ORIGINAL ARTICLE

Burnout among public doctors in Hong Kong: cross-sectional survey

Christina FY Siu 蕭鳳兒
SK Yuen 袁仕傑
Andy Cheung 張潔影

Objective The stressful life of doctors makes them prone to burnout. We evaluated the prevalence of burnout among Hong Kong public hospital doctors and correlated burnout with job characteristics, working hours, stressors, and stress-relieving strategies.

Design Cross-sectional survey.

Setting Hong Kong.

Participants One thousand doctors were randomly sampled from the Hong Kong Public Doctors' Association registry. Self-administered, anonymous questionnaires with postage-paid envelopes were mailed twice in early 2009. The Maslach Burnout Inventory–Human Services Survey was used for burnout assessment. According to this scale, burnout is defined as emotional exhaustion, depersonalisation, and a reduced sense of personal accomplishment. Correlation analysis, as well as univariate and multivariate analyses, were performed to assess factors associated with high degrees of burnout.

Results A total of 226 questionnaires were analysed, of which 31.4% of the respondents satisfied the criteria for high burnout. They were younger and needed to work shifts, and their median year of practice was 8.5. High-burnout doctors worked similar hours per week to non–high-burnout doctors (mean ± standard deviation, 56.2 ± 12.7 vs 54.7 ± 10.9; P=0.413) and reported suicidal thoughts more often (9.9% vs 2.6%; P=0.033). Moreover, 52.2% of high-burnout doctors were dissatisfied or very dissatisfied with their jobs. 'Excessive stress due to global workload' and 'feeling that their own work was not valued by others' were the most significant stressors associated with high emotional exhaustion and depersonalisation, while 'feeling that their own work was not valued by others' and 'poor job security' correlated with low personal accomplishment.

Conclusions A high proportion of public doctors who responded to our survey endured high burnout. Trainees with some experience were at heightened risk. Stressors identified in this study should be addressed, so as to improve job satisfaction.

Key words
Burnout, professional; Depersonalization; Job satisfaction; Stress, psychological

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Private practice (Hong Kong)
CFY Siu, FHKCP, FHKAM (Medicine)
Department of Medicine and Geriatrics, Caritas Medical Centre, Shamshuipo, Kowloon, Hong Kong
SK Yuen, FHKCP, FHKAM (Medicine)
Department of Family Medicine, The Chinese University of Hong Kong, Shatin, Hong Kong
A Cheung, FHKCFP, FHKAM (Family Medicine)

Correspondence to: Dr CFY Siu and Dr A Cheung
Email: siufungyee@hotmail.com

New knowledge added by this study

- 31.4 % of the responding Hong Kong public doctors suffered from high burnout.
- Young but moderately experienced doctors who need to work shifts appeared most vulnerable.

Implications for clinical practice or policy

- Corporate initiatives directed towards reducing stress-related global workload, recognition of junior doctors' contribution, and provision of good job security are possible strategies to protect public doctors from burnout.
- Stressors identified in this study need targeting to protect our doctors from burnout.

Introduction

Burnout was defined as exhaustion resulting from excessive demands on energy and resources.[1] Maslach and Jackson conceptualised its features as a combination of emotional exhaustion (EE), depersonalisation (DP), and a reduced sense of personal accomplishment (PA).[2] The EE subscale assesses feelings of being emotionally overextended and exhausted by one's work.[2] The DP subscale measures an unfeeling and impersonal response towards

recipients of one's service, care, treatment, or instruction.[2] The PA subscale assesses feelings of competence and successful achievement in one's work with people.[2]

Doctors live stressful lives that may easily end up in burnout.[3,4] Burnout in doctors is related to their response to the need to provide high standards of medical care, their personality type, as well as their degree of control over their work environment.[5,6] It may lead to reduced job commitment and performance, problematic patient care, stress-related health problems, low career satisfaction, and depression.[7-10] Job absenteeism, reduced productivity, and tendency for job change were also associated with burnout.[7-14] Substance abuse was another major consequence.[15]

Many public hospital doctors in Hong Kong work long hours. The optimal number of working hours is constantly under debate. Long working hours may be one of the stressors related to burnout[16] but local data on burnout are scarce. Our study assessed the magnitude of high burnout among public doctors and tried to identify risk factors associated with high burnout.

香港醫生過度勞累的橫斷面研究

目的 香港醫生所面對的壓力會導致他們容易過度勞累。本研究評估香港公立醫院醫生過度勞累的情況，以及與此有關的工作性質、工時、壓力來源及減壓策略。

設計 橫斷面研究。

安排 香港。

參與者 從香港公共醫療醫生協會隨機抽樣1000名醫生，於2009年初向他們發放不記名問卷及附有已付郵資的信封共兩次。用Maslach過度勞累量表—服務行業版來評估醫生過度勞累的情況。根據這量表，過度勞累是指情感耗竭、人格解體及個人成就感下降。使用相關性分析和單元及多元回歸分析來評估與極度勞累有關的因素。

結果 共分析了226份問卷，其中31.4%填寫問卷者符合極度勞累的標準，他們多為年青及須輪班工作的醫生，行醫年資的中位數為8.5年。極度勞累的醫生與非極度勞累的醫生的每週工時相似（平均±標準差：56.2±12.7比54.7±10.9；P=0.413），但極度勞累的醫生較常有自殺念頭（9.9%比2.6%；P=0.033）。有52.2%極度勞累的醫生對於他們的工作不滿或極之不滿。「工作量增加以致過度壓力」及「感到自己的工作不被人所重視」是情感耗竭和人格解體的兩個顯著壓力來源。而「感到自己的工作不被人所重視」及「就業保障差」則與個人成就感下降相關。

結論 相當多醫生有極度勞累的情況。正接受培訓的醫生尤其處於高風險。須解決以上的壓力來源，從而改善醫生的工作滿足感。

Methods

This was a voluntary cross-sectional survey. Based on overseas prevalence data of 10 to 28%,[4,11] a sample size of 138 to 310 was deemed required to estimate the prevalence of burnout among doctors within 5% of the true value (with a 95% confidence). In consideration of both the potentially low response rate and financial constraints, self-administered, anonymous questionnaires with postage-paid return envelopes were mailed to 1000 registered doctors working in the public sector (Hospital Authority [HA], government, or universities). Using random numbers, this sample was selected from 3878 members known to the Hong Kong Public Doctors' Association. Questionnaires were mailed twice at a 2- to 3-week intervals in early 2009 and the doctors were instructed to ignore the second questionnaire if they had already returned the first. Burnout was assessed by the 22 seven-point Likert scale questions of the Maslach Burnout Inventory–Human Services Survey.[2] This included nine questions on EE, five on DP, and eight on PA. Scores from each of these subscales may be graded as high, moderate, or low according to validated cut-offs. The EE subscale score ranged from 0 to 54, high and low scores being ≥27 and ≤18, respectively. The DP subscale score ranged from 0 to 30, high and low scores being ≥10 and ≤5, respectively. The PA subscale score ranged from 0 to 48; high and low scores being ≥40 and ≤33, respectively.[2]

High-burnout individuals were characterised by high scores in both EE and DP subscales, as well as low scores in the PA subscale. Overall job satisfaction was assessed by a simple self-rated ordinal scale. Data on demographics, professional status, job characteristics, stressors, and stress-relieving factors were also collected (Appendix). The study was approved by the Ethics Committee of the Chinese University of Hong Kong.

Continuous data were presented as means ± standard deviations or medians with interquartile ranges. Percentages were calculated for dichotomous variables. Group comparisons were performed by Pearson's Chi squared test, Student's *t* test, or the Mann-Whitney *U* test, as appropriate. The Spearman-correlation test was used to assess stressors or stress-relieving factors that correlated with each burnout subscale. The effects of various personal characteristics (age, gender, marital status, number of children, exercise) and job characteristics (working experience, specialist status, weekly work hours, need to work shifts, number of hospital-stay calls) on high burnout were first examined using univariate logistic regression. Factors with P values of <0.1 were entered into a multivariate logistic regression model to examine their independent effects after adjusting for the others. All P values were

TABLE 1. Percentage of respondents according to specialty

Specialty	Our respondents	HA* doctor manpower in 2008[17]
Internal medicine	19.0	22.2
Family medicine	11.1	10.0
Anaesthesiology	10.2	6.9
Surgery	9.7	9.7
Psychiatry	7.5	5.8
Paediatrics	6.6	6.3
Emergency medicine	6.2	8.6
Orthopaedics and traumatology	5.8	5.9
Obstetrics and gynaecology	4.9	4.3
Pathology	4.4	4.0
Radiology	4.4	4.7
Ophthalmology	1.8	2.9
Intensive care unit	1.8	-
Microbiology	1.3	-
Otorhinolaryngology	1.3	1.6
Administrative medicine	1.3	-
Clinical oncology	0.9	2.5
Community medicine	0.4	-
Public health medicine	0.4	-
General out-patient clinic	0.4	-

* HA denotes Hospital Authority

two-sided, and <0.05 were reported as statistically significant. All statistical calculations entailed using SPSS for Windows version 17.0 (SPSS Inc., Chicago, IL, US).

Results

The response rate was 23%; after excluding one with incomplete data and by doctors who worked part-time, 226 valid questionnaires were analysed. In all, 98.7% of these respondents worked in HA specialties, the proportions being similar to that prevail throughout the authority (Table 1).[17] Demographics, professional status, and job characteristics are shown in Tables 2 and 3. The majority of the respondents were male. Doctors worked long hours, averaging at 55.2 hours per week. Mean scores of respondents exceeded cut-offs for high EE, high DP, and low PA (Table 3). Alternatively, 51.1% and 53.3% of the respondents exceeded cut-offs for high EE and DP scores, respectively, and 55.5% of them met the criteria for low PA. Only 51.4% of them were satisfied or very satisfied with their jobs (Table 4).

In all, 71 respondents (31.4%; 95% confidence interval, 0.25-0.38) suffered from high burnout, based on high EE, high DP, and low PA scores. High-burnout respondents were younger doctors who had worked for a median of 8.5 years. Half of them

TABLE 2. Demographics of respondents

Demographics	All (n=226)	High-burnout group (n=71)	Non–high-burnout group (n=155)	P value
Male	66.8%	69.0%	65.8%	0.730
Age (years)*	37.0 (30.5-44.0)	33.0 (29.5-41.5)	38.5 (33.0-46.0)	<0.001
Years of practice*	12.0 (6.0-20.0)	8.5 (5.0-15.0)	14.0 (8.0-20.0)	<0.001
Marital status†				0.540
Single	34.1%	39.4%	31.6%	
Married	62.4%	57.7%	64.5%	
Divorced	2.7%	1.4%	3.2%	
Widowed	0%	0%	0%	
No. of children				0.113
0	52.3%	61.8%	48.0%	
1	18.2%	20.6%	17.1%	
≥2	29.6%	17.7%	34.9%	
Have religious belief	42.5%	42.3%	42.6%	0.851
Current smoker vs ex-smoker	1.3% vs 0.9%	1.4% vs 0%	1.3% vs 1.3%	0.743
Current drinker	27.9%	25.4%	29.0%	0.735
Use of psychotropics	4.5%	5.6%‡	3.9%§	0.800
Chronic illness				0.054
Psychiatric	0.9%	2.8%	0%	
Non-psychiatric	12.8%	8.5%	14.8%	

* Continuous data expressed as median (interquartile range)
† The %s do not total 100% due to missing data
‡ Including 2.8% being current users and 2.8% being past users
§ Including 1.3% being current users and 2.6% being past users

TABLE 3. Job characteristics and burnout scores*

Characteristic / burnout score	All (n=226)	High-burnout group (n=71)	Non–high-burnout group (n=155)	P value
Professional status				0.003
Basic trainee	15.5%	19.7%	13.5%	
Higher trainee	18.6%	31.0%	12.9%	
Specialist	63.3%	47.9%	70.3%	
Working hours per week	55.2 ± 11.5†	56.2 ± 12.7	54.7 ± 10.9	0.413
Need to work shifts	20.8%	33.8%	14.8%	0.005
On-call duty (days/month)				
Any	5 (3.0-7.0)	5 (2.4-6.1)	5 (4.0-8.0)	0.036
Hospital-stay	0 (0-4.0)	2 (0-5.0)	0 (0-3.0)	0.002
Home-stay	2 (0-7.0)	0 (0-3.3)	4 (0-7.9)	<0.001
Weekend or Sunday work (days/month)	2 (1.0-3.0)	2 (1-3.9)	2 (1.0-3.0)	0.661
Exercise (≥30 minutes) [no. of times/week]	1.6 ± 1.5‡	1.3 ± 1.3§	1.8 ± 1.6	0.034
MBI-HSS scores				
Emotional exhaustion	27.2 ± 13.2	40.0 ± 7.4	21.4 ± 11.1	<0.001
Depersonalisation	10.9 ± 7.6	17.5 ± 5.6	7.9 ± 6.3	<0.001
Personal accomplishment	31.6 ± 8.8	25.3 ± 6.0	34.4 ± 8.4	<0.001
Job satisfaction score‖	4 (2.0-4.0)	2 (2.0-3.0)	4 (3.0-4.0)	<0.001
Days of sick leave in the past 1 year	1 (1.0-2.0)	1 (0-3.0)	0.25 (0-2.0)	0.127
Suicidal thoughts	4.9%	9.9%	2.6%	0.033
Suicidal act	0%	0%	0%	-

* Continuous data expressed as mean ± standard deviation or median (interquartile range), whichever appropriate. MBI-HSS denotes Maslach Burnout Inventory–Human Services Survey

† Being longest for surgeons and orthopaedic surgeons (70.0 ± 11.7 and 63.8 ± 8.3, respectively)

‡ 56.2% of respondents exercised at most once per week, 23.3% did not do any exercise

§ 30.3% did not do any exercise

‖ According to an ordinal scale: 1 = very dissatisfied, 2 = dissatisfied, 3 = neutral, 4 = satisfied, 5 = very satisfied

were still undergoing professional training and more than a third worked shifts. Their weekly working hours and need to work on weekends and Sundays did not differ significantly from respondents without high burnout, but they were more likely to be on-call in the hospital rather than at home. Only 14.9% of respondents among this group were satisfied or very satisfied with their jobs, while 52.2% were dissatisfied or very dissatisfied with their job. Nearly one tenth of them had had suicidal thoughts though none had attempted suicide. Despite suffering from high burnout, the median sick leave taken was only 1 day in the past year. High-burnout respondents were not special with regard to their marital status, religious beliefs, chronic illnesses, and smoking or drinking behaviour.

Correlations between stressors, stress-relieving factors, and self-rated job satisfaction with each stratum of burnout are shown in Table 5. 'Feeling their own work not being valued by others' and 'excessive stress due to global workload' were among the most significant stressors that correlated with high EE and DP, while 'feeling their own work was not valued by others' and 'poor job security' were most correlated with low PA. Exercise and social support from colleagues were not perceived as stress-relieving factors against burnout. Support from their spouse appeared to correlate with PA but not with the other two subscales. Self-rated job satisfaction correlated strongly with each burnout stratum. While younger age, less working experience, need to work shifts, having fewer children and less exercise were associated with high burnout, only younger age and need to work shifts remained independent risk factors that were associated with high burnout in the multivariate analysis (Table 6).

TABLE 4. Detailed responses on self-rated job satisfaction

Self-rated job satisfaction	%		
	All (n=226)	High-burnout group (n=71)	Non–high-burnout group (n=155)
Very satisfied	6.5	1.5	8.7
Satisfied	44.9	13.4	59.1
Neutral	21.8	32.8	16.8
Dissatisfied	22.7	41.8	14.1
Very dissatisfied	4.2	10.4	1.3

TABLE 5. Correlations between stressors, stress-relieving factors or job satisfaction with each burnout stratum

Variable	Emotional exhaustion		Depersonalisation		Personal accomplishment	
	Spearman *r*	P value	Spearman *r*	P value	Spearman *r*	P value
Stressors						
Perceived inadequate sleep	0.287	<0.001	0.206	0.002	0.003	0.968
Perceived excessive calls	0.177	<0.001	0.184	0.006	-0.066	0.330
Irregular sleep pattern	0.293	<0.001	0.241	<0.001	-0.078	0.243
Feel own work not valued by others	0.452	<0.001	0.431	<0.001	-0.227	0.001
Difficulties to balance professional and family life	0.382	<0.001	0.290	<0.001	-0.149	0.025
Excessive stress due to global workload	0.478	<0.001	0.364	<0.001	-0.185	0.005
Health insurance–related work	0.270	<0.001	0.215	0.001	-0.154	0.022
Poor job security	0.341	<0.001	0.303	<0.001	-0.209	0.002
Difficult relations with colleagues and staff	0.216	0.001	0.113	0.088	-0.064	0.338
Administrative responsibilities	0.047	0.482	-0.038	0.572	0.038	0.572
Lack of independence	0.213	<0.001	0.154	0.021	-0.140	0.088
Possible stress-relieving factors						
Spouse support	0.022	0.748	0.012	0.858	0.248	<0.001
Social support from colleagues	0.094	0.162	0.047	0.481	0.108	0.106
Exercise	-0.051	0.447	-0.067	0.317	0.063	0.345
Self-rated overall assessment						
Job satisfaction	-0.583	<0.001	-0.578	<0.001	0.610	<0.001

TABLE 6. Regression analyses of factors that might associate with high burnout*

Variable	Univariate analysis		Multivariate analysis	
	OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Each year older	0.928 (0.892-0.966)	<0.001	0.935 (0.894-0.978)	0.003
Each additional work year	0.935 (0.898-0.972)	0.001	1.166 (0.926-1.469)	0.192
Need to work shift	2.949 (1.519-5.725)	0.001	3.140 (1.483-6.649)	0.003
Each additional hospital-stay call	1.111 (0.997-1.237)	0.057	1.075 (0.961-1.203)	0.205
Being a specialist	0.468 (0.215-1.019)	0.056	1.011 (0.358-2.858)	0.984
Having each additional child	0.658 (0.477-0.907)	0.011	0.804 (0.504-1.283)	0.361
Each additional session of ≥30-minute exercise	0.790 (0.633-0.986)	0.037	0.876 (0.679-1.130)	0.307
Being male	1.135 (0.621-2.077)	0.680	-	-
Being married	0.718 (0.398-1.294)	0.270	-	-
Each additional work hour	1.011 (0.986-1.037)	0.385	-	-

* OR denotes odds ratio, and CI confidence interval

Discussion

Our data confirmed that burnout was a major problem among public hospital doctors in Hong Kong. In any stratum, more than half of the respondents could be categorised into the burnout group. In addition, our doctors scored higher in EE or DP and lower in PA compared to normative data for medical workers in the Maslach Burnout Inventory Manual.[2] More importantly, 31.4% of our respondents fulfilled the criteria of high burnout, which was only deemed to be present if a doctor had high EE, high DP, and low PA. This point prevalence was much higher than that of otolaryngology–head and neck surgery residents in the United States[11] and New Zealand physicians,[4] which were only 10% and 28%, respectively. Although no doctor attempted a suicidal act and we had not assessed suicidal risk, nearly 10% of high-burnout respondents had had suicidal thoughts. Moreover, more than 10% had a chronic illness and 30% did not undertake regular exercise. Smoking was fortunately

uncommon and sick leave taken in the immediate past year was unexpectedly low, even among the high-burnout respondents. Unhealthy lifestyle is worrisome for any labour-intensive occupation, and our doctors should be reminded to reflect on this issue.

Obviously, data on burnout differ across continents given the interplay of economic, social, cultural, and spiritual factors. At best, we could only speculate about reasons for our high-burnout rates, but our data were clearly comparable to that reported by a study on local public hospital nurses performed a few years ago.[18] In that study, scores (mean ± standard deviation) of EE, DP, and PA were 27 ± 13, 10 ± 7, and 20 ± 8, respectively. Another small study[19] found a prevalence of burnout, as defined by high EE and DP scores, to be 65% among local anaesthetic trainees, but the authors did not report the prevalence of high burnout. Living in a westernised metropolis with a keenly competitive culture, Hong Kong inhabitants are used to co-existing with stress. The rising public expectation for high-quality services and the imbalance between public-private health services might be particularly relevant for local medical professionals.

Although high-burnout doctors tend to be younger, intriguingly the most junior doctors seem not be the most susceptible. By contrast, high-burnout doctors had worked for a median of 8.5 years, which was when they were either still undergoing or had just finished higher specialist training. A greater proportion of high-burnout doctors were non-specialists; 31% being higher-level trainees. Doctors at this stage of personal development were experiencing changes in their social roles. Many had just married and some might have had children. These personal psychosocial changes were often coupled with the need to sit for professional examinations and strike a balance between professional training, clinical duties, career advancement, and family life. Young, moderately experienced doctors feel they need to fulfil the higher expectation of their seniors and provide training or supervision to juniors. Some might need to participate in research, audits, or administrative work.

High-burnout doctors worked for a mean of 56 hours per week but more often needed to work shifts. This is consistent with previous findings that physicians with higher number of shifts had significantly higher EE and DP scores and lower satisfaction scores.[10] 'Feeling their own work was not valued by others' and 'excessive stress due to global workload' were the strongest stressors that correlated with burnout. Moderately experienced doctors might not receive adequate professional recognition and were most vulnerable to burnout if they felt their work was not being valued by others. Burnout among doctors was likely due to a complex interaction of factors, including physical exhaustion, excessive calls, shift duties, and unhealthy sleep patterns (Table 5). Indeed, the perception of low work value and poor job satisfaction has been associated with burnout.[20] A corporate initiative directed towards reducing stress-related global workload, recognition of junior doctors' contributions, and provision of good job security are possible strategies to protect our doctors from burnout. Perhaps the simplest way to assess and monitor workforce morale and risk of burnout is by a simple 5-point Likert job satisfaction score. We confirmed it to be suitable for correlating with every burnout subscale, as suggested by other studies on health care professionals.[21]

Notably, social support from colleagues and exercise were not perceived as stress-relieving factors. On the other hand, support from a spouse correlated positively with PA but not with other burnout subscales. The underlying reasons of these observations were not apparent but could be related to the inadequate power of our study, since a significant proportion of our respondents were unmarried and did no regular exercise. It is suggested that being single was associated with more depression and EE[22-24] but we were unable to demonstrate any such relationships in our univariate analysis. Not surprisingly, however, 'difficulty balancing professional and family life' correlated with all three subscales. Job-family conflict might be at play, but we were unable to make more inferences based on available data.

Our study was not designed to specifically address stress-coping strategies. Although their cost-effectiveness is unknown, stress management workshops could lead to short-term improvement in stress and burnout test scores.[25,26] Respiratory One Method, with its subject focus on the word "one" with each exhalation, was also shown to reduce EE scores.[27]

Our cross-sectional study was hypothesis-generating but could not ascertain causality. Of 6925 active doctors who responded to the 2009 Health Manpower Survey[28] (60% of fully registered doctors), 42% worked in the HA, 5% worked in the Government, and 3% in the academic sector. A random sample of 3878 doctors known to the Hong Kong Public Doctors' Association should provide data on the real situation with reasonable accuracy. A voluntary self-completed questionnaire survey is a convenient way of collecting data, but is prone to selection and report biases. A response rate of 23% was not satisfactory and unfortunately, we could not analyse the non-respondents since we did not have access rights to such data. Moreover, the results of this study should not be extrapolated to doctors working in the private sector. Subgroup analyses comparing doctors working in different specialties could only be undertaken with a larger-scale study.

Conclusions

A high proportion of public doctors who responded to our survey had high-burnout features. Young but moderately experienced doctors who need to work shifts appeared most vulnerable. Stressors identified in this study suggest a need to improve job satisfaction.

Appendix

Additional material related to this article can be found on the HKMJ website. Please go to <http://www.hkmj.org>, search for the appropriate article, and click on **Full Article in PDF** following the title.

Declaration

Hong Kong Public Doctors' Association assisted in the distribution of questionnaires but did not provide financial support or get involved in the study design, data analyses, and manuscript preparation. Results of a preliminary analysis were reported in 2009 by the principal author as her graduation thesis at the School of Public Health and Primary Care, The Chinese University of Hong Kong, Hong Kong.

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Appendix

[Sections A and B contains copyrighted materials that are intentionally removed in this version.]

Section C

Please use a tick (√) to indicate the most appropriate response

Did you have suicidal thoughts in recent 3 months?

☐ No (0) ☐ Yes (1)

Did you attempt suicide in recent 3 months?

☐ No (0) ☐ Yes (1)

Section D Personal particulars

Please note that the personal information will be kept strictly confidential.

1. Are you male or female?
   ☐ Male (0) ☐ Female (1)
2. Age _____
3. In what year did you graduate from medical school? Year _____
4. Number of years working as a doctor (including internship) _____
5. Marital status
   ☐ Single (0) ☐ Married (1)
   ☐ Getting divorced or divorced (2) ☐ Widowed (3)
6. Number of children _____
7. Religion
   ☐ No (0) ☐ Yes (1), please specify _____
8. Do you smoke?
   ☐ No (0), I do not smoke
   ☐ Yes (1), average number of cigarettes smoked per day _____
   ☐ Yes, past history only (2)
9. Do you drink alcohol?
   ☐ No (0), I do not drink alcohol
   ☐ Yes (1), Average units* of alcohol intake per week _____
   (* The approximate total units of alcohol intake per week = concentration of alcohol (%) x total volume per week (mL) / 1000)
10. Use of psychotropics?
    ☐ Never (0)
    ☐ Yes, current use (1)
    ☐ Yes, past history only (2)
11. Do you have personal chronic illness in need of regular medication and follow-up?
    ☐ No (0)
    ☐ Yes
        ☐ Non-psychiatric illness (1)
        ☐ Psychiatric illness (2)

Section E Job characteristics

1. What is the main setting of your current practice?
   ☐ Hospital Authority
   ☐ Department of Health
   ☐ University
   ☐ Others, please specify _____
2. What is your main area of practice?
   ☐ Administrative Medicine ☐ Anaesthesiology
   ☐ Clinical Oncology ☐ Community Medicine
   ☐ Emergency Medicine ☐ Family Medicine
   ☐ Internal Medicine ☐ Microbiology
   ☐ Obstetrics and Gynaecology ☐ Occupational Medicine
   ☐ Ophthalmology
   ☐ Orthopaedics & Traumatology ☐ Otorhinolaryngology
   ☐ Pathology ☐ Paediatrics
   ☐ Psychiatry ☐ Public Health Medicine
   ☐ Radiology ☐ Surgery
   ☐ Others, please specify _____

Appendix (Cont'd)

3. Are you a
   ☐ Basic trainee (0) ☐ Higher trainee (1)
   ☐ Specialist (2)
4. What is the total number of hours worked during an average week? _____ hours
5. What is the number of on-call days per month?
   Stay-in-hospital on call: _____ days/month
   Stay-at-home on call: _____ days/month
6. How many hours do you work continuously in each on-call day? _____ hours
7. Do you need to work shift duty?
   ☐ No (0) ☐ Yes (1)
8. What is the number of working nights per month? _____ nights/ month
9. What is the number of working weekend or Sunday per month? _____ days/month
10. Number of sick leave in the past one year: _____ days
11. Are you retired or not working in the profession for recent 3 months?
    ☐ No (0) ☐ Yes (1)

Section F Possible stressors

On a scale of 1 to 5, please rate the most important stressors. 5 is the most important stressor.
Please use a tick (√) to indicate the most appropriate response or fill in the blanks.

		1	2	3	4	5
a)	Perceived inadequate sleep	☐	☐	☐	☐	☐
b)	Perceived excessive calls	☐	☐	☐	☐	☐
c)	Irregular sleep pattern	☐	☐	☐	☐	☐
d	Feel own work not valued by others	☐	☐	☐	☐	☐
e)	Difficulties to balance professional and family life	☐	☐	☐	☐	☐
f)	Excessive stress due to global workload	☐	☐	☐	☐	☐
g)	Health insurance–related work	☐	☐	☐	☐	☐
h)	Difficult relations with colleagues and staff	☐	☐	☐	☐	☐
i)	Administration responsibilities	☐	☐	☐	☐	☐
j)	Lack of independence	☐	☐	☐	☐	☐
k)	Poor job security	☐	☐	☐	☐	☐
l)	Others, please specify	☐	☐	☐	☐	☐

Please also rank the 3 most important stressors in sequence.
_____ > _____ > _____
(For example, if you think the most important stressor is (a) perceived inadequate sleep, (c) irregular sleep pattern, and (e) difficulties to balance professional and family life, please write down a > c > e.)

Section G Possible stress-relief factors

On a scale of 1 to 5, please rate the most important stress-relief factors.
Please use a tick (√) to indicate the most appropriate response or fill in the blanks.

		1	2	3	4	5
a)	Spouse support	☐	☐	☐	☐	☐
b)	Social support from colleagues	☐	☐	☐	☐	☐
c)	Exercise	☐	☐	☐	☐	☐
d)	Others, please specify	☐	☐	☐	☐	☐

Frequency of exercise with each section equal to or more than 30 minutes in an average week: _____ times per week
(Please fill in the blanks)

Please also rank the 3 most important stress-relief factors in sequence:
_____ > _____ > _____

Section H Overall self-reported job satisfaction

On a scale of 1 to 5, please rate your degree of job satisfaction.
Please use a tick (√) to indicate the most appropriate response

Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
❑	❑	❑	❑	❑