

Needs Assessment For Continuing Professional Education Among Aesthetic Plastic Surgeons: Evidence From An Economically Developed Region in China

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Abstract

Background: This study aims to survey the demographic status of aesthetic plastic surgeons in an economically developed region and to investigate their continuing professional education needs in contents, training methods, and barriers in private and public hospitals.

Methods: A cross-sectional survey with a self-administered questionnaire was conducted from January to December, 2020 in Guangdong, China. An in-depth key informant interviews were conducted to gain insights on the current demographic status. Demographic data and training needs assessment were collected and compared with the chi-square test, Fisher's test, Mann-Whitney U-test using R software.

Results: The disparity of surgeons' demographic data between private and public hospitals was small. Over 60% of practicing aesthetic plastic surgeons transferred from other specialties, and one third of them had less than three years of working experience. Half surgeons attended training less than three times with an affordable expense of 1000-5000RMB. Almost 80% of them had strong willingness to attend a continuing professional education program. They prefer to attending further study in a tertiary hospital, short topic-focused training course with operation demonstrations. Their favorable training contents were rhinoplasty, eye surgery, and new technologies. Questionnaire survey revealed the likelihood that the surgeons had a graduate degree in public hospitals outweighed those in private hospitals ($P < 0.05$). In-depth interview showed that the public hospitals focused more on repair and reconstructive surgery, academic research, whereas, private hospitals focused on market needs and were more profit-driven, where the organizational needs had influence on their different training needs for aesthetic plastic surgeons.

Conclusion: It would be favorable to take the demographic status of aesthetic plastic surgeons and organizational needs into consideration in designing a continuing professional education program in plastic surgery.

1. Background

Rapid economic development and "selfie culture" have driven Chinese plastic surgery market to grow very fast in recent years[1, 2]. It is expected that the total amount of spending in plastic procedures has increased up to approximately 122 billion US dollars by 2019, which ranks third in the world following United States and Brazil[3]. As a result, the past decade has witnessed drastic development of private aesthetic plastic hospitals owing to highly social demand for all kinds of cosmetic plastic surgeries [4]. Meanwhile, surgical doctors transfer their original practicing specialty into aesthetic plastic surgery after obtaining a training certificate from a tertiary public hospital recognized by the provincial health commission. The public hospitals serve as a training base for medical students who pursue a master degree or PhD degree in plastic surgery and also play pivot roles in continuing professional education for these doctors who change from other surgical specialties[5]. Private hospitals tend to develop even more faster than public hospitals due to more flexibility in management and favorable government policies.

The total number of aesthetic plastic procedures in private hospitals has exceeded that of public hospitals [6]. Our first hypothesis is that owing to the rapid development of the plastic surgery industry, the influx of a large number of plastic surgeons will result in a very strong demand for continuing professional education in plastic surgery.

It has been documented that continuing professional education programs are significant to improve their serving quality for health professionals[7–9]. There have been various training programs available for the aesthetic plastic surgeons in recent years, which include conference sessions, further clinical education in tertiary hospitals, operation demonstrations, and online training courses. But almost all those programs are organized and dictated by hospitals or organizations, the needs of learners have rarely been assessed[10]. As Goldstein training mode suggests that training candidates, training contents, organizational requirements be the three important factors while in designing a good health training program[11]. Our second hypothesis is the difference between private and public hospital in medical service would lead to different training needs.

To date, there is a paucity of data investigating the current demographic status of aesthetic plastic surgeons both in public hospitals and private hospitals in China and their respective needs in continuing professional education. To test the above two hypotheses, this study aims to survey the demographic status of aesthetic plastic surgeons from both in public and private hospitals, and to investigate their continuing professional education needs in contents, methods, and barriers within.

2. Study Site And Methods

2.1 Study site

The study site was conducted from January to December, 2020 in Guangdong, China. As a coastal province in South China, Guangdong's GDP in 2019 surpassed 1.5 trillion US dollars, which ranked first in China [12]. In this developed economic region, it is estimated that there are more than ten public hospitals with aesthetic plastic departments and two hundred private plastic hospitals with almost eight hundred aesthetic plastic surgeons in total in 2019.

2.2 Study design

A mixed study combining a self-administered questionnaire survey and in-depth key informant interviews were used.

2.3 Data collection method and instruments

Based on literature reviews and experts' consultation, we adapted a questionnaire which was reviewed by a statistician, two epidemiologists, four dermatologists, and two plastic and aesthetic surgeons to ensure its validity. A small pilot study was conducted to verify suitability of the questions before survey.

2.4 In-depth interview with key informants

In-depth interviews were conducted with multiple key informants. The interview topics included comments on the current status of aesthetic plastic surgeons, current continuing professional education programs, potential problems, and solutions for the improvement. All interviews were taped and transcribed verbatim for thematic analysis.

2.5 Statistical analysis

All data analyses were performed using R version 3.5.2 (<http://www.R-project.org/>) and EpiDisplay package. Categorical data were given as counts and percentages, to compare the difference in demographic information and training needs assessment, the chi-square test, Fisher's test, were used as appropriate for categorical variables. Mann-Whitney U-test was used to compare the knowledge gap for major aesthetic surgical procedures between surgeons in private and public hospitals. Statistical significance was set at 5%.

3. Results

3.1 Demographic information and needs assessment on aesthetic plastic surgeons

Demographic data of 290 aesthetic plastic surgeons completed the questionnaire survey, the responding rate was 81.5% ((290 out of 356)). 240 surgeons were practicing aesthetic plastic surgery after excluding those cosmetic dermatologists, and cosmetic doctors in traditional Chinese medicine.

Shown in Table 1, the distribution of gender, age groups, and years of practice, professional technical titles, and original working department was nearly the same among the 144 surgeons from public hospitals and 96 from private hospital. In general, over sixty percent of the surgeons were under 40 years of age, one third of the surgeons had less than three years of working experience with junior professional technical titles. Almost two thirds of surgeons' original working departments were not aesthetic plastic surgery. The distribution of educational degree among doctors between hospitals was statistically different. There were more doctors with a graduate degree in public hospitals.

Table 1
Demographic data of aesthetic plastic surgeons

from public and private hospitals			
	Public hospital (N = 144)	Private hospital (N = 96)	P value
Gender			0.25
Male	90 (62.5)	52 (54.2)	
Female	54 (37.5)	44 (45.8)	
Age group (years)			0.69
< 30	30 (20.8)	21 (21.9)	
30–40	70 (48.6)	41 (42.7)	
40–50	32 (22.2)	22 (22.9)	
> 50	12 (8.3)	12 (12.5)	
Educational degree			< 0.01
Associate degree or below	6 (4.2)	10 (10.4)	
Bachelor	72 (50)	61 (63.5)	
Graduate	66 (45.8)	25 (26)	
Years of practice			0.96
1–3 year	48 (33.3)	31 (32.3)	
3–5 year	19 (13.2)	15 (15.6)	
5–10 year	35 (24.3)	23 (24)	
> 10 year	42 (29.2)	27 (28.1)	
Professional technical title			0.17
Senior	45 (31.2)	20 (20.8)	
Junior	59 (41)	42 (43.8)	
Primary	40 (27.8)	34 (35.4)	
Original working department			0.62
Other specialty	56 (38.9)	32 (33.3)	
Aesthetic plastic surgery	54 (37.5)	37 (38.5)	
Other surgery	34 (23.6)	27 (28.1)	
Values are presented as number (%).			

Table 2 summarized the current training status and study objectives for surgeons. Overall, there were some similarities between surgeons of public and private hospitals, half of the surgeons attended training less than three times with an affordable expense of 1000-5000RMB, surgeons in private hospitals were more likely to spend more than 10,000 RMB in training. The majority of them (almost 80%) had strong willingness to attend training to improve their practical skills, gain clinical experience, and learn latest technologies.

Table 2
Current training status and training objectives

	Public hospital (N = 144)	Private hospital (N = 96)	P value
Numbers of training in a year			0.60
1–3	74 (51.4)	49 (51)	
3–5	39 (27.1)	26 (27.1)	
> 5	29 (20.1)	17 (17.7)	
seldom	2 (1.4)	4 (4.2)	
Training expense in a year (RMB)			0.05
< 1000	29 (20.1)	10 (10.4)	
1000–5000	64 (44.4)	49 (51)	
5000–10000	33 (22.9)	16 (16.7)	
10000–20000	14 (9.7)	13 (13.5)	
> 20000	4 (2.8)	8 (8.3)	
Willingness on training			0.88
very strong	89 (61.8)	57 (59.4)	
strong	19 (13.2)	16 (16.7)	
fairly	35 (24.3)	22 (22.9)	
no	1 (0.7)	1 (1.0)	
Study objectives			
theory	47 (32.6)	20 (20.8)	0.06
practical skills	112 (77.8)	74 (77.1)	1.00
clinical experience	89 (61.8)	49 (51)	0.13
communication skills	34 (23.6)	17 (17.7)	0.35
aesthetic judgment	24 (16.7)	22 (22.9)	0.30
team work	19 (13.2)	15 (15.6)	0.73
scientific writing	22 (15.3)	12 (12.5)	0.68
latest technology	48 (33.3)	38 (39.6)	0.39
Values are presented as number (%)			

Table 3 concluded the surgeons' favorable training methods and reported obstacles. Further study in a tertiary hospital, short training course focusing in specific topic by corresponding experts, and operation demonstration were regarded as the top three favorable choices. The number one obstacle was "nobody can replace me at work", however, training expenses was the second obstacle for doctors in public hospitals and the third one for doctors in private hospital, in converse, "I cannot learn the skills I want" was second obstacle and third one for doctors in private and public hospital respectively.

Table 3
Favorable methods and obstacles for training

	Public hospital (N = 144)	Private hospital (N = 96)	P value
Favorable training methods			
further study in tertiary hospital	99 (68.8)	49 (51)	0.01
attend short focus training course by experts	61 (42.4)	43 (44.8)	0.81
online computer courses	28 (19.4)	18 (18.8)	1.00
online courses on smart phone	54 (37.5)	43 (44.8)	0.32
attend conference	54 (37.5)	42 (43.8)	0.40
operation demonstration	64 (44.4)	48 (50)	0.48
Obstacles in training			
I am not allowed by hospital	41 (28.5)	20 (20.8)	0.24
nobody replaces me at work	80 (55.6)	59 (61.5)	0.44
I am not allowed due to family reasons	25 (17.4)	9 (9.4)	0.12
I cannot afford the training	53 (36.8)	29 (30.2)	0.36
I cannot learn the skills I wanted	46 (31.9)	43 (44.8)	0.06
Values are presented as number (%).			

Table 4 summarized their interest in major surgical procedures and self-assessed knowledge gap. For surgeons in private hospitals, 69.2% of them intended to learn rhinoplasty, and eye plastic surgery. Fat transplant was their third interesting procedures, which coincided with their self-assessed knowledge gap. For surgeons working in public hospitals, their top three interesting surgical procedures were eye plastic surgery, rhinoplasty, and minimally invasive plastic surgery, in terms of knowledge gap, they believed that they had more knowledge gap in external genitalia, perineal surgery, rather than eye plastic surgery.

Table 4

Summary of major surgical procedures intended to study and self-assessed knowledge gap by aesthetic plastic surgeons

	Public hospital (N = 144)	Private hospital (N = 96)	P value
Major surgical procedures			
rhinoplasty	49 (58.3)	45 (69.2)	0.232
eye plastic surgery	62 (73.8)	42 (64.6)	0.302
fat transplant plastic surgery	34 (40.5)	32 (49.2)	0.368
breast plastic surgery	15 (17.9)	19 (29.2)	0.149
minimally invasive plastic surgery	39 (46.4)	16 (24.6)	0.010
thread lifting	18 (21.4)	13 (20)	0.992
Knowledge gap*, median (IQR)			
gap in eye plastic surgery	1 (0,2)	2 (1,2)	0.866
rhinoplasty	2 (1,3)	2 (0,2)	0.770
ear plastic surgery	1 (0,2)	1 (1,2)	0.897
facial wrinkles and contours	1 (1,2)	1 (1,2)	0.648
lip plastic surgery	1 (0,2)	1 (1,2)	0.288
hair transplant	1 (0,2)	1 (0,2)	0.484
breast plastic surgery	1 (0,2)	1 (1,2)	0.941
bariatric surgery and body shaping	1 (0,2)	1 (1,2)	0.742
external genitalia, perineal surgery	2 (0,2)	1 (0,2)	0.355
new technologies such as fat transplant, endoscope, and other minimally invasive plastic surgery	2 (0,2)	2 (0,2)	0.593
Values are presented as number (%). *Knowledge gap, was calculated by the expected value minus the current assessed value, a five-point Likert scale			

3.2 Qualitative analysis on the current continuing professional education system for aesthetic plastic surgeons

Continuing medical education programs are under the management and organization of medical associations at municipal or provincial levels. Doctors in public hospitals are required to abstain a minimum credit by attending different continuing education programs. However, the doctors in private

hospitals are not compulsory required to get the credits. In-depth interview revealed that most continuing professional education conferences were co-organized by public and private hospitals. As non-profit medical organizations, the department of aesthetic plastic surgery in most public hospitals were merged with burn surgery, therefore, they focused more on their social responsibility in repair and reconstructive surgery. Meanwhile, as a base to train medical students, public hospitals paid more attention on academic development and researches on basic and clinical technologies. By contrast, private aesthetic plastic hospitals were for-profit originations and laid more emphasis on improving customers' experience. Since aesthetic plastic procedure were not covered by insurance schemes, customers were more likely to visit private hospitals for operations because of more comfortable environment and individualized services. These organizational differences between public hospitals and private hospitals led to different requirements of aesthetic plastic surgeons in their respective institutions, reflecting their needs difference in continuing professional education.

4. Discussion

This study suggested that after decades of rapid development of Chinese plastic surgery, the demographic data in private hospitals were quite similar to that of the public hospitals in such an economic developed province. In general, the plastic surgeons were massively young, with comparatively short working years. In addition, almost two thirds of them transferred from other specialties. The only difference was almost half of the doctors in public hospitals had a graduate degree, whereas, a quarter of them had a graduate degree in private hospitals. From the demographic data we concluded that it would be imperative to reinforce continuing professional education for aesthetic plastic surgery, meanwhile, considering the difference in demographic status.

In this study, the fact that half of the surgeons attended continuing professional education less than three times in a year with limited affordable expense had great significance on planners in designing programs. Although most surgeons preferred to further their studies in a tertiary hospital, the chances were very limited[13, 14]. This study suggested that short course focused on specific topic with operation procedures demonstrations by experts should be a favorable training method, similar to other researches in surgical education[15]. Meanwhile, more attention should be laid on skills improvement in designing training curriculum, and with more consideration of reasonable price and flexible time for attendees.

This study also revealed a fact that rhinoplasty and new technologies such as fat transplant, minimally invasive plastic surgery were great concerning procedures for surgeons either in public hospitals or in private hospitals. The results of self-assessed knowledge gap showed surgeons in public hospitals intend to have more continuing professional education in genitoperineal surgery, a newly popular surgical procedure in recent years [16]; while the surgeons in private hospitals believed more improvement should be made on eyes plastic surgery since blepharoplasty is the most popular procedure in China[17]. The difference in training objectives was due to the different customer groups and social roles for public and private hospitals. In specific, the public hospitals also took social responsibility in repair and

reconstructive surgery, while, the private hospitals were more market-oriented, mainly focused aesthetic surgery.

This study tested the hypothesis that the demographic difference for aesthetic plastic surgeons between public and private hospitals were getting narrow. However, the organizational difference had influence on their respective training needs, which coincided with Goldstein training mode.

5. Conclusion

The demographic disparity of aesthetic plastic surgeons between public hospitals and private hospitals was small. Continuing professional education was very important to improve the level of massive young aesthetic plastic surgeons. To design the training curriculum focused on practical skills, especially a short training course elicited by expert in rhinoplasty, eye surgery, and new technologies such as fat transplant, minimal invasive plastic surgery would be favorable. Meanwhile, the demographic status of aesthetic plastic surgeons and organizational needs should be taken into consideration.

Declarations

Ethics approval and consent to participate

The protocol was approved by the Ethics Committee of Southern Medical University, China. Informed Consent Informed consent was obtained from all participants. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Consent for publication

All authors are consent for the publication of this manuscript.

Competing interests

The authors declare that they have no conflicts of interest.

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Authors' contributions

QJ and YYH contributed equally in literature review, study design, data collection, analysis, interpretation of results, and manuscript drafting. HZQ and MY proposed the research idea and helped organize the

whole research process. JJ attended the data collection, data analysis and interpretation of results., as a native English speaker, he also checked and proofread the manuscript. The corresponding author attests that all listed authors meet the authorship criteria.

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Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

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