What Causes The Job Burnout among Medical Interns

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Abstract

Background Medicine is a practical science, and clinical internship is an important way to strengthen the theoretical knowledge of medical students and cultivate their independent work ability. However, medical students generally experience job burnout during clinical internships, which affects the improvement of their work abilities and career development, and also hinders the improvement of medical service quality. Objective: The purpose of this study is to explore the present situation of job burnout among medical interns and to analyze its major influencing factors. Methods: A stratified random sampling was used to select 1268 medical interns from 6 full-time medical colleges in Guangdong province. They were investigated with Maslach Burnout Inventor-General Survey, (MBI－GS), Questionnaire on Humanistic Care Ability of Medical Students (QHCAMS) and a self-compiled personal information questionnaire. Results: (1) The incidence of job burnout in this group was 98.40%. The total score of MBI－GS and the scores of emotional exhaustion, cynicism and reduced personal accomplishment were (45.27±12.61), (16.21±4.91), (12.91±3.93) and (18.15±5.22), respectively. (2) The result of multiple stepwise linear regression showed that gender, specialty, type of internship hospital, working department and average length of overtime per day were positively correlated with the total score of MBI-GS (β =.154～.676, all P<0.01). Nine factors, such as self-evaluation of health status, ability to solve problems at work, relationship with patients, classmates and medical staff, as well as the scores of hope, honesty, humility and courage in HQCAMS, were negatively correlated with the total score of MBI-GS (β=-.148～-.468, all P < 0.01). Conclusion: It is suggested that Medical interns are suffering serious job burnouts, which may be related to work pressure, personal quality and other factors.

Keywords: *Medical interns; Job burnout; Relevant factors*

1. Introduction

The internship is an important transitional stage for medical students to change from a student to a clinical practitioner. Successful adaptation during this stage is of great significance for medical students to establish a proper professional attitude, strengthen professional aspiration, improve work enthusiasm and work efficiency, and promote career development. However, medical interns are found to suffer great mental stresses and are prone to job burnouts because of

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their incomplete and immature professional skills, insufficient psychological preparation and incompetence in work. Previous research has shown that during the internship period, medical students generally experience above average job burnout, with an incidence rate of about 45% in foreign countries [1-3] and 39.7% to 70.9% in China [4-9].

According to the 2020 Statistical Bulletin on the Development of Health Care in China, the current number of general practitioners per 10000 people in China is only 2.90; Hospital physicians are responsible for an average of 5.9 person-times of outpatient patients and 2.1 inpatients per day, with public hospital physicians responsible for an average of 6.3 person-times of outpatient patients and 2.2 inpatient patients per day [10]. According to the Statistical Bulletin on the Development of Health Care in China in 2022, the current number of general practitioners per 10000 people in China is only 3.28; Hospital physicians are responsible for an average of 6.2 person-times of outpatient patients and 2.1 inpatient patients per day, among which public hospital physicians are responsible for an average of 6.6 person-times of outpatient patients and 2.0 inpatient patients per day [11]. It can be seen that in the past two to three years, although the number of general practitioners per 10000 population in China has slowly decreased, compared to other regions in the world, such as the European Union, the United States, and Japan, China has a significant gap; the workload of hospital physicians has always been at a relatively heavy level, and it has not decreased but increased (partly due to the impact of the epidemic). Due to the fact that interns are between doctors and students, without prescription rights and awkward identities, their knowledge, skills, and clinical experience are relatively lacking, as well as concerns about medical errors, the teaching staffs of hospitals dare not let go of important operations for interns, but instead entrust most of the basic and auxiliary work to them, making the work of interns appear heavy and tedious. For example, under the guidance of higher-level physicians, changing medication for patients in need, examining, removing stitches, removing catheters, taking blood pressure, doing electrocardiograms, admitting new patients, issuing hospitalization certificates, inquiring about medical history, writing medical and admission records, and improving old medical records. Therefore, medical interns' opportunities for clinical hands-on action will be greatly reduced, which greatly disappoints interns who originally had high vision but low skills and thought that their knowledge could be fully applied to clinical practice.

On the other hand, medical interns are young and inexperienced, and need to transition from campus environment and theoretical learning to professional environment and clinical practice. This process of adaptation and transformation is undoubtedly a great pressure and challenge for them. During clinical internships, medical students will be exposed to a real and complex work environment, including the diversity of diseases, the tedious and heavy daily work, the severity of doctor-patient relationships, and the complexity of interpersonal relationships in the workplace. At the same time, they will also face frequent pressure to learn and assess clinical operational skills. Not only do clinical internships require strong theoretical knowledge and practical skills, but they also need to have good information communication and interpersonal skills, and sufficient interdisciplinary literacy in psychology, sociology, and law. Although they are aware of the pressure, intensity, and risks of clinical work, medical schools generally lack systematic and effective clinical training. Therefore, they lack sufficient coping skills for clinical work, which can

easily lead to anxiety, panic, helplessness, and improper work behavior (such as rude, disrespectful to others, and avoiding work). They can also suffer serious psychological trauma and even harm physical health [12, 13], reducing their professional identity and triggering job burnout [14-15]. Therefore, exploring the influencing factors of job burnout among medical interns is of great significance for the high-quality cultivation of medical talents in the future. However, there is a lack of comprehensive research on the current situation and influencing factors of job burnout among medical interns in China.

Based on the above analysis, this study intends to adopt a large sample and multi-center investigation to make a comprehensive analysis of this problem from many aspects, such as demographic factors, psychological factors, and so on.

2. Objects and Tools

2.1. Objects
2.1.1. Minimum Sample Size Estimation
The minimum sample size is calculated by G *power3 [16]. Previous studies have shown that the detection rate of job burnout among domestic medical interns being 39.7% to 70.9% [4-5] , the test effect value is at a moderate level, that is, the D value is 0.50-0.80 [17]. In this study we set the effect value d=0.70, with a statistical test power of $1- \beta= 0.80$, and the type I error probability $\alpha= 0.05$. The minimum sample size required for the survey is 459. Due to a 20% possible loss of follow-up rate, the minimum sample size is determined to be 574.

2.1.2. Sampling
Stratified random sampling was used to select medical interns from 6 full-time colleges
(Southern Medical University, Guangzhou University of Traditional Chinese Medicine, Guangdong Medical University, Guangzhou Medical University, Guangdong Pharmaceutical University and Shenzhen University Health Science Center) as the study objects. 1300 questionnaires were sent out and 1268 valid questionnaires were collected, with an effective rate of 97.54%. Among them, 1237 were from Han nationality, 31 from ethnic minorities, 233 from Southern Medical University, 345 from Guangzhou University of Traditional Chinese Medicine, 274 from Guangdong Medical University, 138 from Guangzhou Medical University, 156 from Guangdong Pharmaceutical University, 122 from Shenzhen University Health Science Center; 1094 are only-child, 174 are non-only-child; 2 from rich family, 652 from well-off family, 523 from poverty-line family, and 72 from needy family; 763 from urban areas, 505 from rural areas; 46 academically excellent, 636 academically moderate, 495 academically intermediate, 88 passing score and 3 failed.

2.2. Tools
2.2.1. Maslach Burnout Inventory-General Survey (MBI-GS)
It was compiled by Maslach et al. (1984) and revised by Li Chaoping into the Chinese version [18]. There were 16 items, divided into 3 dimensions: emotional exhaustion (EEX), reduced personal accomplishment (RPA) and cynicism (CYM). The Likert 5-point scoring method is used to score from 1 (never)-5 (daily). The higher the score, the more obvious the burnout tendency. The critical values of emotional exhaustion, cynicism and reduced personal accomplishment were 25 points, 11 points and 16 points, respectively. If all the three dimensions < the critical value, the objects would be considered not suffer burnout; if one of the three

dimensions ≥ critical value, the object would be considered suffer mild burnout; if two of the three dimensions ≥ critical value, the object would be considered suffer moderate burnout; and if all of the three dimensions ≥ critical value, the objects would be considered suffer serious burnout. The average score of the scale (dimension) below 2.5 indicates low job burnout, 2.5-3.5 indicates moderate job burnout, and more than 3.5 indicates serious job burnout. In this study, the Cronbach's α coefficient of the total scale was 0.892, and the Cronbach's α coefficient of each dimension was 0.801-0.843.

2.2.2. Questionnaire on Humanistic Care Ability of Medical Students (QHCAMS)

It was compiled by Shen Zhengfu el. (2013) [19], involving 42 items and 7 dimensions, namely, altruism (ALM), honesty (HOY), courage (COE), trust (TRT), patience (PAE), humility (HUY) and hope (HOE). The Likert 5-point scoring method is used to score from 1(not at all) to 5 (completely yes). The higher the total score, the more obvious the trendency in this dimension or item. The average score of the scale (dimension) below 2.5 indicates low score, 2.5-3.5 indicates moderate score, and more than 3.5 indicates high score. In this study, the Cronbach's α coefficient of the total questionnaire is 0.848, and the Cronbach's α coefficient of each dimension is 0.773-0.834.

2.2.3. Self-compiled Personal Information Questionnaire

The CNKI, Wanfang database, VIP database, Baidu, Pubmed and other search engines were used to search the literatures about the burnout among medical interns (277 in Chinese and 2421 in foreign languages). Based on that, the basic contents of the questionnaire were constructed, with a total of 19 items. Combined with the results of 3 collective discussions with 10 representatives of medical interns and 5 experts in the field of higher medical education, 4 items were deleted and 3 items were added. The final version involves 18 items, which include gender, age, nationality, school, specialty, family status (only-child or not), family financial status, origin, academic achievement, type of internship hospital, working department, length of overtime every day, ability to solve problems at work, relationship with patients and medical staff and classmates, self-assessment of personality and health status and so on.

2.3. Data manipulation

SPSS 20.0 software was used for statistical analysis. Descriptive statistics were used to calculate the average score and standard deviation of each scale; independent sample t-test, Pearson product correlation and one-way ANOVA were used to explore the correlation between variables; multiple stepwise linear regression was used to analyze the related factors of MBI-GS total score.

3. Results

3.1. Descriptive statistics of the total score and factor score of each scale

The incidence of job burnout in this group was 98.40%. Among them, there were 946 (74.6%) with mild burnout, 238 (18.5%) with moderate burnout and 67 (5.3%) with serious burnout.

As can be seen from Table 1, the overall level of job burnout in this group is on the high side (i.e. MBI-GS total average score is more than 3.50) [5], the score of patience dimension of QHCAMS is considered high, while the total score of QHCAMS and the scores of the other six dimensions are considered moderate [19].

Table1. Descriptive statistics of the scores of each scale (n=1268).

Dimension	Min	Max	M	SD	Item number	M of item	SD of item
MBI-GS total score	35.00	87.00	45.27	12.61	15	3.95	0.84
EEX	5.00	31.00	16.21	4.91	5	4.04	0.98
RPA	6.00	31.00	18.15	5.22	6	3.86	
CYM	5.00	24.00	12.91	3.93	4	3.98	0.99
QHCAMS total score	91.00	210.00	144.74	18.98	42	3.44	0.45
ALM	7.00	25.00	16.86	3.09	5	3.37	6.17
HOY	7.00	25.00	17.26	3.61	5	3.45	0.72
COE	7.00	25.00	16.34	2.97	5	3.27	0.59
TRT	13.00	40.00	27.61	4.56	8	3.45	0.57
PAE	13.00	35.00	24.72	4.58	7	3.53	0.65
HUY	11.00	35.00	24.46	4.60	7	3.50	0.66
HOE	5.00	25.00	17.49	3.86	5	3.44	0.45

3.2. Correlation Analysis between the scores of each scale

From Table 2, it can be found that there is a significant pairwise correlation between the total score of MBI-GS and the total score of QHCAMS (together with the scores of 6 dimensions except COE).

Dimension	1	2	3	4	5	6	7	8	9	10	11	12
1.MBI-GS	1											
2.EEX	.884**	1										
3.RPA	.930**	.719**	1									
4.CYM	.870**	.630**	.756**	1								
5.ALM	-.170**	-.156**	-.140**	-.165**	1							
6.HOY	-.313**	-.214**	-.297**	-.341**	.302**	1						
7.COE	-.341	-.311	-.298	-.052	.164**	.183**	1					
8.TRT	-.242**	-.196**	-.199**	-.268**	.299**	.398**	.239**	1				
9.PAE	-.294**	-.217**	-.260**	-.326**	.388**	.482**	.253**	.496**	1			
10.HUY	-.334**	-.231**	-.310**	-.370**	.300**	.471**	.252**	.526**	.562**	1		
11. HOE	-.377**	-.312**	-.317**	-.398**	.304**	.461**	.150**	.492**	.503**	.558**	1	
12. QHCAMS	-.370**	-.276**	-.325**	-.410**	.553**	.692**	.437**	.746**	.793**	.794**	.724**	1

Note: * $P＜0.05$, ** $P＜0.01$

3.3. Multiple stepwise linear regression analysis of factors related to job burnout among medical interns

3.3.1. Variable Assignment

First, values are assigned to the possible situations (alternative answers) of demographic and psychosocial classification variables that may affect the total score of MBI-GS, and the results are shown in Table 3.

Table 3. Variable Assignment.

SL	Item	Options and variable assignment
1	nation	0=Minority minorities; 1= Han nationality
2	gender	0= Male;1= Female
3	School	0=Southern Medical University; 1=Guangzhou University of Traditional Chinese Medicine; 2=Guangdong Medical University; 3=Guangzhou Medical University; 4=Guangdong Pharmaceutical University; 5= Shenzhen University Health Science Center
4	specialty	0=Oral Medicine; 1= Preventive Medicine; 2= Medical Examination; 3= Pharmacy; 4= Nursing; 5=Anesthesiology; 6= Clinical Medicine
5	only-child or not	0=No; 1=Yes
6	Family financial status	0= Rich; 1= Moderate; 2= Poverty-line; 3= Poor
7	Origin	0= Urban area; 1= Rural areas
8	Academic	0= Failed; 1= Passed; 2= Medium; 3=Above average; 4= Excellent
9	Type of internship hospital	0=First class; 1=Second class; 2=Tertiary
10	Working department	0= Department of Internal Medicine; 1= Department of Obstetrics & Gynecology; 2= Department of Pediatrics; 3= Surgical Department; 4=Department of psychiatry; 5=Department of Infectious Diseases; 6=ICU
11	Average length of overtime per day	0=0 hour; 1=within 1hour; 2=1-2hours; 3=2-3hours; 4=More than 3 hours
12	Ability to solve problems at work	0= Almost can't; 1= Mostly can't; 2= Mostly can; 3= Totally can
13	Relationship with patients	0= Not sure; 1=Bad; 2= Moderate; 3=Good; 4= Great
14	Relationship with medical staff	0= Not sure; 1=Bad; 2= Moderate; 3=Good; 4= Great
15	Relationship with classmates	0= Not sure; 1=Bad; 2= Moderate; 3=Good; 4= Great
16	self-assessment of personality	0= Extraversion, 1= Introversion
17	Self-assessment of health status	0= Not well; 1= Moderate;2= Strong

3.3.2. Multiple stepwise linear regression analysis of factors related to job burnout among medical interns

Taking the total score of MBI-GS as the dependent variable, the 7 dimensions of QHCAMS and 18 factors that may be related to the total score of MBI-GS (including demographic variables and psychosocial factors) as independent variables, a multiple stepwise linear regression was carried out within 95% confidence interval.

From Table 4, it can be found that gender, specialty, type of internship hospital, working department and average length of overtime per day were positively correlated with the total score of MBI-GS (β =.154～.676, all P < 0.01). Nine factors, such as self-evaluation of health status, ability to solve problems at work, relationship with patients and classmates and medical staff, as well as the scores of hope, honesty, humility and courage, were negatively correlated with the total score of MBI-GS (β =-.148～-.468, all P < 0.01).

Table 4. Multiple stepwise linear regression analysis of factors related to job burnout among medical interns.

Dependent variable	Independent variable	B	SE	β	t	P	R^2	R_{adj}^2
MBI-GS	Gender	.267	.045	.154	7.623	<.001	.508	.503
Total score	Specialty Type of internship hospital	.381	.069	.312	2.999	.005		
		.427	.116	.374	2.766	.008		
	working department	.683	.114	.599	3.863	<.001		
	average length of overtime per day	.485	.132	.402	4.899	<.001		
	Selfe-valuation of health status	-.313	.051	-.302	-5.209	<.001		
	ability to solve problems at work	-.753	.105	-.676	-2.785	.005		
	relationship with patients	-.440	.196	-.386	-4.464	<.001		
	relationship with medical staff	-.528	.213	-.468	-5.095	<.001		
	relationship with classmates	-.344	.092	-.284	-3.900	<.001		
	hope	-.257	.055	-.236	-4.706	<.001		
	honesty	-.173	.055	-.148	-3.132	.002		
	humility	-.212	.066	-.158	-3.084	.002		
	courage	-.224	.043	-.191	-5.116	<.001		

4. Discussion

This study found that medical interns suffered a rather high level of job burnout, with the average MBI-GS score being 3.95±0.84, 98.40% of the medical interns suffered from job burnout,

which was consistent with the results of previous studies [2, 4, 5]. The result suggests that job burnout is a common psychological problem among the medical interns in China. The results of multiple stepwise linear regression showed that gender, specialty, type of internship hospital, working department and average length of overtime per day were positively correlated with the total score of MBI-GS. Nine factors, such as self-evaluation of health status, ability to solve problems at work, relationship with patients, classmates and medical staffss, as well as hope, honesty, humility and courage, were negatively correlated with the total score of MBI-GS.

Girls suffer higher level of job burnout than boys, which is consistent with the findings of Shu Xianzhu [9]. It is suggested that there are gender differences in occupational adaptation. Job burnout is a negative mood and behavioral reaction caused by the inability to tackle the stress at work. Besides, girls are less capable in anti-frustration and emotion regulation than boys [20]. Stress will bring about greater and more lasting stress on girls, resulting in excessive activation of negative emotions [21]. Therefore, it is concluded that girls are more likely to suffer job burnout.

It is also found that specialty, the type of hospital, the working department, the average length of overtime per day are positively

correlated with the total score of MBI-GS, which is consistent with the research results of Shu Xianzhu [9]. The above 5 factors reflect the objective work stress from different angles, such as work task, work content, work standard, workload and so on, which have positive predictive effects on the job burnout of the enrolled medical staff. The result has been confirmed by a large number of literatures [22-28]. Once again, this study confirmed that the results also have a positive predictive effect on the job burnout of medical interns, suggesting that objective job stresses have a generally positive predictive effect on job burnout among medical workers.

Lastly, it was found that such nine factors as self-evaluation of health status, ability to solve problems at work, relationship with patients, classmates and medical staff, and QHCAMS's hope, honesty, humility and courage, were negatively correlated with the total score of MBI-GS. The result is consistent with the findings of previous studies [7-9, 27-28], suggesting that good personal qualities (physical health status, ability to solve problems at work, personality traits, interpersonal relationships, etc.) are helpful to reduce the job burnout among medical interns.

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