



A Survey of Factors Influencing Specialization in Plastic Surgery Among Chinese Surgeons

Xuebing Liang, MD, Sijie Sun, PhD, Tianyi Gu, PhD, Jiguang Ma, BS, and Keming Wang, MD

Abstract: In recent years, more Chinese surgeons have left other fields to enter plastic surgery. The factors influencing this respecialization have not been elicited. The authors aim to elucidate Chinese surgeons' experience and career satisfaction in this specialty change. Between July and September 2020, the authors conducted an online survey of nonplastic surgeons who received plastic surgery training at an academic center. The survey evaluated their motivation for pursuing their field, practice patterns, and career satisfaction. Responses were compared those who respecialized in plastic surgery with those who did not. A total of 251 nonplastic surgeons completed the survey. The most frequent reasons for pursuing plastic surgery were lifestyle (61.1%), desire to help others (44.4%), and higher compensation (37.3%). Among those who changed fields, employment in academic centers declined from 85% to 51.7%, 70% devoted at least half of their practice to aesthetic surgery, and the median nights on call decreased from 1.54 to 0.38 per week after specializing in plastic surgery. Overall career satisfaction in plastic surgery was significantly higher compared with their former specialties (78.3% versus 28.3%, P 0.05). The authors' study showed that outflow of surgeons from other specialties to plastic surgery is mainly due to burnout, which erodes physicians' satisfaction level and the quality of care they are able to provide. The authors highlight the need for reducing burnout in

other surgical fields as well as rigorous plastic and aesthetic surgery training for those changing fields to ensure high-quality patient care.

Key Words: Chinese surgeons, plastic surgery, specialization, survey

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In the last decade, plastic and aesthetic surgery in China has seen a significant increase in the number of surgeons migrating to the field, sometimes after years of practicing in another surgical specialty. It remains unclear what factors, whether economic, social, or clinical, are driving this shift in specialization. Similar redistributions in physician specialty have occurred in other countries and determinants of medical career choice have been shown to be a self-motivated, complicated, and multifactorial process.^{1,2} In the United Kingdom, Goldacre et al¹ found that almost half of doctors changed specialty from the 1 selected in their first postgraduate year. Also, the match rate of initial career choice and final specialty increased over time as most physicians entered higher level of specialist training.

In China, there are 2 main questions about this migration to plastic surgery: why nonplastic surgeons desire to change fields and which characteristics of plastic surgery appeal to them, and how does this career change affect practice patterns and physician satisfaction. In the United States, the top 3 reasons for leaving other surgical specialties were poor cultural fit with the specialty, moving closer to family, and compensation.³ As China has a physician shortage relative to its large population of 1.4 billion people, Chinese surgeons often experience heavy workloads and tense physician-patient relationships.⁴ This could lower surgeons' career satisfaction and prompt the decision to specialize in a different field. Streu et al⁵ found that plastic surgeons have reported greater satisfaction with their career choice and less regret (only 4%) compared with other surgeons. Satisfaction among plastic surgeons was independently associated with group practice compared with solo practice, being a resident educator, and a highly cosmetic procedure mix.

Understanding physicians' changing motives for choosing plastic surgery is important as it could be used to improve career satisfaction, guide surgeons in training toward better career choices, and enhance delivery of high-quality care through lowering physician burnout. Therefore, our study aimed to describe the characteristics of Chinese nonplastic surgeons who seek a career change, compare practice patterns and career satisfaction before and after becoming plastic surgeons, and find factors that influenced Chinese nonplastic surgeons' migration to plastic surgery specifically. We hypothesized that low satisfaction with the former specialty, desire for lifestyle change, and seeking higher compensation are the 3 main reasons contributing to the career migration.

From the 17th Department of Plastic Surgery, Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China.

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Address correspondence and reprint requests to Keming Wang, MD, 17th Department of Plastic Surgery, Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100730, China; E-mail: davidwkm@126.com

XL and SS contributed equally to this article.

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METHODS

This study was conducted in accordance with the Declaration of Helsinki on the use of human subjects.

Study Population

A self-administered online survey was sent to 251 Chinese nonplastic surgeons who had trained or were currently training in plastic surgery at our institution between July and September, 2020. All the interviewees had completed resident curriculum of surgery. In China, it is not mandatory by law for nonplastic surgeons to receive plastic surgery training before they can practice as plastic surgeons. In fact, their institutions take main responsibility of assessing applicants' competency and determining their qualification as plastic surgeons. So after reinforcing theoretical and clinical knowledge in our center, surgeons from other specialty would present a more convincing application to their organization. As one of the leading academic plastic surgery centers in China, our hospital has implemented the model of combining advanced education for nonplastic surgeons into our routine clinical education since the 1980s. Every year, about 100 nonplastic surgeons from across China come to our center to receive plastic surgery training for at least 6 months. Currently, there is no standardization of training curriculum for nonplastic surgeon to be qualified as a plastic surgeon in China. To improve the cosmetic surgery ability of the nonplastic surgery trainees, China National Health Commission pressed a 58.5-hour training syllabus as a reference in 2020. This syllabus include psychological diagnosis and counselling techniques with cosmetic patients, basic anatomy, operation indications, skills, and complications of different plastic surgeries, and fundamental knowledge of LASER and injection skills. Based on the syllabus, our center designed detailed course content and added microsurgical training in operation practice.

Survey Design and Distribution

The survey was developed based on a conceptual model with a primary outcome of comparing career satisfaction with respondents' former specialty (eg, general surgery) and with plastic surgery. We first built questionnaires in English based on relevant literature as well as feedback from clinical and methodological collaborators. The satisfaction scale was adapted from Streu et al.⁵ Responses were measured on a 5-point Likert scale and summed and sorted into a dichotomous measure of high satisfaction versus low satisfaction. Our instruments captured demographic information, practice patterns, perceptions of previous specialty and work-life balance, and attitudes toward plastic surgery. Clinical and methodological collaborators performed expert review to assess the content, wording, and structure of the survey. Two different researchers then translated the survey into Chinese. A third researcher back-translated survey into English without knowing the original English items. We then compared the back-translation to the original English to ensure precision of the survey content. Any discrepancies between the original and back-translated surveys were reconciled to produce the 3 final instruments targeting 3 different groups: Group A comprised those who had already changed their specialty to plastic surgery (70 questions); Group B were nonplastic surgeons who were still in training to specialize in plastic surgery (43 questions); and Group C were nonplastic surgeons who remained in their original specialty (46 questions). Each survey took 7 to 10 minutes to complete.

The project was conducted through a link to an online survey between July and September 2020. All trainees from our hospital were sent the link inviting them to complete the survey.

Each respondent could only complete the survey once and the answers could not be changed after submission. After 4 weeks, we sent the link again and a reminder message to non-responders. The responses were input into an Excel spreadsheet (Microsoft Corporation, Redmond, WA).

Statistical Analysis

We compared career satisfaction and attitudes toward plastic surgery and respondents' original specialties to determine why they chose their ultimate specialty. Six factors were assessed: culture of the specialty, lifestyle, compensation, employment opportunities, desire to help others by reconstructing defects or achieving aesthetic goals, and others. We then used a pair-wise proportion test to detect differences between groups A, B, and C. Career satisfaction with respondents' former specialties and plastic surgery were assessed with a Likert-scale and compared using proportion Z-test to see if rates of satisfaction differed between groups.

RESULTS

A total of 126 nonplastic surgeons completed the survey with a response rate of 50.2% (Supplementary Digital Content, Table 1, <http://links.lww.com/SCS/D899>); 74% of the respondent were male, 92% were married, and 46% had no loan debt. The most common surgical specialties were general surgery (31%), orthopedic surgery (19%), otolaryngology (13%), and stomatology (13%). Most respondents were attending physicians (90%) and had been in practice for more than 10 years before undergoing plastic surgery training (Supplementary Digital Content, Table 3, <http://links.lww.com/SCS/D901>). Medical education included Bachelor's degree (43%), Master's degree (45%), and Doctoral degree (1%). There were 60 who had already changed their specialty to plastic surgery (Group A), 16 respondents were in the process of specializing in plastic surgery (Group B), and 50 interviewees did not change specialty (Group C).

Motivation to Change Career

The most common reasons for specialty choice were lifestyle (61.1%), followed by desire to help others by reconstructing defects or achieving aesthetic goals (44.4%) and compensation (37.3%) (Supplementary Digital Content, Table 2, <http://links.lww.com/SCS/D900>). Employment opportunities infrequently drove decisions (5.6%) and no participants cited "other" reasons.

Practice Patterns

In Group A, 85% of respondents had originally worked in academic centers (public hospitals) but after changing to plastic surgery this declined to 51.7% (Supplementary Digital Content, Table 3, <http://links.lww.com/SCS/D901>). Academic practice was less common among Groups B and C, with 37.5% and 36.8%, respectively. Overall, the percentage of practice devoted to surgery was similar across groups, with the exception in Group A of fewer respondents spending >75% of their time in surgery after changing to plastic surgery (6.7% versus 21.7%, $P = 0.036$). In Group A, 70% devoted 50% or more of their practice to aesthetic surgery. Compared with their original specialty and Groups B and C, plastic surgeons in Group A spent significantly less time seeing clinic or emergency patients ($P = 0.015$), fewer nights on calls ($P = 5.55E-11$), and saw fewer inpatients ($P = 1.6E-07$). After changing to plastic surgery, those in Group A spent significantly more time with new clinic patients ($P = 0.005$) and keeping abreast of clinical developments ($P = 0.08$). There was no difference in time spent on

patient care, administrative tasks, teaching trainees, or weekends worked.

Compensation

Most respondents were compensated with a salary plus bonus method. The only significant difference was in Group A, where fewer surgeons received salary with bonus after changing to plastic surgery ($P = 0.027$). More received other incentives, though this was not significant.

Satisfaction With Career Choice

Group A reported significantly higher rates of satisfaction with their specialty choice (80%) compared with satisfaction with their former specialty (33.3%) and Groups B (40%) and C (38%) (Supplementary Digital Content, Table 4, <http://links.lww.com/SCS/D902>). This trend persisted across overall career satisfaction and income satisfaction. Group C, who remained in their original specialty, reported higher satisfaction with their career decision and overall career than Group A did for their former specialty. Only 3.3% of Group A regretted choosing plastic surgery, while 15.0% of them regret selecting their former specialty, and 45.0% would encourage their child or close relative to pursue plastic surgery.

DISCUSSION

In this cross-sectional survey, we found that the top reasons why Chinese surgeons migrate to plastic surgery were changing lifestyle, using intellect to help others by reconstructing defect or achieving aesthetic goals, and greater compensation. Those who respecialized in plastic surgery endorsed higher rates of satisfaction with their specialty choice, income, and overall career. They also experienced shifts in practice patterns with less time spent in the hospital or on call and more time devoted to keeping a breast with clinical developments.

Satisfaction in nonplastic surgery fields was markedly lower across groups (26.7%–34%) compared with plastic surgeons in Group A (78.3%). This suggests that Chinese surgeons experience high levels of burnout that may drive some to explore a new balance of work and life in other fields. This is further supported by the majority of Group A who transferred to private practice and performed aesthetic surgeries primarily, as this practice pattern offers more control over schedule and lifestyle. They reported spending less time on outpatient, emergency, and inpatient care, indicating a decrease on workload as plastic surgeons. Those who respecialized in plastic surgery also endorsed higher satisfaction with income (41.7% versus 16.7%), fulfilling one of their reasons for pursuing this career change and likely supporting the greater satisfaction seen in this group. This is in accordance to previous studies that Chinese physicians are underpaid compared with their peers from developed countries.^{6–8} According to Zhang et al,⁹ the expected compensation of Chinese physicians from tertiary hospitals was almost twice of their actual ones.

Although our results agree with prior studies showing greater satisfaction among plastic surgeons,⁵ surgeons in China demonstrating different reasons for changing specialties compared with those in other countries. In UK, residents were more likely to change from their initial choice of specialty due to changing their minds, lack of opportunities, and failing to achieve their career goals.^{1,10,11} Lachish et al¹¹ found that 61% of UK-trained doctors felt that they had rushed to choose their specialty too quickly after qualification. The authors felt these hasty decisions might be attributed to physicians' inadequate experience of a wide range of specialties, longing for a grander breadth of practice of medicine in general, and insufficient career advice. In the UK, changing specialties was less for

attending common as most physicians entered higher level of specialty training. However, 62% of the respondents in our study worked on their former practice for more than 10 years and had achieved attending, indicating a high levels of achievement as a surgeon.

Senior Chinese physicians may be motivated to change career for a number of reasons. Burnout is common across career stages in Chinese neurosurgeons,¹² Orthopedic trainees,¹³ anesthesiologists,¹⁴ and general practitioners.¹⁵ Burnout is associated with significantly lower career satisfaction and increased turnover intention among Chinese healthcare staff.⁷ Therefore, it is reasonable that majority of the physicians in our study leave their practice for a change in lifestyle. Additionally, the rapid increase in demand for plastic and aesthetic surgery in China has created a deficit of plastic surgeons. In 2015, China became the third largest plastic surgery market globally according to the International Society of Aesthetic Plastic Surgery.¹⁶ An estimated 12,273,643 Chinese outpatients visited plastic and aesthetic surgeons in 2018, a more than 6-fold increase since 2009.¹⁷ Meanwhile, there is a shortage of Chinese plastic surgeons to meet this enormous demand. International Society of Aesthetic Plastic Surgery estimated that there were 3000 plastic surgeons in China in 2018, which is less than half the number in the United States ($n = 7009$).¹⁸ Considering China's population approached 1.4 billion by the end of 2018, 1 plastic surgeon needed to provide medical care for 465,126 Chinese citizens, which was substantially higher than other countries. The demand for plastic surgeons coupled with less stressful practice patterns, higher compensation, and high job satisfaction may further facilitate surgeons' desire for career change.

The growing gravitation toward plastic surgery among Chinese physicians has raised concerns about whether high-quality medical care could be delivered to patients consistently. Bezzini et al¹⁹ compared 11,659 body-contouring procedures performed by plastic versus general surgeons, and unfortunately the latter group had higher rates of complications. Aesthetic surgery is best performed by those with comprehensive plastic surgery training.^{20,21} Plastic surgeons' comprehensive knowledge of the principles of plastic surgery, human anatomy, blood supply, wound healing, and the evidence-based decision-making process necessary to successfully reconstruct a patient's defect, enhances our ability to accomplish meticulous cosmetic surgeries.²² Therefore, we encourage rigorous and stringent certification evaluations to make sure Chinese plastic surgeons have achieved milestones that should be met throughout their training process before career change, particularly with regards to aesthetic surgery which predominated practices in this study. More effort should also be made to retain senior doctors and prevent further acceleration in burnout in other specialties such as Orthopedics, Otolaryngology, and Stomatology to ensure high-quality patient care. In China, burnout is most serious in pediatrics²³ and Chinese government has issued policies to cope with problem. In 2016, China released an announcement of enhancing the reform and development of children's medical and health services. A range of measures to relieve burnout in pediatrics were pressed including: expand the enrollment of graduate students in pediatrics; financial aid to pediatricians; adjust fees for pediatric medical services; and increase salaries and benefits of pediatric medical staff. We hope the policies of pediatrics could be used as a guide to alleviate burnout in other specialties.

Our study has important implications both for Chinese physicians seeking to migrate to plastic surgery and policy makers. The outflow of surgeons from other specialties is mainly due to burnout, which erodes physicians' satisfaction level as well

as the quality of care they are able to provide. Future efforts should continue to focus on how to address this problem and may wish to draw on the experiences and practice patterns of plastic surgeons who consistently report great satisfaction.

Our findings should be interpreted in the setting of several limitations. First, the selection of surgeons who completed plastic surgery training at our institution necessarily excludes those who did not pursue plastic surgery training. This selection bias may affect practice patterns or satisfaction. Our response rate meets the threshold of 50% or greater that is typically considered adequate.²⁴ However, surveys are inherently subject to respondent recall and interpretation bias. Recall bias may affect Group A's recollections of their former specialty in particular. Lastly, this survey was performed during the SARS-CoV-2 pandemic, which may have influenced practice patterns and sentiments across specialties.

Overall, this study offers an up-to-date snapshot of non-plastic surgeons in China and the factors driving many to migrate to plastic surgery. We identified low satisfaction and desire for lifestyle change as major drivers in this shift, which comprised predominantly senior physicians. Those who respecialized in plastic surgery achieved significantly higher career satisfaction and lower patient workloads. To ensure the best possible surgical care continues to be provided, we encourage other surgical specialties to learn from plastic surgery to address burnout and improve retention, and additionally that the Chinese aesthetic board carefully evaluate the technical skills and knowledge of all surgeons migrating to plastic surgery.

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