

AME survey-003 A1-part1: in current China, do you regret you joined the medical profession

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Background: The medical workforce constitutes the foundation of the provision of health services in all countries. The effectiveness of health systems and the quality of health services are directly related to the performance of health workers. Satisfaction level of the job affects the quality of care for patients. An anonymous on-line survey was conducted with the aim to obtain a better understanding of the current morale of Chinese medical professionals.

Methods: An online cross-sectional questionnaire based survey was conducted during the period of Sep 10-23, 2015, via the platform provided by DXY (www.dxy.cn), which is the largest medical and paramedical related website in China. In addition to demographics of the participants, a particular question was asked to the participants, in current China do you regret you joined the medical profession? This initial report analyzed the relationship between the participants with 'No' or 'Yes' answers to their demographic characteristics.

Results: In total 2,356 DXY users completed the survey, including 1,740 males (73.82%) and 617 females (26.18%), with a mean age of 31.96 ± 7.03 yrs. There were more participants from relatively economically developed eastern coast areas. The N/Y (no regret participants *vs.* regretted participants ratio) ratio for all participants was 1.06 ($P=0.181$). The N/Y ratio of males and females was 1.04 and 1.11 respectively, and there was no significant difference in this ratio among them. There were 1,549 participants from IIIA hospitals (65.72%, N/Y ratio =1.15, $P=0.008$), followed by IIIB & IIA hospitals (25.46%, N/Y ratio =0.87, $P=0.086$), IIB & II C hospitals (3.7%, N/Y ratio =0.83, $P=0.394$), and lastly 1A & 1B clinics (2.6%, N/Y ratio =1.35, $P=0.249$). A total of 1,323 participants (56.13%) were trainee doctors with N/Y ratio of 1.19 ($P=0.002$), followed by lecturer-level attending specialists (27.79%, N/Y ratio =0.81, $P=0.009$), associate principle doctors (12.43%, N/Y ratio =1.01, $P=0.953$), and lastly principle doctors (3.73%, N/Y ratio =1.59, $P=0.033$). Specialties with less stressful workload such as radiology and traditional Chinese medicine have the highest job satisfaction, while doctors in accident and emergency cluster have the least job satisfaction. Medical professionals from Yunnan, Gansu and Shanxi have relatively higher positive response (higher N/Y ratio), despite the fact that these are not the economically advanced regions in China; while Jiangsu, an economically advanced province, had relatively higher negative response (lower N/Y ratio).

Conclusions: The morale of majority medical professional in China mainland is likely to be positive. Job satisfaction is inversely related to work related stress level, but may not related to the absolute income.

Keywords: China; survey; job satisfaction; stress; clinical specialty; income

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Introduction

The medical workforce constitutes the foundation of the provision of health services in all countries. Occupational stress and job satisfaction in medical profession is an important issue globally (1-13). The effectiveness of health systems and the quality of health services are directly related to the performance of health workers. Satisfaction level of the job affects the quality of care for patients and it has the potential to affect the future of medicine in many ways, and low satisfaction makes it harder to recruit future generation of bright doctors (1-12).

A few recent reports described a bleak picture of medical professionals' current morale in China Mainland, citing low pay, long working hours, and poor doctor-patient relationship (13-19). Recruitment and retention of doctors were reported to be major challenges for the Chinese health system (14). However, this bleak picture differs from many other personal observations and communications. To enroll into a good medical school is very highly competitive in China (20-22). In the meantime, many patients complain it is difficult to see a good doctor, and the treatments are far too expensive. To address this disparity, and hopefully obtain a better understanding which is closer to the true situation at the national level, an anonymous on-line survey was conducted in September 2015. This paper reports the results of the first part of the questionnaire. The results of the second part of the questionnaire, as well as the attempted explanation of results, will be provided in a followed report to be published in the next issue of this journal.

Materials and methods

An online cross-sectional survey was carried out during the period of September 10-23, 2015. The survey was conducted on the platform provided by DXY (www.dxy.cn), which is the largest medical and paramedical related website in China. Participants are advised to read some comparative information before they started to fill the on-line questionnaire: (I) the training period for medical professionals is similar to other professions if we include the graduate studies, such as PhD study (usually 5 years' post-graduate study) and post-doctoral study (usually 2-3 years after a PhD degree) of other professions, which also feature relative low income during the training period; (II) in developed counties such as USA, Europe, Japan, and Korea,

it is common that medical doctors work for long hours (1,2,5,7,9-13); (III) in their first year, German doctors earn roughly 4,000 Euro/month, and after 3-5 years their income can grow to >5,000 Euro/month before tax (23,24). While the average monthly salary of all professions in Germany is slightly less than 3,500 Euro before tax. Tax and other deductions are traditionally very high in Germany (approximately 40%); (IV) in the year 2013, the average income of doctors in Japan is around 780,000 RBM/yr, while the average income of professors in Japan is 730,000 RBM/yr (25); (V) it is highly competitive to get into good medical schools in China (20-22). In 2014 the enrolment score at Shanghai Medical College for high school graduates was higher than the enrolment score at the Fudan University main campus. Its enrolment score was only below that of Tsinghua University and Peking University in Zhejiang Province, but higher than that of Fudan University. In Jiangsu Province, Shanghai Medical College's enrolment score was higher than that of Peking University, and much higher than that of Fudan University.

To increase the participation rate, a token bonus would be awarded to the DXY users who completed this survey. This token bonus allows the user to download materials from DXY website. The survey flow chart is shown in *Figure 1*.

Results

In total 2,356 DXY users completed the survey, including 1,740 males (73.82%) and 617 females (26.18%), with a mean age of 31.96 ± 7.03 yrs. The geographic distribution of participants is shown in *Figure 2*. There were participants from all provinces or regions in China mainland (only n=1 for Tibet autonomous region). It can be seen that there were more participants from relatively economically developed eastern coast areas, probably due to the fact that doctors in these regions have more access to internet. The N/Y ratio (no regret participants *vs.* regretted participants ratio) for all participants was 1.06, and not significant ($P=0.181$). The N/Y ratio of males and females was 1.04 and 1.11 respectively, and there was no significant difference in this ratio among them (*Figure 3*).

There were 1,549 participants from IIIA hospitals (65.72%) with an N/Y ratio =1.15 ($P=0.008$), followed by IIIB & IIA hospitals (25.46%) with an N/Y ratio =0.87 ($P=0.086$), IIB & II C hospitals (3.7%) with an N/Y ratio =0.83, ($P=0.394$), and lastly 1A & 1B clinics (2.6%) with a N/Y ratio =1.35 ($P=0.249$, *Figure 4*). A total of 1,323

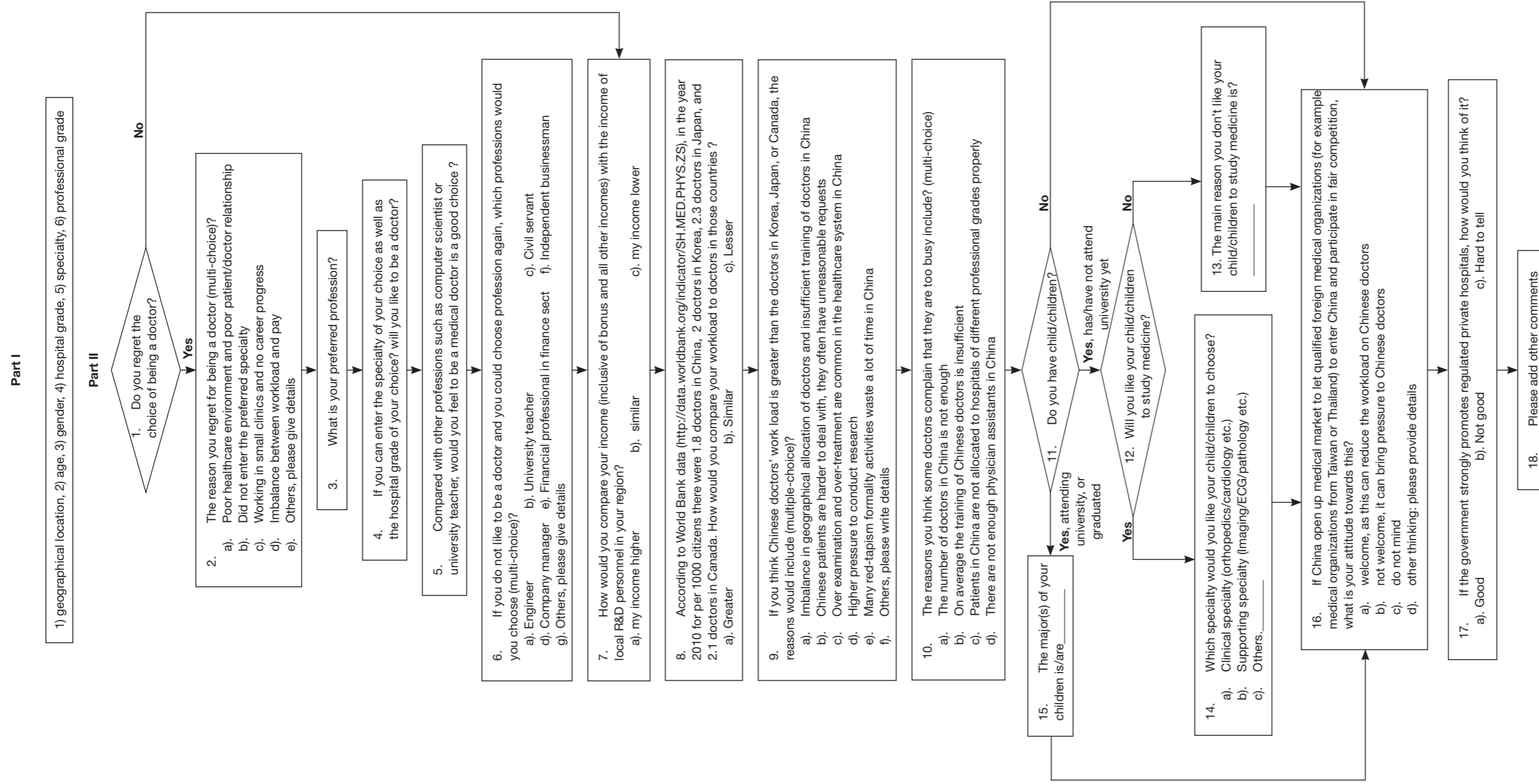


Figure 1 AME survey-003 questionnaire flow chart.

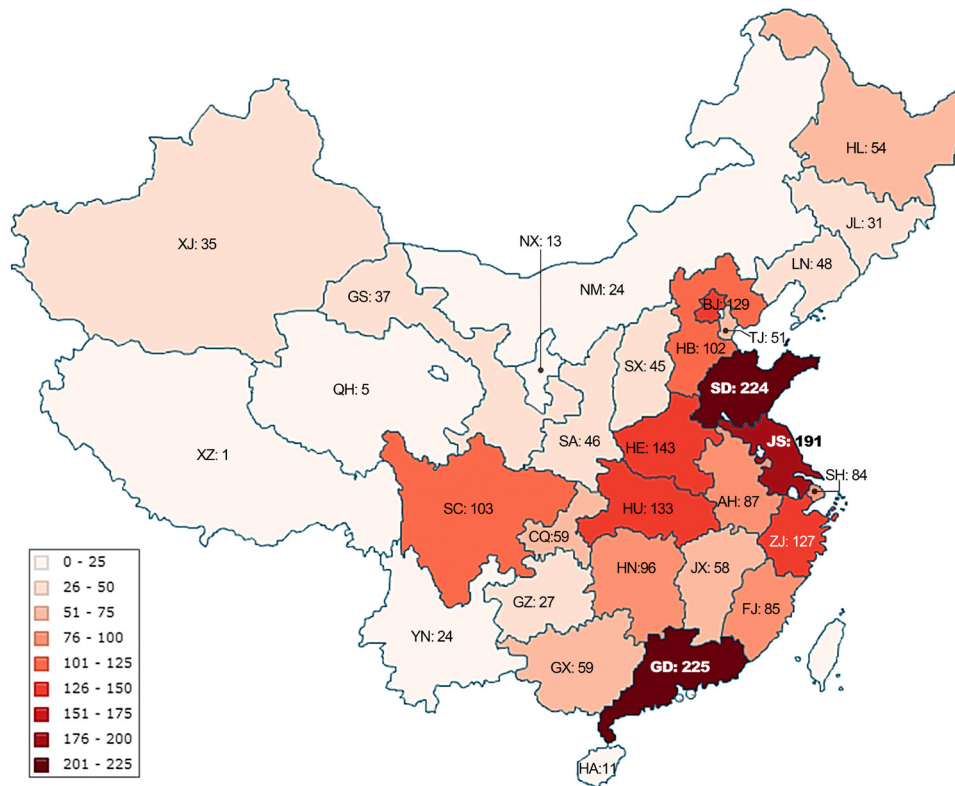


Figure 2 Geographic distribution of participants. The number of participants from each provinces or regions is indicated.

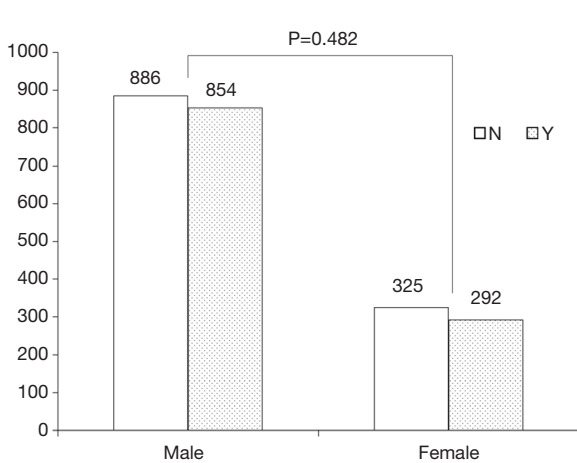


Figure 3 A graphic comparison of job satisfaction of male medical professionals vs. female medical professionals.

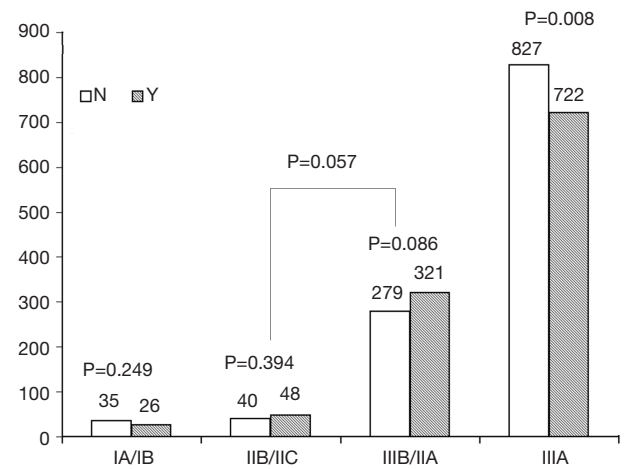


Figure 4 A graphic presentation of job satisfaction of medical professionals working at different grades of hospitals. IIIA hospitals are the highest tertiary hospitals and many of them are university teaching hospitals. IA & IB refer to small hospitals or clinics.

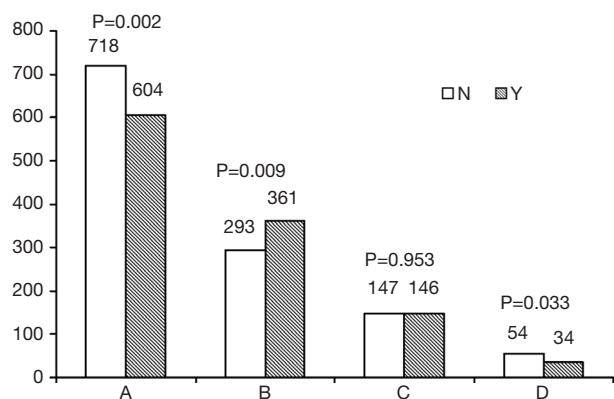


Figure 5 A graphic presentation of job satisfaction of medical professionals of different seniority grades. A: trainee doctors (including graduate students in clinical specialties); B: lecturer-level attending specialists; C: associate principle doctors; D: principle doctors.

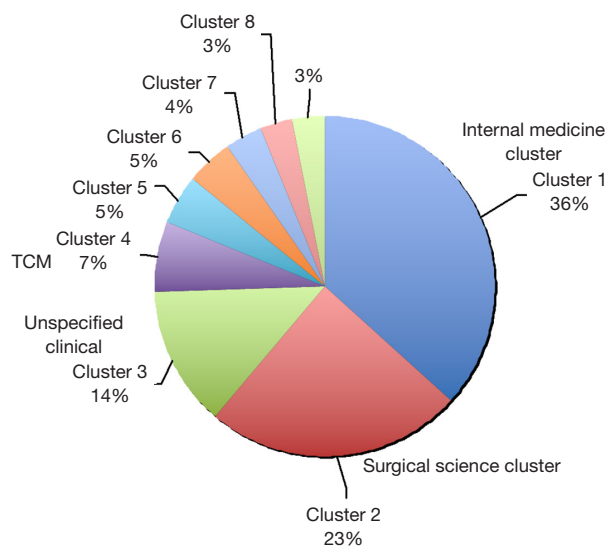


Figure 6 A graphic presentation of proportion of various specialist clusters.

Table 1 The non-regret voter vs. regretted voter ratios in different specialty clusters

Variables	SC6	SC9	SC4	SC8	SC3	SC2	SC1	SC12	SC5	SC10	SC7	SC13	SC11	Total
Voters	100	65	147	70	300	542	815	24	102	55	81	23	33	2,357
No	60	38	83	39	160	287	413	12	46	23	33	8	9	1,211
Yes	40	27	64	31	140	255	402	12	56	32	48	15	24	1,146
N/Y	1.5	1.41	1.3	1.26	1.143	1.13	1.03	1	0.82	0.72	0.69	0.53	0.375	
P value	0.046	0.17	0.12	0.34	0.248	0.17	0.7	1	0.32	0.23	0.1	0.14	0.009	0.181

SC1: internal medicine cluster; SC2: surgical sciences cluster; SC3: unspecified clinical medicine cluster; SC4: traditional Chinese medicine (TCM) cluster; SC5: oncology cluster; SC6: diagnostics cluster; SC7: pediatrics cluster; SC8: anesthesiology cluster; SC9: basic science research and public health cluster; SC10: obstetrics and gynecology cluster; SC11: accident and emergency cluster; SC12: nursing cluster; SC13: ophthalmology cluster.

participants (56.13%) were trainee doctors with an N/Y ratio of 1.19 (P=0.002), followed by lecturer-level attending specialists (27.79%, N/Y ratio =0.81, P=0.009), associate principle doctors (12.43%, N/Y ratio =1.01, P=0.953), and lastly principle doctors (3.73%, N/Y ratio =1.59, P=0.033, Figure 5).

We grouped all specialties into 11 clusters (SC1-SC11, Appendix). Subspecialties are grouped together as single cluster due to the nature of their duties and operations are similar, such as radiology and pathology, and additionally the subspecialties no/yes ratios were also similar according to initial assessment by the authors. The percentage distribution of each cluster is shown in Figure 6. The diagnostics cluster has the highest job satisfaction, followed

by basic science research and public health cluster, while doctors in accident and emergency cluster come the last (Table 1).

The N/Y ratio's geographical distribution is shown in Figure 7 and Table 2. Figure 7 shows medical professionals from Yunnan, Gansu, and Shanxi, had relatively higher positive responses, despite that fact that they are not in the economically advanced regions in China.

Discussion

This is till now the largest survey conducted on the career satisfaction of medical professionals in China Mainland. In contrast to some recent reports, our data showed

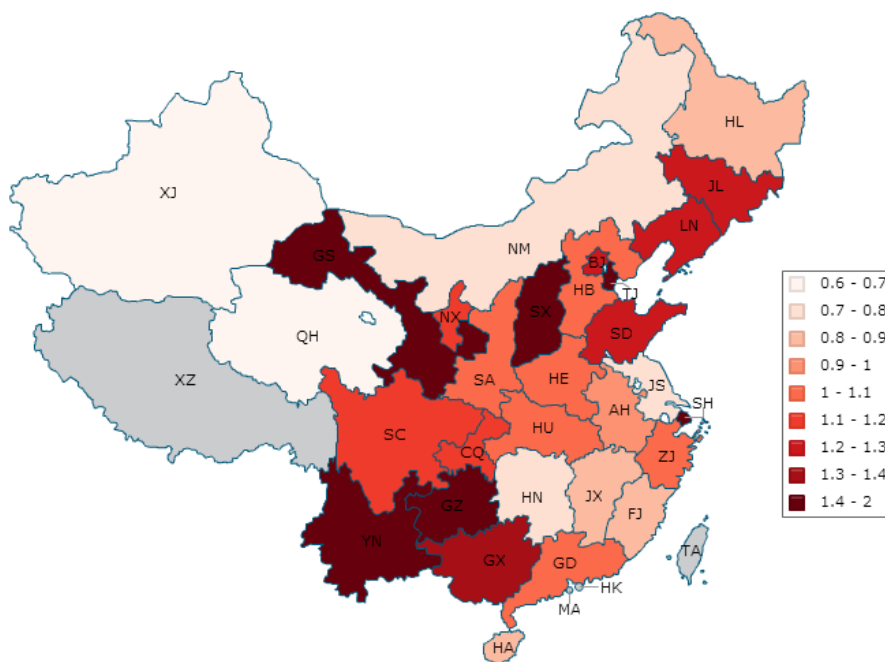


Figure 7 A graphic presentation of job satisfaction of medical professionals at individual province. Color map represents the N/Y ratio.

slightly more than half of the survey participants did not regret entered profession ($P>0.05$). When we look at the results, we always need to keep in mind the widely known psychological phenomenon of *'the grass is always greener on the other side'*, i.e., *other circumstances seem more desirable than one's own but in reality are often not* (26).

This study demonstrated that female medical professionals have similar moral as male medical professionals. Medical professionals in primary care and small clinics (IA and IB clinics) tend to have a better job satisfaction. This has documented previously (14). The reasons are mostly due to these doctors deal with mostly mild or chronic illness. Their work is less stressful, and they tend to enjoy a good relationship with the local resident community. On the other end, medical professionals in IIIA hospitals also have a better job satisfaction. This is likely related to the fact that these medical professionals have better career path, have access to more advanced techniques, and better respected in the society, despite the fact that they have to work longer hours, and deal with more complicated disease cases. The medical professionals in the middle of the spectrum, i.e., IIIB, IIA-C hospitals, tend to have less job satisfaction.

The analysis on professional grade shows trainee doctors and senior doctors tend to have better satisfaction.

Lecturer-level attending specialists tend to have less job satisfaction. This is probably due to lecturer attending specialists have relative heavy work load. Trainee doctors tend to show positive response demonstrates they overall have a good expectation for their future career.

The analysis on specialties was a surprise to the authors. The diagnostics cluster, which includes radiology, pathology, lab medicine, has the highest job satisfaction, followed by basic science research and public health cluster. Traditionally highly regarded specialty such as surgery only ranked in the middle of the spectrum. The high stress level has been highlighted among surgeons in other countries (1,2,9). Not surprisingly, doctors in accident and emergency cluster came the last. This result suggests work related stress is an important determinant in job satisfaction in the field of medicine in China.

The analysis on regional job satisfaction difference is quite interesting. Surprisingly, economically more developed provinces such as Guangdong province, Zhejiang province, Jiangsu province did not rank ahead in medical professionals' job satisfaction. On the other hand, medical professionals in economically less developed provinces such as Yunnan, Gansu, and Shanxi have better job satisfaction. While the actual income of the medical professional is difficult to estimate, if we take the assumption that doctors

Table 2 The N/Y ratio (no regret participants *vs.* regretted participants ratio) in various provinces and regions

Region	N/Y ratio	n
Yunnan	2	24
Gansu	1.85	37
Shanxi	1.65	45
Shanghai	1.47	84
Guizhou	1.45	27
Tianjin	1.43	51
Guangxi	1.36	59
Liaoning	1.29	48
Beijing	1.22	129
Shandong	1.22	225
Jilin	1.21	31
Chongqing	1.19	59
Ningxia	1.17	13
Sichuan	1.10	103
Zhejiang	1.08	127
Henan	1.07	143
Hubei	1.05	133
Guangdong	1.05	225
Hebei	1.00	102
Shaanxi	1.00	46
Anhui	0.93	87
Jiangxi	0.87	58
Heilongjiang	0.86	54
Fujian	0.85	85
Hainan	0.83	11
Hunan	0.75	96
Jiangsu	0.72	191
Nei Mongol	0.71	24
Qinghai	0.67	5
Xinjiang	0.67	35

N, number of voters per province or region.

in the economically more developed provinces have better income, then our result seems to suggest absolute income is not an important determinant in job satisfaction. Of course, we need to consider the relative living cost at the economically less developed regions would also be lower.

Despite the fact that the current survey is the largest on medical professionals' job satisfaction in China Mainland, there are several important limitations. The first is the small number of participants from IA & IB clinics (2.6%). This

is probably due to medical professionals in small clinics use fewer internet services. However, they constitute a very large proportion of doctors in China. In this consideration, the overall job satisfaction of all medical professionals in China could be underestimated in this study. Another point is that while young doctors were more likely to respond to the survey, well-established and busier senior doctors were under-represented in this survey (only 3.7% for principle doctors). Again this would lead to underestimation of the overall job satisfaction of medical professionals in China. Another limitation of this survey is that there were fewer participants from less economically developed regions.

This survey was conducted during September 10-23, 2015, lasting only two weeks. The number of participants is more than our previous two surveys (2,357 *vs.* 1,663 & 1,513) (27,28). This reflects the overall enthusiasm of participants to express their view on the current healthcare structure in China. However, the participants' number is still small when we look at the individual regions and individual specialties or sub-specialties. In order to provide more conclusive answer to the questions we are concerned. We plan to continue our survey, and recruit more participants. Particularly we aim to recruit more participants from small clinics and primary care sections, and try seeking views from more senior doctors.

In conclusion, our survey suggested the overall morale of majority medical professional in China mainland is likely to be positive. Job satisfaction is inversely related to work related stress level, but may not related to the absolute income. According to the comments provided by the participants, further analysis for the causes of job satisfaction/dissatisfaction will be reported in a followed paper.

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Footnote

Conflicts of Interest: This study was partially supported by the DXY Company and AME Publishing Company. The DXY Company and AME Publishing Company have no influence on the study design and interpretation of the results.

References

- Kim SK. How to save surgical residents in crisis. *J Korean Surg Soc* 2009;76:207-14.
- Kang SH, Boo YJ, Lee JS, Han HJ, Jung CW, Kim CS. High occupational stress and low career satisfaction of Korean surgeons. *J Korean Med Sci* 2015;30:133-9.
- Atif K, Khan HU, Maqbool S. Job satisfaction among doctors, a multi-faceted subject studied at a tertiary care hospital in Lahore. *Pak J Med Sci* 2015;31:610-4.
- Cagan O, Gunay O. The job satisfaction and burnout levels of primary care health workers in the province of Malatya in Turkey. *Pak J Med Sci* 2015;31:543-7.
- West CP, Dyrbye LN, Rabatin JT, Call TG, Davidson JH, Multari A, Romanski SA, Hellyer JMH, Sloan JA, Shanafelt TF. Intervention to promote physician well-being, job satisfaction, and professionalism: a randomized clinical trial. *JAMA Intern Med* 2014;174:527-33.
- Ali Jadoo SA, Aljunid SM, Dastan I, Tawfeeq RS, Mustafa MA, Ganasegeran K, AlDubai SA. Job satisfaction and turnover intention among Iraqi doctors--a descriptive cross-sectional multicentre study. *Hum Resour Health* 2015;13:21.
- Christopher AS, Smith CS, Tivis R, Wilper AP. Trends in United States physician work hours and career satisfaction. *Am J Med* 2014;127:674-80.
- Doroghazi RM. Physicians should work more, not less. *Am J Med* 2015;128:e21.
- Di Rocco F, Giraudat K, Zerah M. Factors affecting the quality of life of young neurosurgeons: a survey. *Acta Neurochir (Wien)* 2015;157:495-6.
- Bauer J, Groneberg DA. Working conditions of physicians in hospitals--A comparison of specialties in German hospitals (iCept-Study). *Dtsch Med Wochenschr* 2015;140:e150-8.
- Tokuda Y, Hayano K, Ozaki M, Bito S, Yanai H, Koizumi S. The interrelationships between working conditions, job satisfaction, burnout and mental health among hospital physicians in Japan: a path analysis. *Ind Health* 2009;47:166-72.
- Wada K, Arimatsu M, Yoshikawa T, Oda S, Taniguchi H, Higashi T, Aizawa Y. Factors on working conditions and prolonged fatigue among physicians in Japan. *Int Arch Occup Environ Health* 2008;82:59-66.
- Wáng YX, Loffroy R, Arora R, Suzuki K, Lee CH, Chung HW, Oei EH, Winston GP, Ng CK. Relative income of clinical faculty members vs. science faculty members in university settings-a short survey of France, Hong Kong, India, Japan, South Korea, The Netherlands, Taiwan, UK, and USA. *Quant Imaging Med Surg* 2014;4:500-1.
- Wu D, Wang Y, Lam KF, Hesketh T. Health system reforms, violence against doctors and job satisfaction in the medical profession: a cross-sectional survey in Zhejiang Province, Eastern China. *BMJ Open* 2014;4:e006431.
- Zhou XD, Li L, Hesketh T. Health system reform in rural China: voices of healthworkers and service-users. *Soc Sci Med* 2014;117:134-41.
- Gong Y, Han T, Chen W, Dib HH, Yang G, Zhuang R, Chen Y, Tong X, Yin X, Lu Z. Prevalence of anxiety and depressive symptoms and related risk factors among physicians in China: a cross-sectional study. *PLoS One* 2014;9:e103242.
- Zhang X, Sleeboom-Faulkner M. Tensions between medical professionals and patients in mainland China. *Camb Q Healthc Ethics* 2011;20:458-65.
- Hesketh T, Wu D, Mao L, Ma N. Violence against doctors in China. *BMJ* 2012;345:e5730.
- Shi L, Song K, Rane S, Sun X, Li H, Meng Q. Factors associated with job satisfaction by Chinese primary care providers. *Prim Health Care Res Dev* 2014;15:46-57.
- Why someone would believe to enroll into a medical school is not an attractive choice ? In Chinese. Available online: <http://www.zjyby.cn/jyb/jygyj/11251.html>
- The first batch scores of 2014 university enrolment examination in Zhejiang Province have been released. In Chinese. Available online: <http://zj.sina.com.cn/news/m/2014-07-16/0701208636.html>
- Of the top 10 science scheme candidates in Zhejiang province, eight were enrolled into Peking University, what are behind the examination scores? In Chinese. Available online: http://edu.qq.com/a/20140716/015784_all.htm
- Bestärztverdienst Wer bezahlt wie viel? Available

- online: <https://www.allianzfueraerzte.de/magazin/wer-bezahlt-wie-viel.php>
24. Ärztegehälter im Krankenhaus imeuropäischen Vergleich. Available online: https://www.i-med.ac.at/betriebsrat1/info/Aerztegehaelter_im_Krankenhaus_im_europaeischen-Vergleich_Das-Krankenhaus_2011.pdf
 25. Ranking of incomes of different professions in Japan. Available online: <http://www.recordjapan.net/news/32177>
 26. Persaud R. *The Motivated Mind*. London: Bantam Press, 2005.
 27. Zhang Z, Wáng YX. English language usage pattern in China mainland doctors: AME survey-001 initial analysis results. *Quant Imaging Med Surg* 2015;5:174-81.
 28. Wáng YX, Xiao F. Top five medical innovations in China mainland since Xinhai revolution (1911): results of AME survey-002. *Quant Imaging Med Surg* 2015;5:453-66.

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Appendix

Speciality cluster details

SC1: internal medicine cluster participants

Cardiology =177; neurology =97; internal medicine (unspecified) =97; respiratory medicine =96; gastroenterology =71; endocrinology =58; nephrology =51; intensive care =45; dermatology =42; psychiatry =26; hematology =23; medicine-infective disease =16; physical therapy =7; geriatrics & gerontology =6; family medicine =1; regenerative medicine =1; medicine-tuberculosis =1.

SC2: surgical sciences participants

Orthopedics =145; general surgery (abdominal) =140; surgery (unspecified) =73; ENT surgery =40; urology =38; neurosurgery =38; dental surgery =29; cardiothoracic surgery =55; TMC orthopedics & traumatology =14; plastic surgery and microsurgery =8; organ transplantation surgery =3.

SC3: unspecified clinical medicine cluster participants

Clinical medicine unspecified =300.

SC4: traditional Chinese medicine (TCM) participants

TCM =147.

SC5: oncology cluster

Oncology =102.

SC6: diagnostics cluster participants

Radiology =60; clinical diagnostics (unspecified) =15; lab medicine =15; pathology =10.

SC7: pediatrics cluster participants

Pediatrics =81.

SC8: anesthesiology cluster participants

Anesthesiology =70.

SC9: basic science research and public health cluster participants

Basic science research =45; public health =20.

SC10: obstetrics and gynecology cluster participants

Obstetrics and gynecology =55.

SC11: accident and emergency cluster participants

Accident and emergency =23.

SC12: nursing cluster participants

Nurse =24.

SC13: ophthalmology cluster participants:

Ophthalmology =23.