

Burnout level and job satisfaction in Chinese pediatric residents

A web-based cross-sectional study

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Abstract

To study the prevalence of burnout and job satisfaction in Chinese pediatric residents.

Prospective participants were invited via a WeChat group to participate from October 1, 2018 to January 31, 2019. The Maslach Burnout Inventory-Human Services Survey was used to measure physician burnout, and the Minnesota Satisfaction Questionnaire was used to measure job satisfaction.

A total of 380 residents (81.1% response rate) from 35 pediatric residency programs completed the cross-sectional web-based survey. Of the responders, 233 (61.3%) exhibited high levels of career burnout. Residents 24 to 29 years of age were less likely to report burnout than residents ≥ 30 years of age (50.9% vs 74.7%; $P < .05$). In addition, residents with an annual income less than 80,000 RMB seem to have higher burnout levels (66.2%). Residents who reported that they felt sleep deprived had significantly higher rates of burnout than those who did not ($P < .01$). Logistic regression showed that age ≥ 30 years (odds ratio [OR] 3.74 [1.57–7.66], $P < .01$) and sleep deprivation (OR 4.11 [2.19–7.35], $P < .01$) were the 2 independent risk factors associated with burnout.

Burnout is highly prevalent among Chinese pediatric residents who also reported poor job satisfaction.

Abbreviations: MBI-HSS = Maslach Burnout Inventory-Human Services Survey, MD = medical doctor, MSQ = Minnesota Satisfaction Questionnaire, OR = odds ratio, PS-CMDA = the Pediatric Society of the Chinese Medical Doctor Association.

Keywords: burnout level, job satisfaction, pediatrician, resident

1. Introduction

Burnout is defined as a combination of low sense of personal accomplishment, feelings of depersonalization, and a loss of enthusiasm for work.^[1–3] Occupations that involve frequent interactions with people, such as medicine, are at the highest risk for burnout.^[4] Burnout is also common among resident

physicians, occurring in up to 75% of trainees across multiple disciplines.^[5,6] This high risk for developing burnout is likely due to the long work hours, high stress levels, sleep deprivation, and lack of leisure time associated with residency training. Previous studies have demonstrated that resident burnout negatively impacts perceived quality of patient care,^[7,8] professional conduct and attitudes,^[9] self-reported medical mistakes,^[5,10] and medical knowledge.^[11] Once present, burnout can persist throughout residency.^[12,13] Previous studies show that pediatricians and pediatric trainees experience burnout at rates comparable to other specialties.^[13–16]

Chinese pediatric trainees not only face the prospect of burnout induced by the abovementioned factors, but also more uniquely Chinese issues, such as the shortage of pediatricians, occupational overload, patient-physician conflict, and low income.^[17] The frequency of medical disputes in pediatrics is higher than in other specialties.^[18] In fact, Chinese pediatricians are frequently insulted and threatened with assault and murder.^[19] Furthermore, the low salaries received by pediatricians are another major cause of frustration. A survey of physicians' salaries, performed by the Pediatric Society of the Chinese Medical Doctor Association (PS-CMDA), found that nearly 96% of pediatricians were not satisfied with their salaries and believed there was an imbalance between their income and job intensity.^[17] According to data from the PS-CMDA, at least 2 pediatricians per hospital leave their positions annually.^[20] Furthermore, at least 300 vacant pediatric positions had to be canceled because the minimum number of candidates was not reached.^[17]

In this complex and unfriendly pediatrics practice climate, there have been few investigations into the levels of burnout level among Chinese pediatric residents. Therefore, we tentatively aimed to describe the prevalence of burnout and job satisfaction in Chinese pediatric residents.

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2. Materials and methods

The study population included a sample of pediatrics residents in China. We utilized the mobile web-based survey platform WeChat, which is 1 of the fastest growing mobile apps in China, with more than 1 billion monthly active users.^[21] The WeChat platform is the most popular platform visited daily by young people in China, and has been previously used to conduct and disseminate surveys to targeted populations with impressive results.^[22,23] Prospective participants were invited to participate via a WeChat group from October 1, 2018 to January 31, 2019. The study was approved by the Institutional Review Board at the Peking Union Medical College School.

We gathered information on personal and practice characteristics, and used the Chinese version of the Maslach Burnout Inventory-Human Services Survey (MBI-HSS) to measure physician burnout, and the Minnesota Satisfaction Questionnaire (MSQ) to measure job satisfaction. The Chinese version of the MBI is a widely used instrument for measuring burnout.^[24] The 22-item questionnaire uses a 0 to 6-point scale^[25] and includes 3 dimensions: emotional exhaustion (scores 0–54), depersonalization (scores 0–30), and lack of personal accomplishment (scores 0–48).^[26] Burnout was defined as moderate to high levels of both depersonalization and emotional exhaustion and low to moderate levels of personal accomplishment in this study. In our study, the Cronbach alpha of the MBI was 0.85. The Cronbach alpha for the subscale “emotional exhaustion,” “depersonalization,” and “lack of personal accomplishment” were 0.91, 0.89, and 0.92, respectively.

The MSQ^[27] is a well-regarded measure of job satisfaction, which has been used effectively in some Chinese studies after simple adjustment.^[28] The 20-item short form MSQ uses a 5-point scale (from 1=very dissatisfied to 5=very satisfied), and includes 2 dimensions: intrinsic job satisfaction and extrinsic job satisfaction. Intrinsic job satisfaction includes 12 items that refer to activity, ability utilization, and achievement, among others. Extrinsic job satisfaction includes 6 items that refer to supervision-human relations, company policies, compensation, and so forth. Increasing intrinsic and extrinsic job satisfaction leads to a higher score. Overall job satisfaction is calculated as the total of 20 items, and can be considered as a composite that involves all facets of job satisfaction. The overall job satisfaction score ranges from 20 to 100. A score of ≤ 40 indicates either “very dissatisfied” or “dissatisfied” with their job; 41 to 59 indicates “dissatisfied to moderately dissatisfied”; 60 indicates “moderate”; 61 to 79 indicates “moderate to not fully satisfied”; and ≥ 80 indicates “satisfied or very satisfied.”^[29] In this study, the Cronbach alpha for overall, intrinsic, and extrinsic job satisfaction on the MSQ was 0.91, 0.92, and 0.84, respectively.

The actual sample size for the study was determined using the formula of single population proportion formula for single proportion population.

$$n_i = \frac{(Za/2)^2 p(1-p)}{(d)^2}$$

where n_i =initial estimated sample size, Z =confidence level (alpha, α), p =prevalence, d =marginal error. To determine the sample size, the following assumption was used. Magnitude of residents’ burnout was taken from a previous related study, which is 56.6%.^[6] A 95% confidence level, margin of error (0.05), we required a minimum of 378 recruits.

We planned to enroll around 500 physicians to allow possible withdrawal and evaluation of potential confounding factors. Descriptive statistics were used to characterize the study population. Statistical analysis was performed using the Statistical Package for Windows v. 17.0 (SPSS, Chicago, IL). All data were shown as number, percentage, and mean and standard deviation. The groups were compared using Student t test for variables with normal distribution and the Mann–Whitney test for variables with non-normal distribution. The statistical significance was at a P value of less than .05. Univariate logistic regression analysis was used to determine the association between risk factors and outcome. Variables that presented $P < .25$ were included in a multivariate logistic regression model with backward stepwise elimination. Variables that attained a level of significance ($P < .05$) were kept in the model. The final multivariate regression model was obtained using the forward stepwise variable selection method, where variables with $P < .25$ were initially included and variables with $P < .05$ were kept in the model to determine their odds ratio (OR).

3. Results

3.1. Demographics

A total of 380 of the 489 enrolled residents completed the survey (81.1% response rate). The mean age of the residents was 28.1 ± 3.9 years, with the majority being 24 to 29 years old. The residents were predominantly female (79.2%). The majority was married (60.0%) and did not have children (83.2%). In the Chinese pediatrics residency training system, all the residents need to complete 5 years of training, which can be divided into 2 phases: general pediatrics training for 3 years (phase 1) and chief residency pediatrics training for 2 years (phase 2). Respondents were evenly distributed across the 5 postgraduate year (PGY) groups (42.1% PGY-1 and 2, 19.2% PGY-3, and 38.7% PGY-4 and 5) (Table 1).

3.2. Burnout level

Of the responders, 233 (61.3%) exhibited high levels of career burnout. Residents 24 to 29 years of age were less likely to report burnout than those ≥ 30 years of age (50.9% vs 74.7%; $P < .05$). Meanwhile, residents with an annual income less than 80,000 RMB seemed to have higher burnout levels (66.2%). Other factors, such as having children, home ownership, and average working hours per week, were not associated with burnout. However, residents who reported that they felt sleep deprived had significantly higher rates of burnout than residents who did not ($P < .01$) (Table 1).

3.3. Job satisfaction

The mean value for overall job satisfaction (Table 2) was close to that corresponding to “moderately dissatisfied” among male physicians (51.79 ± 9.77), and to “moderate” in female physicians (60.29 ± 10.55) (Table 2). All aspects of job satisfaction were significantly lower in the pediatrics residents surveyed compared with a previous report on community health workers^[28] ($P < .05$). Overall, 11.3% were either “very dissatisfied” or “dissatisfied” with their jobs, 31.6% were “dissatisfied” to “moderately dissatisfied,” 36.2% were “moderately dissatisfied,” 16.1% were “moderately” to “not fully satisfied,” and 4.8% were “satisfied” or “very satisfied” with their jobs.

Table 1
Demographic characteristic.

Variable	Total (n=380), n (%)	Nonburnout (n=147), n (%)	Burnout (n=233), n(%)	P
Age, y				
26–29	214 (56.3)	105 (49.1)	109 (50.9)	.03*
≥30	166 (43.7)	42 (25.3)	124 (74.7)	
Sex				
Male	79 (20.8)	25 (31.6)	54 (68.4)	.19
Female	301 (79.2)	122 (40.5)	179 (59.5)	
Year of residency training				
PGY-1 and 2	160 (42.1)	78 (48.7)	82 (51.3)	.08
PGY-3	73 (19.2)	27 (37.0)	46 (63.0)	
PGY-4 and 5	147 (38.7)	42 (28.6)	105 (71.4)	
Sleep deprivation				
No	62 (16.3)	45 (72.6)	17 (27.4)	<.01*
Yes	318 (83.7)	102 (32.1)	216 (67.9)	
Average working hours per week				
41–60 h	66 (17.4)	21 (31.8)	45 (68.2)	.17
>61 h	314 (82.6)	126 (40.1)	188 (59.9)	
Children				
0	316 (83.2)	121 (38.3)	195 (61.7)	.25
≥1	64 (16.8)	26 (40.6)	38 (59.4)	
Married				
No	152 (40.0)	54 (35.5)	98 (64.5)	.19
Yes	228 (60.0)	93 (40.8)	135 (59.2)	
Home owner				
No	237 (62.4)	87 (36.7)	150 (63.3)	.28
Yes	143 (37.6)	60 (42.0)	83 (58.0)	
Regular physical activity				
No	342 (90.0)	136 (39.8)	206 (60.2)	.17
Yes	38 (10.0)	11 (28.9)	27 (71.1)	
Annual income				
<80,000 RMB	299 (78.7)	101 (33.8)	198 (66.2)	.02*
≥80,000 RMB	81 (21.3)	46 (56.8)	35 (43.2)	

Note: 10,000 RMB=1483 USD (according to the currency rate in February, 2019).
* P<.05.

3.4. Univariate analysis and regression

Univariate analyses identified age ≥30 years, sleep deprivation, and annual income <80,000 RMB as risk factors for burnout (P<.05). Five other variables with a P value <.25 (male sex [P=.19], having children [P=0.25], working >61 h/wk [P=

Table 2
Level of burnout and job satisfaction.

Scale	Male (n=79)	Female (n=301)	Total (n=380)
MBI			
Emotional exhaustion	25.23±5.31	21.44±5.73	23.86±7.61
Depersonalization	12.52±4.03	9.05±4.36	10.43±4.21
Lack of Personal accomplishment	27.15±10.34	35.07±9.38	33.71±9.43
MSQ			
Overall job satisfaction	51.79±9.77	60.29±10.55	58.68±10.22
Intrinsic job satisfaction	35.12±5.96	42.76±6.41	40.33±6.24
Extrinsic job satisfaction	15.54±3.10	17.33±2.71	16.89±2.95

Maslach Burnout Inventory (MBI): emotional exhaustion scoring standard—low (0–18), average (19–26), high (>26); depersonalization scoring standard—low (0–5), average (6–9), high (>9); lack of personal accomplishment scoring standard—low (40–48), average (34–39), high (<34). Minnesota Satisfaction Questionnaire (MSQ): very dissatisfied or dissatisfied (≤40), dissatisfied to moderately dissatisfied (41–59), moderate (60), not fully satisfied (61–79), satisfied, or very satisfied (≥80).

Table 3
Multivariate regression of risk factor for burnout.

Variable	No burnout (n=147) (%)	Burnout (n=233) (%)	OR (95% CI)	P
Age ≥30 y	42 (28.6)	124 (53.2)	3.74 (1.57–7.66)	<.01
Male	25 (17.0)	54 (23.2)	1.35 (0.77–2.18)	.45
Married	93 (63.3)	135 (57.9)	1.69 (0.56–1.84)	.63
Sleep deprivation	102 (69.4)	216 (92.7)	4.11 (2.19–7.35)	<.01
Weekly working hours ≥61 h	126 (85.7)	188 (80.7)	0.86 (0.60–3.32)	.21
Annual income of <80,000 RMB	101 (68.7)	198 (85.0)	1.73 (0.77–5.31)	.09
Regular physical activity	11 (7.5)	27 (11.6)	1.70 (0.87–3.82)	.44
Having children	26 (17.7)	38 (16.3)	0.83 (0.24–1.62)	.73

CI=confidence interval, OR=odds ratio.

0.17], being married [P=0.19], and regular physical activity [P=0.17]) were included in the regression analysis (Table 3). Logistic regression showed that age ≥30 years (OR 3.74 [1.57–7.66]; P<.01) and sleep deprivation (OR 4.11 [2.19–7.35]; P<.01) were the 2 independent risk factors associated with burnout.

4. Discussion

To the best of our knowledge, this is the first study to address burnout and job satisfaction among Chinese pediatrics residents. In our study population of 380 pediatrics residents from 35 residency programs, 61.3% experienced burnout. Previous studies have estimated the prevalence of burnout among pediatrics residents to be from 40% to 74%.^[6,14,15] In a study of first-year pediatric and medicine–pediatrics residents, 40% were found to have at least 1 of the criteria for burnout.^[30] In a study of 33 pediatrics residents in 1 residency program, Milstein et al^[31] found that 66% experienced burnout. Our study—the largest to date on Chinese pediatrics residents—demonstrated a burnout rate of 61.3%. Studies have demonstrated that sleep,^[32] length of work hours,^[33] and work schedules^[7] are predictors of burnout. In our study, perceived sleep deprivation and age ≥30 years were predictors of burnout. In contrast to our findings, age did not appear as a significant risk in the previous studies. We believe that several reasons contribute to this result. First, the current Chinese pediatrics residency program format is still new to most of the pediatrics residents. The modern residency training program was firstly tentatively implemented in several large cities, such as Beijing and Shanghai, in 1997, and would not be compulsory throughout China until 2020.^[34] There are some economically underdeveloped provinces that still do not have residency training programs; thus, the pediatricians from these areas are sent out for training in other areas, despite already being over 30 years of age or even older, and facing an uncertain future and salary. This may underscore why age had a significant influence on burnout. Second, many residents suffer from a sense of apprehension regarding finishing their residency, specifically those in PGY-4/5, as they have to prepare to find a job after graduation. Many residents have to compromise their leisure time, or even their working time, to interview for potential jobs, and have to compete against other residents for positions at large, tertiary, teaching hospitals in big cities where career development prospects are better. These issues may increase their burnout levels. Third, residents have to directly confront the unfriendly practice climate after graduation as they are no longer trainees,

and they begin to worry about their professional future, income, and their families. However, psychological intervention by their supervisors is lacking for these residents, and they have to come to terms with these issues by themselves.

The PS-CMDA reported 831 incidents of serious medical violence in pediatric units in China. At least 319 medical workers were attacked, and several pediatricians were beaten to death or disabled.^[17] Similar data were also reported by the Dingxianyuan online network—a national medical website. The number of medical violence incidents in which pediatric medical staff were injured or murdered in China was 5 in 2006, 7 in 2008, 10 in 2010, and 15 in 2013.^[17] The incidence of medical violence is increasing by nearly 20% annually.^[35] Careers in pediatrics have become very dangerous in China.^[17] Furthermore, the pediatricians receive very low income, with an average annual income of 77,000 RMB,^[36] while occupational overload is more common than in other specialties. Therefore, it is unsurprising that Chinese pediatrics residents only had a “low” level of job satisfaction, and that physicians are generally not satisfied with their working conditions. Our analyses showed a negative correlation between job satisfaction, and emotional exhaustion and depersonalization, and a positive correlation with reduced personal accomplishment, which is consistent with other studies.^[37,38]

Excessive workload, financial insecurities, and a feeling of lack of personal achievement contribute to the development of burnout.^[3,39] Understanding the factors that affect burnout is important, because burnt out pediatrics residents are more likely to leave their practice or reduce their clinical hours during training.^[40,41] This study indicates that Chinese pediatrics residents are facing critical psychological and occupational stress, which may ultimately deteriorate to significant psychological health problems. Therefore, a series of comprehensive measures should be enforced to reduce burnout and increase job satisfaction in residents. Our study findings emphasize that substantial action must be taken to modify Chinese pediatrics residency training. It is recommended that protective lifestyle behaviors should be integrated into residency training and that the concept of self-care is acknowledged and normalized. Second, the engagement of a critical mass of residents and faculty instructors participating in and teaching these activities would drive broader personal opinion changes within individual organizations. Third, increased attention should be paid to pediatricians by our society at large, as the lives of our children are guarded by these physicians and residents. If the number of physicians pursuing and practicing pediatrics continue to decrease, our children’s health and welfare will be compromised.

We acknowledge that the small sample relative to the large population of China is a limitation of our study. Furthermore, online surveys such as ours are particularly vulnerable to coverage and sampling errors. Thus, our participants may not be representative of the target study population. On the contrary, the age and sex distribution of our sample was similar to that of pediatric physicians currently practicing in China, and our findings are largely in agreement with our preliminary studies.

This study describes the burnout and job satisfaction of a group of pediatrics residents in China, and provides a view of the working conditions of these physicians in this fast changing country. In addition, the results convey how pediatrics residents, especially those in China, are at risk of having their mental health gradually undermined. This needs to be acknowledged and addressed by healthcare administrators.

5. Conclusions

In this first study of burnout among pediatrics residents in China, we found that over half of the participants have high burnout levels and low job satisfaction. Accruing research suggests that residents enter training with high levels of burnout, emphasizing the need for effective solutions to address burnout in medical education.

Author contributions

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