

# BMJ Open Cross-sectional survey on job satisfaction and its associated factors among doctors in tertiary public hospitals in Shanghai, China

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**To cite:** Liu J, Yu W, Ding T, *et al.* Cross-sectional survey on job satisfaction and its associated factors among doctors in tertiary public hospitals in Shanghai, China. *BMJ Open* 2019;**9**:e023823. doi:10.1136/bmjopen-2018-023823

► Prepublication history and additional material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2018-023823>).

Received 25 April 2018  
Revised 18 December 2018  
Accepted 25 January 2019



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## ABSTRACT

**Objectives** Doctors in public hospitals in China face considerable pressure and excessive workloads, which are likely to predispose them to job dissatisfaction. We explored the job satisfaction of doctors and examined the influence of diverse sociodemographic characteristics.

**Design** This was a cross-sectional study.

**Setting** Eleven tertiary public hospitals in Shanghai, China.

**Participants** The questionnaire was designed based on the fifth National Health Service General Research, which was based on the Minnesota Satisfaction Questionnaire. Questionnaires were administered to 897 doctors randomly (using random number tables) and 730 were returned completed (response rate=81.4%). Doctors who volunteered and provided informed, written consent participated.

**Primary outcome measures** The dependent variable was doctors' job satisfaction.

**Results** Statistical analyses were conducted using SPSS and SAS. Overall, 64.8% of participants were dissatisfied with their jobs. Factors that were statistically significant to doctors' job satisfaction in the univariate analysis were entered into the logistic regression analysis, including doctors' professional title, department, work hours, work requirements (reflected as the number of patients they diagnosed and treated monthly), life and work stress, and the types of patients that doctors treated or expected to treat. The results of the logistic regression analysis suggested that doctors' job satisfaction was related to their professional title, types of patients that doctors treated or expected to treat, as well as their work stress.

**Conclusions** There is an urgent need for public hospitals in China to establish a more reasonable promotion and management system for doctors, encourage patients to accept the two-way referral, pay more attention to less-experienced staff and help doctors release their work stress.

## BACKGROUND

Work-related problems of doctors are growing global concerns, especially doctors' job satisfaction.<sup>1</sup> Job satisfaction comprises issues such as burnout,<sup>2 3</sup> mental health,<sup>4</sup> work-family balance<sup>5</sup> and quality of care.<sup>6</sup> Several studies

## Strengths and limitations of this study

- We tried to suggest ways to improve doctors' job satisfaction and promote becoming a doctor in China.
- We provided a valuable reference for others interested in doctors' job satisfaction and working conditions in China.
- We provided quantitative data concerning doctors' working conditions.
- Our research findings are only representative of doctors in tertiary A public hospitals in China.
- Income or income-workload balance was not explored in this study, which is a major limitation.

have explored job satisfaction, including its diverse dimensions<sup>2</sup>; its influencing factors<sup>7</sup>; and interrelationships between burnout,<sup>3</sup> work stress,<sup>8 9</sup> mental health<sup>4</sup> and job satisfaction among doctors, nurses, and medical staff in diverse departments, regions and countries.<sup>10</sup> Several studies in different countries have also indicated that income and income-workload balance are related to doctors' job satisfaction.<sup>11–13</sup>

Scholars from different countries such as the USA, the UK and Germany have tried to deal with problems concerning job dissatisfaction.<sup>14–16</sup> For example, scholars in the USA noted that workload, work meaningfulness, relational needs, tolerance and risk-taking attitudes were associated with job satisfaction.<sup>14</sup> Researchers in the UK indicated that whether physicians can fully use their training was a key factor influencing their job satisfaction.<sup>15</sup> Scholars in Germany paid more attention to foreign-national physicians and suggested that human relations and social status were related to their job satisfaction.<sup>16</sup> In addition, job characteristics<sup>9 10 17–21</sup> and personal factors<sup>22–25</sup> have been found to affect job satisfaction.

Further, doctors themselves pay great attention to job satisfaction. Doctors worldwide fight for their own rights to improve job satisfaction, working condition, professional accomplishments and career development. For example, doctors in Poland<sup>26</sup> and the Czech Republic<sup>27</sup> have had conflicts with their respective governments regarding overwork. Fortunately, doctors in many countries and regions have succeeded in this fight, which ultimately improves their job satisfaction, work efficiency and care quality.<sup>28</sup>

Moreover, healthcare reform is a vital component of doctors' job satisfaction and working conditions, and China is no exception. In Chinese healthcare reform, the government pays considerable attention to reducing medication costs.<sup>29</sup> Hospitals are expected to sell drugs to patients without adding a 15% profit, which may decrease the hospital's income.<sup>30</sup> Other policies such as controlling medication fees per visit and the cost of medical insurance have reduced doctors' decision-making power. Consequently, hospital management may force doctors to work overtime to augment or maintain hospital income if there is not enough government compensation.<sup>31</sup> Moreover, doctors had to change their behaviours to fulfil hospital income indicators. In China, over 4.5 million doctors are under increasing pressures to see more patients, meet increased administrative requirements, and keep up with government regulations.<sup>32</sup> Moreover, the lives of doctors are threatened in hospitals owing to poor doctor-patient relationships.<sup>33</sup> As doctors are overworked, underpaid and under threat, some scholars have wondered who will be the next doctors in China.<sup>34</sup>

Therefore, the main purpose of this study was to suggest ways to promote the development of more doctors in China and improve the condition of doctors. We determined what factors affect doctors' job satisfaction in China and provide practical recommendations to improve Chinese doctors' job satisfaction and working conditions.

## METHODS

### Participants

Between June 18 and September 27, 2013, a cross-sectional survey of doctors' job satisfaction was conducted in Shanghai, China. Using random number tables, we selected eleven tertiary public hospitals in Shanghai. Questionnaires were administered to 1000 doctors in these hospitals. All participants were also chosen through random number tables, which were based on doctors' job number. Of the 1000 participants, 897 were willing to participate and 103 doctors were excluded from this study because of their unwillingness to participate. Of these, 730 were returned complete (valid response rate=81.4%). Doctors who volunteered and provided informed, written consent participated. Researchers addressed doctors' queries and doubts regarding the questionnaire as needed.

### Instrument development and validation

The questionnaire was designed to examine doctors' working conditions and job satisfaction. The questionnaire was designed based on the fifth National Health Service General Research by the National Health and Family Planning Commission of the People's Republic of China.<sup>35</sup> The general survey of the National Health Service included job satisfaction of medical staff. It was a rigorously developed instrument, based on the well-known and widely used Minnesota Satisfaction Questionnaire.<sup>36</sup> Its content validity was validated through an expert panel discussion, which included five experts. To determine the internal consistency of this questionnaire, Cronbach's  $\alpha$  coefficient was calculated, which was 0.65. The Kaiser-Meyer-Olkin test was used as a screening test for factorability, which was 0.703 ( $p < 0.001$ ), indicating acceptable validity.

We collected data on sociodemographic variables such as age, sex, education level, position, professional title and department. Positions comprised directors, doctors, researchers and unspecified staff. The unspecified staff members were doctoral students studying and working in these hospitals. There were some structured questions about types of patients, including types of patients that doctors thought should be treated in different healthcare institutions, doctors' satisfaction with the types of patients they were treating, and what types of patients they expected to treat. In addition, we asked about doctors' work time, life stress, work stress and the sources of work stress. The sources of work stress included work intensity, long hours, patients' lofty expectations, job risks, poor patient-doctor relationships, poor colleague relationships, competition for promotion, poor social evaluations and societal misunderstandings. Work intensity reflected the quantum of doctors' work, which was mainly evaluated by the number of patients that doctors diagnosed and treated (including surgery). Poor social evaluations reflected doctors' reputation among patients, which considered doctors' professional abilities and personal characteristics. We also asked doctors to rate their relationships with patients and evaluate patients' medical expenses. Questions about working and life stress, and doctor-patient relationships were measured using a 5-point Likert scale (*not respectful, relatively not respectful, moderate, relatively respectful and very respectful*). Doctors' job satisfaction was the dependent variable in this study. Because job satisfaction and dissatisfaction were evaluated from multiple aspects, doctors had to make an evaluation of their job based on their work time, life stress, work stress and the sources of work stress. Based on the definition by Gothe *et al.*,<sup>37</sup> if the individual is happy with their job after considering all the above factors, they could evaluate their job as satisfactory; otherwise, they could evaluate it as dissatisfactory.

### Statistical analyses

All data were entered into Epidata V.3.1 and analysed using SPSS V.19.0 and SAS V.8.0. Sociodemographic data were described using frequencies and percentages.  $\chi^2$  tests were employed to test the differences in job satisfaction among

**Table 1** Participants' personal and job characteristics

	n (%)	Job satisfaction		$\chi^2$	P value
		Dissatisfaction n (%)	Satisfaction n (%)		
Sex		473 (64.8)	257 (35.2)	1.448	0.229
Male	407 (55.8)	256 (62.9)	151 (37.1)		
Female	323 (44.2)	217 (67.2)	106 (32.8)		
Education level				4.565	0.207
Junior college degree	11 (1.5)	4 (36.4)	7 (63.6)		
Bachelor's degree	203 (27.8)	128 (63.1)	75 (36.9)		
Master's degree	331 (45.3)	218 (65.9)	113 (34.1)		
Doctor's degree	185 (25.3)	123 (66.5)	62 (33.5)		
Position				6.800	0.147
Director of a clinical department	51 (7.0)	32 (62.7)	19 (37.3)		
Director of a medical technology department	4 (0.5)	2 (50.0)	2 (50.0)		
Doctor	637 (87.3)	420 (65.9)	217 (34.1)		
Researcher	2 (0.3)	0 (0.0)	2 (100.0)		
Unspecified staff	36 (4.9)	19 (52.8)	17 (47.2)		
Professional title				12.674	0.005
Junior	249 (34.1)	164 (65.9)	85 (34.1)		
Intermediate	302 (41.4)	204 (67.5)	98 (32.5)		
Associate senior	127 (17.4)	83 (65.4)	44 (34.6)		
Senior	52 (7.1)	22 (42.3)	30 (57.7)		
Department				8.213	0.042
Others	84 (11.5)	51 (60.7)	33 (39.3)		
Medical technology	46 (6.3)	25 (54.3)	21 (45.7)		
Internal medicine	319 (43.7)	224 (70.2)	95 (29.8)		
Surgery	281 (38.5)	173 (61.6)	108 (38.4)		

doctors with different personal characteristics and other factors. A binary logistic regression analysis was further used to verify the influence of factors on doctors' job satisfaction. In the logistic regression analysis, the dependent variable was doctors' job satisfaction. Independent variables entered into the logistic regression analysis were based on the univariate analysis results that were all significantly related to doctors' job satisfaction. We employed the stepwise selection method, with inclusion criteria of 0.10 and exclusion criteria of 0.15. We also employed a multicollinearity analysis to test collinearity. All tests were two-tailed and  $p < 0.05$  was considered significant.

### Patient and public involvement

We declare that no patients or public were involved in this study.

## RESULTS

### Characteristics, working condition and job satisfaction

Overall, 64.8% of participants were dissatisfied with their jobs. Participants' personal and job characteristics are shown in [table 1](#).

Working conditions and participants' job satisfaction are shown in [table 2](#). Nearly 88% of the participants worked more than 40 hours a week. It was found that 85% of the doctors could basically meet the hospitals' working requirements, which were reflected as the number of patients they diagnosed and treated monthly. Most reported work and life stress, which had increased in the last year, and was due to working intensity, long hours and job risks. In addition, about one-third of doctors reported that their departments organised a community health lecture, and more than half of the departments participated in a volunteer medical consultation.

Considering the types of patients, participants believed patients with difficult-to-diagnose diseases, serious diseases and rare diseases should seek medical treatment in tertiary A hospitals. Most participants treated patients with common diseases, chronic diseases and those seeking medicine; only about half of them were satisfied with the type of patients they met, which differed from whom they were expecting to treat more often. Participants felt that many of these patients should seek medical

**Table 2** Working conditions and participants' job satisfaction

	n (%)	Job satisfaction		$\chi^2$	P value
		Dissatisfaction n (%) 473 (64.8)	Satisfaction n (%) 257 (35.2)		
<b>Work hours per week (hours)</b>				16.935	0.002
≤40	90 (12.3)	44 (48.9)	46 (51.1)		
41–55	277 (37.9)	185 (66.8)	92 (33.2)		
56–70	282 (38.6)	190 (67.4)	92 (32.6)		
71–85	56 (7.7)	42 (75.0)	14 (25.0)		
≥86	25 (3.4)	12 (48.0)	13 (52.0)		
<b>Whether the work within working hours met hospital requirements</b>				13.846	0.008
Can	253 (34.7)	161 (63.6)	92 (36.4)		
Mostly can	367 (50.3)	224 (61.0)	143 (39.0)		
Mostly cannot	68 (9.3)	55 (80.9)	13 (19.1)		
Cannot	20 (2.7)	15 (75.0)	5 (25.0)		
Hard to say	22 (3.0)	18 (81.8)	4 (18.2)		
<b>Life stress</b>				20.524	<0.0001
Very light	2 (0.3)	2 (100.0)	0 (0.0)		
Relatively light	6 (0.8)	3 (50.0)	3 (50.0)		
Moderate	153 (21.0)	80 (52.3)	73 (47.7)		
Relatively great	362 (49.6)	234 (64.6)	128 (35.4)		
Very great	207 (28.4)	154 (74.4)	53 (25.6)		
<b>Work stress</b>					
Very light	0 (0.0)	0 (0.0)	0 (0.0)	39.135	<0.0001
Relatively light	3 (0.4)	0 (0.0)	3 (100.0)		
Moderate	88 (12.1)	37 (42.0)	51 (58.0)		
Relatively great	358 (49.0)	225 (62.8)	133 (37.2)		
Very great	281 (38.5)	211 (75.1)	70 (24.9)		
<b>Whether current work stress increased compared with that in the past year</b>				20.777	<0.0001
Yes	576 (78.9)	392 (68.1)	184 (31.9)		
No	73 (10.0)	30 (41.1)	43 (58.9)		
Hard to say	81 (11.1)	51 (63.0)	30 (37.0)		
<b>Reflection of great work stress</b>					
Work intensity	480 (65.8)	341 (71.0)	139 (29.0)	23.979	<0.0001
Long work time	421 (57.7)	303 (72.0)	118 (28.0)	22.459	<0.0001
High expectations of patients	341 (46.7)	230 (67.4)	111 (32.6)	1.976	0.160
High job risks	403 (55.2)	291 (72.2)	112 (27.8)	21.678	<0.0001
Poor patient-doctor relationships	396 (54.2)	277 (69.9)	119 (30.1)	10.083	0.001
Poor colleague relationships	42 (5.8)	33 (78.6)	9 (21.4)	3.708	0.054
Fierce competition for promotion	310 (42.5)	223 (71.9)	87 (28.1)	12.045	0.001
Poor social evaluations	205 (28.1)	162 (79.0)	43 (21.0)	25.303	<0.0001
Social misunderstandings	302 (41.8)	208 (68.2)	97 (31.8)	2.658	0.103
<b>Whether departments once organised a community health lecture</b>				1.542	0.214

Continued



Table 2 Continued

	n (%)	Job satisfaction		$\chi^2$	P value
		Dissatisfaction n (%) 473 (64.8)	Satisfaction n (%) 257 (35.2)		
No	465 (63.7)	309 (66.5)	156 (33.5)		
Yes	265 (36.3)	164 (61.9)	101 (38.1)		
Whether departments once participated in a volunteer medical consultation				0.213	0.644
No	318 (43.6)	209 (65.7)	109 (34.3)		
Yes	412 (56.4)	264 (64.1)	148 (35.9)		

treatment in the community health system, especially patients with common and chronic diseases, and those seeking medicines. Further, about half of the participants thought patients' medical expenses were costly. Finally, less than half of the participants felt respected by their patients (table 3).

### Univariate analysis of job satisfaction and its influencing factors

Using  $\chi^2$  tests, the relationships between job satisfaction and other factors were examined. Results indicated that several factors significantly influenced doctors' job satisfaction (all p values <0.05), including the following: professional title ( $\chi^2 = 12.674$ ), department ( $\chi^2 = 8.213$ ), work hours every week ( $\chi^2 = 16.935$ ), whether the work within working hours met hospital requirements ( $\chi^2 = 13.846$ ), life stress ( $\chi^2 = 20.524$ ), work stress ( $\chi^2 = 39.135$ ), whether current work stress increased compared with that in the past year ( $\chi^2 = 20.777$ ), whether work intensity reflected work stress ( $\chi^2 = 23.979$ ), whether working long hours reflected work stress ( $\chi^2 = 22.459$ ), whether high jobs risks reflected work stress ( $\chi^2 = 21.678$ ), whether a poor patient-doctor relationship reflected work stress ( $\chi^2 = 1.083$ ), whether competition for promotion reflected work stress ( $\chi^2 = 12.045$ ), whether a poor social evaluation reflected work stress ( $\chi^2 = 25.303$ ), whether patients should seek medical treatment in tertiary A hospitals ( $\chi^2 = 4.209$ ), whether patients seeking medicine were the most common type doctors treated ( $\chi^2 = 16.713$ ), whether doctors were satisfied with the type of patients they treated ( $\chi^2 = 49.153$ ), whether patients with common diseases were the population doctors expected ( $\chi^2 = 7.987$ ), whether patients with acute diseases were the population doctors expected ( $\chi^2 = 7.830$ ), and the extent patients respected doctors ( $\chi^2 = 44.764$ ) (tables 1–3).

### Logistic regression analysis of job satisfaction and its influencing factors

Variables that were significant to doctors' job satisfaction in the univariate analysis were included in the binary logistic regression analysis. To testify the collinearity among variables, a multicollinearity analysis was conducted. If tolerance is <0.1 or the variance inflation factor is >5, collinearity exists. The multicollinearity analysis indicated

that collinearity did not exist (online supplementary table 1).

As shown in table 4, nine factors were entered into the logistic regression model. Doctors who were satisfied with the types of patients they treated were more likely to be satisfied with their job compared with those who were not satisfied. Doctors who did not consider work intensity or poor social evaluation as reflective of their work stress had more job satisfaction than did their counterparts. Doctors who felt moderate work stress felt more satisfied with their job compared with those with great work stress. Doctors who had an expectation of treating patients with common diseases were more satisfied with their jobs. Finally, doctors with senior professional titles were more satisfied with their job compared with doctors with lower-level titles.

### DISCUSSION

Doctors' job satisfaction was influenced by their professional title, patient composition and work stress. Some factors like department, work hours, patients' respect and life stress were also related to doctors' job satisfaction.

First, unlike some studies in other countries and regions, demographic characteristics (eg, sex and education background) were not influencing factors of job satisfaction.<sup>38 39</sup> Only doctors' professional title played a role, which was supported by other studies in China<sup>5</sup> and Canada.<sup>40</sup> Junior doctors were less satisfied with their job, which may be attributed to many other factors. Because doctors' income was related to their professional title,<sup>41</sup> the annual income of junior doctors was always lower than that of senior doctors. However, studies have proposed that income positively influences doctors' job satisfaction.<sup>2 5 20 42</sup> In addition, a study in the UK noted that young staff may fail to fully use their training, which could foster low satisfaction.<sup>15</sup> This can also be explained by opportunities to use one's abilities and personal accomplishments during daily work, which were other aspects impeding young staff from enjoying job satisfaction.<sup>7</sup> Moreover, junior doctors in China face additional difficulties, including an unfair promotion system.<sup>43</sup> Furthermore, the new policy about specialist standardisation

**Table 3** Patient-related issues and job satisfaction

	n (%)	Job satisfaction		$\chi^2$	P value
		Dissatisfaction n (%) 473 (64.8)	Satisfaction n (%) 257 (35.2)		
Which types of patients should seek medical treatment in tertiary A public hospitals (MCQ <sup>1</sup> )					
All types	301 (41.2)	182 (60.5)	119 (39.5)	4.209	0.040
Chronic diseases	165 (22.6)	98 (59.4)	67 (40.6)	2.726	0.099
Rare diseases	389 (53.3)	258 (66.3)	131 (33.7)	0.854	0.355
Common diseases	171 (23.4)	105 (61.4)	66 (38.6)	1.126	0.289
Acute diseases	321 (44.0)	211 (65.7)	110 (34.3)	0.221	0.638
Difficult-to-diagnose diseases	484 (66.3)	321 (66.3)	163 (33.7)	1.470	0.225
Rehabilitation	71 (9.7)	45 (63.4)	26 (36.6)	0.069	0.793
Serious diseases	453 (62.1)	294 (64.9)	159 (35.1)	0.006	0.939
Which types of patients doctors treated in most work hours (MCQ <sup>1</sup> )					
Chronic diseases	496 (67.9)	321 (64.7)	175 (35.3)	0.004	0.950
Rare diseases	82 (11.2)	46 (56.1)	36 (43.9)	3.063	0.080
Common diseases	606 (83.0)	399 (65.8)	207 (34.2)	1.715	0.190
Acute diseases	140 (19.2)	87 (62.1)	53 (37.9)	0.534	0.465
Difficult-to-diagnose diseases	190 (26.0)	114 (60.1)	76 (40.0)	2.588	0.108
Rehabilitation	81 (11.1)	52 (64.2)	29 (35.8)	0.014	0.905
Serious diseases	150 (20.5)	87 (58.0)	63 (42.0)	3.821	0.051
Seeking medicine	301 (41.2)	221 (73.4)	80 (26.6)	16.713	<0.0001
Whether doctors were satisfied with types of patients they treated				49.153	<0.0001
Satisfied	374 (51.2)	198 (52.9)	176 (47.1)		
Not satisfied	241 (33.0)	192 (79.7)	49 (20.3)		
Hard to say	115 (15.8)	83 (72.2)	32 (27.8)		
Which types of patients doctors expected (MCQ <sup>1</sup> )					
Chronic diseases	267 (36.6)	162 (60.7)	105 (39.3)	3.133	0.077
Rare diseases	338 (46.3)	224 (66.3)	114 (33.7)	0.603	0.438
Common diseases	380 (52.1)	228 (60.0)	152 (40.0)	7.987	0.005
Acute diseases	196 (26.8)	143 (73.0)	53 (27.0)	7.830	0.005
Difficult-to-diagnose diseases	460 (63.0)	305 (66.3)	155 (33.7)	1.243	0.265
Rehabilitation	69 (9.5)	43 (62.3)	26 (37.7)	0.205	0.651
Serious diseases	348 (47.7)	238 (68.4)	110 (31.6)	3.770	0.052
Seeking medicine	62 (8.5)	44 (71.0)	18 (29.0)	1.132	0.287
Which types of patients should seek medical treatment in the community health system (MCQ <sup>1</sup> )					
Chronic diseases	487 (66.7)	322 (66.1)	165 (33.9)	1.125	0.289
Rare diseases	27 (3.7)	15 (55.6)	12 (44.4)	1.049	0.306
Common diseases	556 (76.2)	360 (64.7)	196 (35.3)	0.002	0.963
Acute diseases	33 (4.5)	19 (57.6)	14 (42.4)	0.790	0.374
Difficult-to-diagnose diseases	30 (4.1)	23 (76.7)	7 (23.3)	1.933	0.164
Rehabilitation	368 (50.4)	251 (68.2)	117 (31.8)	3.787	0.052
Serious diseases	23 (3.2)	15 (65.2)	8 (34.8)	0.002	0.966
Seeking medicine	518 (71.0)	343 (66.2)	175 (33.8)	1.580	0.209
Evaluation of patients' medical expenses in tertiary A hospitals				8.352	0.079
Very cheap	28 (3.8)	24 (85.7)	4 (14.3)		

Continued

Table 3 Continued

	n (%)	Job satisfaction		$\chi^2$	P value
		Dissatisfaction n (%) 473 (64.8)	Satisfaction n (%) 257 (35.2)		
Relatively cheap	35 (4.8)	26 (74.3)	9 (25.7)		
Moderate	284 (38.9)	176 (62.0)	108 (38.0)		
Relatively expensive	334 (45.8)	213 (63.8)	121 (36.2)		
Very expensive	49 (6.7)	34 (69.4)	15 (30.6)		
Evaluation of the extent patients respect doctors				44.764	<0.0001
Not respect	13 (1.8)	11 (84.6)	2 (15.4)		
Relatively not respect	43 (5.9)	36 (83.7)	7 (16.3)		
Moderate	354 (48.5)	260 (73.4)	94 (26.6)		
Relatively respect	284 (38.9)	145 (51.1)	139 (48.9)		
Respect	36 (4.9)	21 (58.3)	15 (41.7)		

\*Participants can choose more than one option in MCQ question.  
MCQ, multiple-choice question.

training places more pressure on young staff, since it requires doctors to do an additional 2–4 years of specialist training after completing 3 years of resident standardisation training.<sup>44</sup> During this process, young doctors may become unsatisfied with their income and their inability to support their families, which, in turn, promotes further job dissatisfaction.

Second, patient composition was a significant factor influencing doctors' job satisfaction. Around 51.2% of the doctors were satisfied with the type of patients they treated; however, 52.1% of the doctors mostly treated patients with common diseases every day. The low satisfaction seemed to reflect the gap between their expectations and the reality. Given that doctors in tertiary A public hospitals have the best professional abilities and hope to deal with the most difficult and complicated diseases, they expect to treat patients with difficult-to-diagnose diseases. However, unlike the two-way referral system in many developed countries (eg, the USA), patients in China can choose the health institution they prefer.<sup>45</sup> This causes overcrowding in tertiary A public hospitals,<sup>46</sup> regardless of disease type. In fact, many patients with common, mild, or chronic diseases do not need to visit tertiary A public hospitals, as this wastes high-quality medical resources. Under these circumstances, doctors who wish to solve difficult-to-diagnose cases feel disappointed and dissatisfied with their work.<sup>14</sup> To solve this problem, hospital patient flow logistics should be controlled.<sup>47</sup> Encouraging patients and doctors to accept the two-way referral is vital; however, the level of trust between doctors and patients is also critical. Moreover, it should be noted that inadequate time spent treating difficult-to-diagnose diseases has a negative effect on doctors' skill development, which can also cause doctors' job dissatisfaction. Policy-makers and hospital administrators should provide more

opportunities to doctors expecting more difficult-to-diagnose patients, especially junior doctors.

Third, work stress was related to job satisfaction, which supported a past study.<sup>5</sup> However, we also found that relative work stress (ie, comparing work stress to that in the past year) more significantly predicted job satisfaction than did present work stress. Doctors who felt greater relative work stress were more likely to be dissatisfied with their job than their counterparts. In addition, the factors that doctors consider as reflective of work stress, especially work intensity and social evaluation, require attention. Doctors working in tertiary A public hospitals usually undertake many clinical tasks; for example, because of the excess of patients, doctors have to diagnose and treat them as fast as possible, which limits doctors' ability to take breaks.<sup>48</sup> Moreover, several doctors have been reported to die suddenly, possibly because of the work intensity.<sup>49</sup> Similar studies in other countries have also stated that work intensity negatively affects job satisfaction.<sup>14 38</sup> Moreover, improving their social evaluation may improve doctors' job satisfaction. At present, doctors in China do not have a good reputation because of some doctors pursuing personal economic interests by prescribing unnecessary medicine or tests for patients.<sup>50</sup> It must be noted that there are many other doctors who do not resort to such unethical practices; however, they also become victims of this stigmatisation. Our society should maintain an objective and impartial attitude towards most doctors and supervise those with a poor reputation.

Fourth, doctors' long work hours require attention. Working overtime has caused low job satisfaction worldwide, such as in Britain,<sup>51</sup> Spain<sup>52</sup> and Switzerland.<sup>42</sup> Our finding was similar. Although the European Working Time Directive ruled that junior doctors should work no more than 48 hours per week,<sup>53</sup> this was unrealistic in China.

**Table 4** Logistic regression analysis of job satisfaction and its influencing factors

Parameter	Estimate	P value	OR	95% Wald CI	
				Lower limit	Upper limit
Whether doctors were satisfied with types of patients they treated					
Satisfied	0.876	0.0007	2.401	1.447	3.982
Not satisfied	-0.244	0.408	0.784	0.440	1.397
Hard to say	Ref	Ref	Ref	Ref	Ref
Evaluation of the extent patients respect doctors					
Not respect	-1.050	0.261	0.350	0.056	2.187
Relatively not respect	-0.831	0.166	0.436	0.134	1.412
Moderate	-0.612	0.136	0.542	0.242	1.213
Relatively respect	0.223	0.573	1.256	0.568	2.776
Respect	Ref	Ref	Ref	Ref	Ref
Whether work intensity reflected work stress					
No	0.527	0.009	1.695	1.143	2.512
Yes	Ref	Ref	Ref	Ref	Ref
Whether a poor social evaluation reflected work stress					
No	0.813	0.0002	2.254	1.466	3.466
Yes	Ref	Ref	Ref	Ref	Ref
Work stress					
Very light	-	-	-	-	-
Relatively light	13.763	0.986	>999.999	<0.001	>999.999
Moderate	1.034	0.001	2.813	1.553	5.096
Relatively great	0.061	0.763	1.063	0.714	1.584
Very great	Ref	Ref	Ref	Ref	Ref
Whether the work within work hours met hospital requirements					
Can	0.498	0.410	1.645	0.504	5.366
Mostly can	0.788	0.187	2.198	0.683	7.080
Mostly cannot	-0.250	0.711	0.779	0.207	2.926
Cannot	0.585	0.482	1.795	0.352	9.159
Hard to say	Ref	Ref	Ref	Ref	Ref
Whether working long hours reflected work stress					
No	0.303	0.111	1.354	0.933	1.964
Yes	Ref	Ref	Ref	Ref	Ref
Whether patients with common diseases were the population doctors expected					
No	-0.415	0.025	0.660	0.459	0.945
Yes	Ref	Ref	Ref	Ref	Ref
Whether patients with acute diseases were the population doctors expected					
No	0.360	0.084	1.434	0.953	2.158
Yes	Ref	Ref	Ref	Ref	Ref
Professional title					
Junior	-0.916	0.031	0.400	0.197	0.811
Intermediate	-0.761	0.011	0.467	0.234	0.933
Associate senior	-0.723	0.031	0.485	0.230	1.022
Senior	Ref	Ref	Ref	Ref	Ref



Doctors have to work overtime, which often limits their family time and spare time. However, a study proposed that work-private hours also play a key role in job satisfaction.<sup>9</sup> In addition, in Chinese hospitals, doctors' payment is based on their performance, indicating that meeting job requirements may be more critical than working long hours. Moreover, performance is critical for promotion, especially for junior doctors. Therefore, there is an urgent need to shorten doctors' weekly work hours and change the current promotion and income structure, which may promote increased job satisfaction.<sup>54</sup>

Fifth, it is reasonable to assume that if doctors feel respected by patients, they will be more satisfied with their work. Respect from patients indicates that their professional abilities, personal characteristics and good reputation are recognised. All of these good aspects would accelerate doctors' enthusiasms of their work, which then reflected as job satisfaction. However, due to the overcrowding of patients in tertiary A public hospitals, patients spend a long time waiting to register, pay and fill prescriptions compared with the short time meeting the doctors. This unreasonable phenomenon has reduced patients' satisfaction and their respect for doctors, and sometimes even results in violence against doctors.<sup>55</sup> Therefore, experiencing a poor patient-doctor relationship and violence from patients might lead to doctors' job dissatisfaction. To address this concern and improve the patient-doctor relationship, the number of patients visiting tertiary A public hospitals should be decreased. If patients with common or minor diseases are willing and encouraged to seek medical treatment in the community healthcare system, doctors at tertiary A hospitals can spend more time diagnosing, treating and communicating with patients, while maintaining a positive and patient attitude.<sup>56</sup>

Finally, other life stress is also related to job satisfaction, and problems such as depression and burnout require consideration.<sup>57</sup> Work-family conflict should also be addressed to avoid job dissatisfaction.<sup>5</sup> Moreover, doctors' professional title and department might factor into their job satisfaction. Junior doctors might experience more life stress due to supporting their families; therefore, these doctors may require additional support. Doctors in different departments may also enjoy various extensions of job satisfaction,<sup>21</sup> indicating that hospital administrators should improve the working conditions to various degrees according to the doctors' departments.

There are two limitations to this study. First, due to doctors' unwillingness to answer questions about certain personal information, information on age distribution and income were not obtained, which made it impossible to explore the effects of these on job satisfaction. Second, this survey was only conducted in eleven tertiary A public hospitals in Shanghai, which limits generalizability. Future studies should include more hospitals and more possible factors.

## CONCLUSIONS

In conclusion, most doctors were not satisfied with their jobs in Shanghai, China, and this was mainly influenced by their professional title, patient composition and work stress. To address this problem, policymakers and hospital administrators should establish the two-way referral system, improve the current promotion and income structure, pay more attention to less-experienced staff and help doctors release their work stress.

**Contributors** This manuscript was jointly completed by JL, WY, TD, ML and LZ. We must point out that the four authors—JL, WY, TD and ML—contributed equally to this research. Here are the specific efforts of each author. JL, WY, TD and ML made substantial contributions to conception and design, analysis and interpretation of data, drafting the manuscript and revising it critically for important intellectual content. LZ made substantial contributions to conception and design. All authors read and gave final approval of the version to be published.

**Funding** This work was supported by National Natural Science Foundation of China (71233008, 91224005, 71673291, 71303248), Important Disease Joint Research Project in Health Systems of Shanghai (2013ZYJB0006) and Military Health Support Strategy and Key Technology Research for Special Injuries in the South China Sea Region (AWS12J002).

**Competing interests** None declared.

**Patient consent for publication** Obtained.

**Ethics approval** Ethics Committee of the Second Military Medical University.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data sharing statement** No additional data are available.

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