items and over-commitment estimated by 6 items.

The ratio between psychological demand and job control is used to define job strain and the ratio between effort and reward was used to indicate the degree of imbalance between high cost and low gain. The job strain and effort reward imbalance were also used as evaluations of occupational stress in this study. Cronbach's α coefficients of effort, reward and over-commitment are 0.82, 0.76 and 0.78, respectively.

Health Functioning

Health functioning was assessed by the Chinese version of the "International Quality of Life Assessment Short Form-36" (IQOLA SF-36)[27]. We examined the 8 dimensions of the IQOLA SF-36: physical functioning, measuring the ability to perform all types of daily activities that require physical effort (10 items); role-physical, measuring role limitations due to physical health problems (4 items); freedom from bodily pain (2 items); general health, evaluating personal health (5 items); vitality, measuring the perceived level of energy and fatigue (4 items); social functioning, measuring the interference with normal social activities due to physical or emotional problems (2 items); role-emotional, measuring role limitations due to emotional problems (3 items); and mental health, which assessed emotional state (5 items). Cronbach's α coefficients of physical functioning, role-physical, freedom from bodily pain, general health, vitality, social functioning, role-emotional and mental health

are 0.80, 0.83, 0.79, 0.59, 0.38, 0.58, 0.77 and 0.53, respectively.

Statistical Analysis

We performed three statistical analyses. First, a t-test was used to compare the means of occupational stress and health functioning between male and female legal professionals. Second, chi-square test was used to compare job content, education level and marital status. And third, the multivariable logistic regression was first used to calculate the odds ratios of poor health functioning of female legal professionals versus male legal professionals adjusted by age, marital status, job content, years of work experience and working hours per day. And then the gender-specific associations between occupational stress and poor health functioning were also evaluated by multivariable logistic regression adjusted by age, marital status, job content, years of work experience and working hours per day. In this approach, indicators of occupational stress and health functioning were divided into two groups, high and low levels, according to their group means. The multivariable logistic regression models used men as the reference group, and they were adjusted by age, marital status, job content, years of work experience, working hours per day under occupational stress. In addition, the job strain and effort-reward imbalance ratio were dichotomized with a cut-point at the mean score. The scores of health functioning indicators were all divided into tertiles in order to estimate the gradient of the impact of occupational stress on poor health functioning. The gender-specific association between JCQ, ERI model and health functioning status was also assessed by multivariable logistic regression adjusted by age, marital status, job content, years of work experience, working hours per day and each model on the other for examining the

independent effect of each occupational stress model. The results were represented as odds ratios (ORs) with 95% confidence intervals (CIs). The significance level was set at $p < 0.05$.

All analyses were conducted using SPSS 11.0 version.

RESULTS

Individual characteristics, occupational stress and health functioning by gender

Table 1 summarizes the statistics of the study subjects individual characteristics and compares occupational stress and health functioning between the 193 (53.2%) male and 170 (46.8%) female legal professionals. Job content, education level and, number of working days per week did not differ significantly between genders.

Of all the individual characteristics listed, four were significantly different between male and female subjects. Male subjects were about 3.7 years older than female subjects, and 63% of the male legal professionals were married, while only 38.2% of the female legal professionals were married. The mean years of work experience of male legal professionals was approximately 1.2 years longer than that of female legal professionals. Men's working hours were approximately 0.4 hours longer than women's.

Three categories in the JCQ results showed significant gender differences. Female legal professionals reported significantly lower scores on job control than male legal professionals. The average score of job strain (psychological demand/ job control) among women was higher than men. Male legal professionals reported significantly higher scores of job satisfaction than female legal professionals. In contrast, the differences in ERI values between genders were not significant.

As for health functioning indicators, the SF-36 results showed that male legal

Table 1. Individual characteristics, occupational stress and health functioning by gender

variable	Male (N=193)	Female (N=170)
Job content(N/%) [#]		
Judge	50 (25.9)	37 (21.8)
Procurator	53 (27.5)	43 (25.3)
Lawyer	90 (46.6)	90 (52.9)
Education level (N/%) [#]		
College	80 (41.5)	73 (42.9)
Graduate degree	111 (57.5)	95 (55.9)
Marital status (N/%) [#]		
Married	122 (63.2)	65 (38.2) ^{***}
Not married	70 (36.2)	103 (60.6)
Age (Mean/SD)	36.33 (6.73)	32.64 (5.70) ^{***}
Years of work experience (Mean/SD)	6.69 (5.72)	5.50 (4.98) [*]
Working hours per day (Mean/SD)	10.25 (1.66)	9.86 (1.73) [*]
Working days per week (Mean/SD)	5.54 (0.58)	5.44 (0.57)
JCQ (Mean/SD)		
Job control	70.54 (8.87)	66.46 (8.32) ^{***}
Psychological demand	32.20 (3.26)	32.00 (3.15)
Workplace social support	23.92 (2.69)	23.73 (2.88)
Job satisfaction	59.99 (9.00)	57.45 (8.35) ^{**}
Job Strain	0.46 (0.08)	0.49 (0.08) ^{**}
ERI (Mean/SD)		
Effort	18.66 (4.50)	18.78 (4.75)
Reward	47.85 (5.58)	47.16 (5.82)
Over commitment	16.79 (2.06)	17.17 (2.15)
Effort reward imbalance	0.73 (0.20)	0.74 (0.22)
SF36 (Mean/SD)		
Physical functioning (PF)	93.80 (9.40)	90.23 (12.21) ^{**}
Role physical (RP)	74.09 (37.27)	69.43 (34.85)
Bodily pain (BP)	77.68 (18.12)	72.73 (19.23) [*]
General health (GH)	56.12 (19.01)	53.97 (18.51)
Vitality (VT)	51.41 (17.82)	48.21 (17.41)
Social functioning (SF)	72.85 (18.21)	66.25 (18.79) ^{**}
Role emotional (RE)	60.97 (41.62)	55.03 (39.37)
Mental health (MH)	62.41 (15.21)	58.02 (15.29) ^{**}

^{*} p value<0.05; ^{**} p value<0.01; ^{***} p value<0.001 for comparison between male and female

[#] p value was evaluated by chi-square test

professionals reported significantly higher scores of physical functioning, but lower levels of bodily pain, social functioning and mental health than female legal professionals.

The association of poor health functioning status between men and women legal professionals

The odds ratios of poor health functioning status between female and male legal

professionals by occupational stress indicators of job control, job satisfaction, job strain and effort-reward imbalance, using men as reference, are shown in Figure 1. After adjusting for age, marital status, job content, years of work experience and working hours per day, a significant gender effect was found in physical functioning, role-physical, bodily pain, social functioning and mental health. The gender difference was most obvious in physical functioning. Compared to men, women had a higher risk of poor physical functioning under job control (OR = 3.73), job satisfaction (OR = 3.42), job strain (OR = 3.77) and effort-reward imbalance (OR = 4.00), as well as a higher risk of poor role-physical under job control (OR = 1.77), job satisfaction (OR = 1.81), job strain (OR = 1.69) and effort-reward imbalance (OR = 1.99). Furthermore, women had higher risk of bodily pain under job satisfaction (OR = 1.70), poor

general health under effort-reward imbalance (OR = 1.68), and higher risk of poor social functioning under job control (OR = 1.86), job satisfaction (OR = 1.83), job strain (OR = 1.86) and effort-reward imbalance (OR = 2.10), and a higher risk of poor mental health under job satisfaction (OR = 1.66) and effort-reward imbalance (OR = 1.80).

ORs of poor health functioning and combined occupational stress models

Table 2 shows the gender-specific associations between different occupational stress models with poor health functioning. In general, both job strain and effort-reward imbalance were found to be associated with poor health functioning after adjustment for confounders including age, marital status, job content, years of work experience, working hours per day and each model on the other.

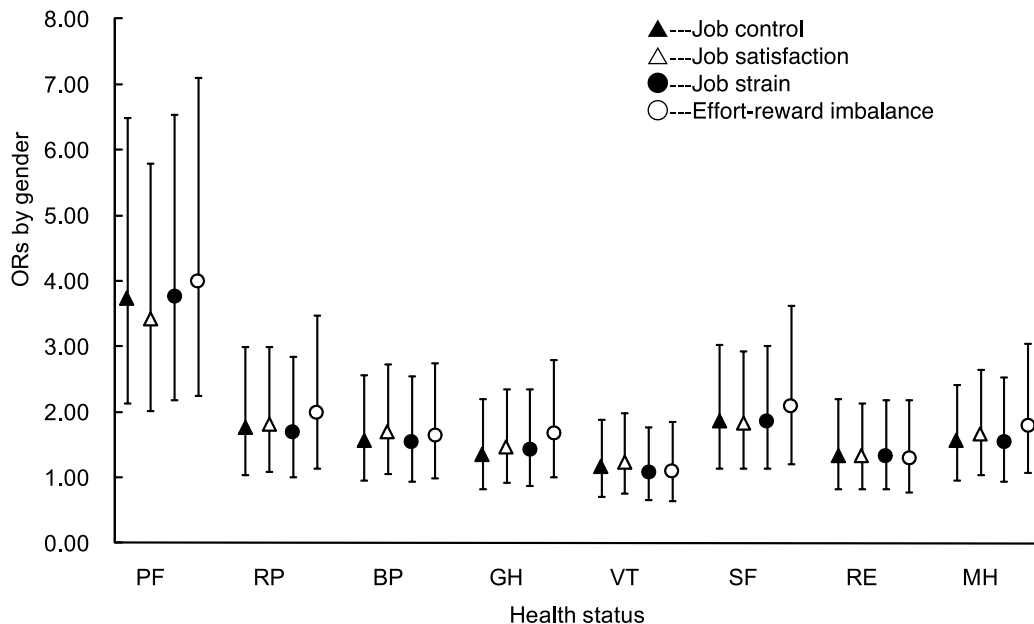


Figure 1 The ORs of Poor Health Functioning Status between Female and Male Legal Professionals by four Occupational Stress Indicators: Job Control, Job Satisfaction, Job Strain and Effort-Reward Imbalance

Note: PF = physical health; RP = role-physical; BP = bodily pain; GH = general health; VT = validity; SF = social functioning; RE = role-emotional; and MH = mental health

However, while job strain was associated with all health dimensions in men except physical functioning, it affected only vitality and mental health in women. Effort-reward imbalance affected all health dimensions except physical functioning in men, and all health dimensions except physical functioning, bodily pain and general health among women. Thus, the health effect of job strain was more obvious in men while stronger and more consistent effects were found with ERI for all health dimensions in men and women.

DISCUSSIONS

From the results of this study, we found that female legal professionals perceived significantly lower job control and job

satisfaction and higher job strain compared to male legal professionals. Also, female legal professionals reported poorer health functioning than male legal professionals. Even after controlling age, marital status, job content, years of work experience, working hours per day, the self-reported health functioning of female legal professionals remained significantly lower than male legal professionals under different occupational indicators. In addition, although both JCQ and ERI model were associated with poor health functioning in men and women, but the ERI showed stronger association. Job strain showed stronger association with men's poor health functioning while ERI showed more equally strength of association with men and women poor health functioning.

Table 2. ORs of poor health functionings and combined occupational stress models among legal professionals

	Job strain [#]		Effort-reward imbalance ^{##}	
	Men	Women	Men	Women
	High v.s. Low	High v.s. Low	High v.s. Low	High v.s. Low
Physical functioning				
Intermediate v.s. High	2.12 (0.96-4.69)	1.41 (0.59- 3.37)	0.97 (0.44- 2.14)	1.32 (0.57- 3.02)
Low v.s. High	2.28 (1.00-5.24)	1.07 (0.42- 2.69)	1.79 (0.78- 4.12)	2.20 (0.89- 5.43)
Role physical				
Intermediate v.s. High	1.99 (0.71-5.61)	1.35 (0.47- 3.86)	2.09 (0.73- 5.93)	2.54 (0.91- 7.11)
Low v.s. High	2.61 (1.21-5.64)*	1.12 (0.48- 2.61)	3.60 (1.63- 7.98)**	3.22 (1.40- 7.41)**
Bodily pain				
Intermediate v.s. High	2.52 (1.15-5.53)*	1.56 (0.57- 4.24)	1.05 (0.48- 2.33)	0.79 (0.30- 2.10)
Low v.s. High	2.84 (1.25-6.44)*	1.84 (0.78- 4.33)	3.33 (1.44- 7.73)**	2.27 (1.00- 5.22)
General health				
Intermediate v.s. High	2.50 (1.15-5.44)*	2.10 (0.87- 5.09)	1.74 (0.80- 3.79)	1.95 (0.83- 4.58)
Low v.s. High	4.10 (1.80-9.33)**	1.97 (0.78- 4.96)	3.33 (1.46- 7.59)**	2.00 (0.81- 4.93)
Vitality				
Intermediate v.s. High	2.57 (1.16-5.69)*	5.42 (1.93-15.23)*	3.04 (1.35- 6.87)**	1.09 (0.42- 2.85)
Low v.s. High	2.54 (1.12-5.75)*	1.91 (0.75- 4.86)	5.98 (2.52-14.18)***	4.35 (1.76-10.72)**
Social Functioning				
Intermediate v.s. High	1.50 (0.67-3.37)	1.39 (0.53- 3.66)	2.25 (0.97- 5.20)	2.69 (1.02- 7.12)*
Low v.s. High	2.59 (1.20-5.60)*	1.64 (0.55- 4.92)	6.26 (2.83-13.88)***	5.34 (1.77-16.12)**
Role emotional				
Intermediate v.s. High	1.10 (0.44-2.71)	0.62 (0.25- 1.50)	1.74 (0.69- 4.37)	2.59 (1.09- 6.18)*
Low v.s. High	3.57 (1.68-7.57)**	1.02 (0.36- 2.87)	3.15 (1.48- 6.71)**	4.14 (1.46-11.70)**
Mental health				
Intermediate v.s. High	1.13 (0.53-2.41)	2.01 (0.84- 4.80)	4.52 (2.03-10.03)***	1.98 (0.85- 4.62)
Low v.s. High	3.40 (1.41-8.17)**	2.69 (1.02- 7.07)*	7.49 (3.03-18.49)***	4.58 (1.75-11.99)**

*p value<0.05; **p value<0.01; ***p value<0.001

[#]OR adjusted with age, marital status, job content, work experience and working hours per day and Effort reward ratio

^{##}OR adjusted with age, marital status, job content, work experience and working hours per day and Job strain



Unlike previous studies, we found that women only reported significantly lower scores in job control and job satisfaction. Gender difference was not found in psychological demand, workplace social support, reward and over-commitment[9,28,29]. In Taiwan, over the past decade, half of those who passed the highly competitive national exams were women. Unlike physicians, the working environment of legal professionals is more gender-balanced, so the occupational stress exposure should be equal for both sexes if measured by the effort reward imbalance model[30,31]. With the facts that effort, reward, over commitment and effort reward imbalance of male and female were similar, the effect of occupational stress evaluated by the effort reward imbalance model on poor health functioning might be similar in both genders. But gender differences still exist in occupational stress measured by the demand-control model. The reason for this difference in received occupational stress with similar working conditions remains unclear and requires further research.

Moreover, the gender difference in poor health functioning remained significant after adjusting for confounders including different indicators of occupational stress, especially in physical functioning, role-physical and social functioning. In other words, women have a higher risk of having poor health functioning than men under similar occupational stress. We believe that the results reflect the combined exposure to work and family-related or marriage-related stress related to the demands of female legal professionals' social roles. Aside from the common social pressure that women should take on more household duties, female legal professionals in Taiwan also face the difficulty of getting married, as men are traditionally deemed superior to women in Chinese culture[32]. Based on the fact that more than 60% of the female legal professionals

in our study were single, a possible explanation is that single women legal professionals in Taiwan face the difficulty of getting married. As women with powerful and high socioeconomic status jobs, female legal professionals have fewer chances of having a marital relationship and experience greater stress in their private lives. The significant difference between female and male legal professionals in marital status in our study supports this argument. However, the stress caused by work-family conflicts was not well covered in our study. In addition, our study found that the difference in health functioning between men and women legal professionals was most apparent in physical functioning. We believe that this might result from a cultural difference in understanding the questionnaire. Items measuring physical functioning were more straightforward than items measuring other aspects of health functioning. With the fact that this questionnaire was introduced from western country, other items which evaluating more psychosocial dimension of health might be interpreted differently in Asian society. As a result, physical functioning was the most sensitive indicator for measuring the gender effect on health functioning.

Furthermore, the difference in explanatory power of the JCQ and ERI models to poor health in men and women was obvious from the study result. Men with high job strain had significantly higher chances of having all aspects of poor health functioning except physical functioning than men with low job strain, while women with high job strain showed only significant differences on vitality and mental health. On the contrary, both men and women in high effort-reward imbalance groups had significantly higher risks of poor role-physical, poor vitality, poor social functioning, and poor role-emotional and poor mental health. These findings reflect different explanatory power of the two occupational

stress models to poor health in men and women. One possible explanation for this phenomenon is patriarchy in Chinese society. Under the traditional pressure that he should be more aggressive at work in order to fulfill his responsibility to provide for his families, a man might be more sensitive to the job control compared to women[32]. This contributes to the obvious gender difference in associations between poor health functioning and demand-control model in our study.

Additionally, our data shows that gender difference also lies in job selection. In the lawyer group, the number of male litigators who focused on traditional legal cases in court was significantly higher than that of female litigators. In other words, men prefer to be litigation lawyers while women prefer to be non-litigation lawyers, focusing on cross-border trade related cases. We believe that this reflects the social reinforcement of gender role expectations. This difference in job selection is historically expressed by hypermasculinity in trials, as litigation lawyers are expected to be tough, aggressive, and intimidating. However, aggressive female litigation lawyers could be dismissed as shrill and unladylike, but if not aggressive, they could be considered not tough enough to be good litigation lawyers[33]. This stereotype also makes it potentially more difficult for women litigation lawyers to bring clients into firms. Therefore, we think that female lawyers tend to choose non-litigation professions over litigation ones under this social context. However, future work is needed to support this explanation.

There are three limitations in this study that need to be addressed. First, our findings can only be considered associations rather than causal relationships because of the cross-sectional study design. Second, the occupational stress caused by work-family interface was not examined in this study. Third,

current findings might not be generalized to other working populations in Taiwan, because our findings are only valid to workers with high socioeconomic status.

In conclusion, our study found that female legal professionals perceived significantly lower job control, lower job satisfaction, and significantly poorer health functioning than male legal professionals. The job strain showed stronger predictability of men's poor health functioning while the effort reward imbalance was equally explanatory for both men's and women's poor health functioning. Our finding suggests that gender-sensitive health promotion programs at work should be considered in future policy and psychosocial working condition management. Also, further studies are needed to evaluate the gender difference in working conditions and work-family conflicts.

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台灣司法從業人員工作壓力與 健康功能之性別差異

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目標：了解工作壓力及健康功能之性別差異，及「負荷-控制-支持」與「付出-回饋失衡」兩種不同工作壓力模型，對於男性及女性司法從業人員造成之不良健康功能影響。**方法：**本橫斷性研究之樣本係來自6個地方法院，1個高等法院，3個地方檢察署及26個法律事務所之193位男性及170位女性司法從業人員。以中文版之「負荷控制支持量表」及「付出回饋失衡量表」測量工作壓力，以簡式「生活品質量表」測量健康功能，並以復迴歸統計方式在控制年齡、婚姻狀況、工作內容、年資、每日工作時數後，分析女性對於男性在不良健康功能之勝算比，及個別性別之工作壓力模型與不良健康功能間之關連性。**結果：**男性司法從業人員回報顯著較女性司法從業人員為高之工作控制(70.54 vs. 66.46)與工作滿意度(59.99 vs. 57.45)。女性回報顯著低於男性之身體功能(90.23 vs. 93.80)、身體疼痛(72.73 vs. 77.68)、社會功能(66.25 vs. 72.85)及心理健康(58.02 vs. 62.41)。工作壓力與不良健康關係間之關連性有顯著之性別差異。我們發現男性的不良健康功能與工作負荷較顯著相關，而付出回饋失衡與男女性之不良健康功能影響則較為平等。**結論：**性別差異存在於司法從業人員之工作壓力、健康功能及不同工作壓力模型與不良健康狀態之關聯性強度上。(台灣衛誌 2011；30(5)：494-504)

關鍵詞：付出回饋失衡、性別、負荷控制支持、司法從業人員、工作壓力

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