

Chen Shen, Kun Yin, Peng Zhang, Qing-Xiang Zhang, Bo Wang, Juan Tao and Jing Yang*

Factors bridging medical graduate students' training and future academic achievements of dermatologists in China

<https://doi.org/10.1515/gme-2024-0010>

Received July 26, 2024; accepted October 11, 2024;

published online November 15, 2024

Abstract

Objectives: Dermatology is highly competitive among medical students in China, yet, limited research has explored the factors influencing their career achievements during their studies. This study aims to examine how demographic and academic factors during training impact future career success in dermatology graduates.

Methods: A retrospective analysis of 61 dermatology graduates (2010–2020) from Wuhan Union Hospital was conducted. The correlation between demographic and academic data and career development indicators using Pearson's chi-squared or Fisher's exact test.

Results: The results revealed that pursuing a doctoral degree after completing master's training, which entails a greater investment of time and effort, was closely associated with future career achievements. In contrast, the age of enrollment in graduate studies did not prove to be a determining factor. Additionally, in-depth training

in research ability, demonstrated by the involvement in national research projects and the publication of high-quality science citation index (SCI) papers, exerted a positive influence on the future professional development. Besides, in terms of future promotions to administrative, teaching, and medical titles, male graduates exhibited a distinct advantage over their female counterparts.

Conclusions: These results suggest that in the medical field, the quality of education and training is more decisive for career development than other factors, such as the age of enrollment. On the other hand, the observed gender advantage in career promotions reflects potential structural inequalities within the medical profession, warranting further investigation and improvement.

Keywords: dermatology; career development; doctoral degree; research training; gender inequality

Introduction

In recent decades, dermatology has increasingly attracted talented and ambitious medical students in China, emerging as a prominent field of study [1, 2]. The long-term goal of medical graduate education is to cultivate comprehensive well-rounded professionals with strong clinical skills and innovative research abilities. As a result, both applicants and medical schools are continuously working to optimize the graduate learning process and enhance students' abilities in clinical skills, scientific research, social engagement and other areas.

Upon completing their undergraduate program in medical specialty, students in China have the option to begin their clinical career [3]. However, those aspiring to advance typically pursue a three-year master's program, and the most outstanding students further pursuing a three-year doctoral program [4, 5]. In China, the medical master's and doctoral degrees are categorized into two types: scientific degrees and professional degrees. The training of professional master focuses on aligning graduate education with standardized residency training, emphasizing clinical practice, and aiming to cultivate frontline clinical talents. On the other hand, scientific master's graduate training is oriented

Chen Shen and Kun Yin contributed equally to this work.

*Corresponding author: **Jing Yang**, Department of Dermatology, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology (HUST), No. 1277 Jiefang Avenue, Wuhan 430022, Hubei, China, E-mail: fly_y1@163.com

Chen Shen, Department of Dermatology, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology (HUST), Wuhan, Hubei, China

Kun Yin, School of Global Health, Chinese Center for Tropical Diseases Research, Shanghai Jiao Tong University School of Medicine, Shanghai, China

Peng Zhang, Department of Pharmacology and Chemical Biology, Shanghai Jiao Tong University School of Medicine, Shanghai, China

Qing-Xiang Zhang, Wuhan Jinyintan Hospital, Tongji Medical College of Huazhong University of Science and Technology, Wuhan, Hubei, China

Bo Wang, Department of Dermatology, University of Michigan, Ann Arbor, MI, USA

Juan Tao, Department of Dermatology, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology (HUST), Wuhan, Hubei, China; and Hubei Engineering Research Center of Skin Disease Therapeutics and Health, Wuhan, Hubei, China

towards academic research, emphasizing the cultivation of research skills in theoretical and experimental aspects, preparing graduates for high-level scientific research work. Due to the lengthy duration of medical education, some graduate students opt to work in clinical positions for several years before returning to pursue master's or doctoral studies [6, 7]. Based on a nationwide research from 2002 to 2018, it is noted that Chinese clinical physicians have shown a process of quantitative growth and qualitative improvement in terms of human resources and talent training. While the supply and demand for advanced clinical medical talents are currently balanced, there is still a gap in per capita numbers and structural levels compared to middle- and high-income countries [8].

For newly enrolled medical graduate students, they quickly immerse themselves in intensive theoretical learning, clinical tasks, and research pressures. Establishing an efficient, reasonable, and scientific learning and training plan is crucial during graduate stage when time and energy is limited. However, the determining factors behind the career trajectory of successful dermatologists among medical students in Chinese society have not been clearly elucidated. We believe that identifying these factors is of paramount importance. These findings will provide crucial evidence for policy adjustments in medical schools and related institutions, leading to more rational medical education reforms that align with societal demands.

To address this gap, a retrospective study was conducted on the demographic characteristics, various learning experiences during their academic tenure, and current individual achievements in the field of dermatology for graduate students at hospital's dermatology department over the past decade. The aim was to identify the personal factors and training characteristics during the graduate stage that are strongly associated with their success as outstanding future dermatologists.

Methods

Study design

The dermatology department of Wuhan Tongji Medical College affiliated Union Hospital is the earliest and largest training base for master's and doctoral students in central China, accepting graduate students who have passed the national postgraduate entrance examination. Every year, the medical college allocates a designated number of enrollment quotas for master's and doctoral students based on the qualifications of the mentor and the research projects in the department. Through a two-way selection process,

each student is matched with a mentor. We conducted a retrospective study on the graduates who completed their master's or doctoral research training in our department over the past 10 years. The entire logical structure of the study is illustrated in Figure 1, which includes the inclusion and exclusion criteria, questionnaire contents, and statistical analysis objectives. Specifically, the inclusion criteria were: (1) graduate students enrolled between 2010 and 2019, and (2) the acquirement of a master's or doctoral degree before June 2022. Students who graduated after June 2022 for other reasons were not included as they would not have access to data on their post-graduation practices.

Measurements

We developed an electronic survey questionnaire with 25 questions using the online survey software "Wenjuanxing" (Changsha Ranshixing Information Technology Co., Ltd., China) for the surveyed participants. These questions cover three main aspects, namely demographic variables and academic achievements during graduate studies, as well as career achievements after graduation. For the demographic variables, we recorded information such as gender, pre-admission experience, age at admission, graduate student type, current age, and work experience. Academic achievements during graduate studies included factors such as publications, participation in research projects, attendance at academic conferences, experience as a student leader, as well as honors and awards received. Under the section of career achievements after graduation, the data we collected were classified into four categories: general status, medical achievements, research achievements, and self-assessment, each of which is measured by several detailed questions.

Data analysis

Correlation analysis was conducted using SPSS 15 (SPSS Inc., Chicago, Illinois, USA) in this study. Pearson's chi-squared test or Fisher's exact test was used for two multivariate variables. All statistical tests were two-sided, and a p value of <0.05 was considered statistically significant.

Results

Graduate demographics and accomplishments during the graduate school period

Demographic characteristics are shown in Figure 2A and Supplementary Table 1. A total of 61 eligible electronic

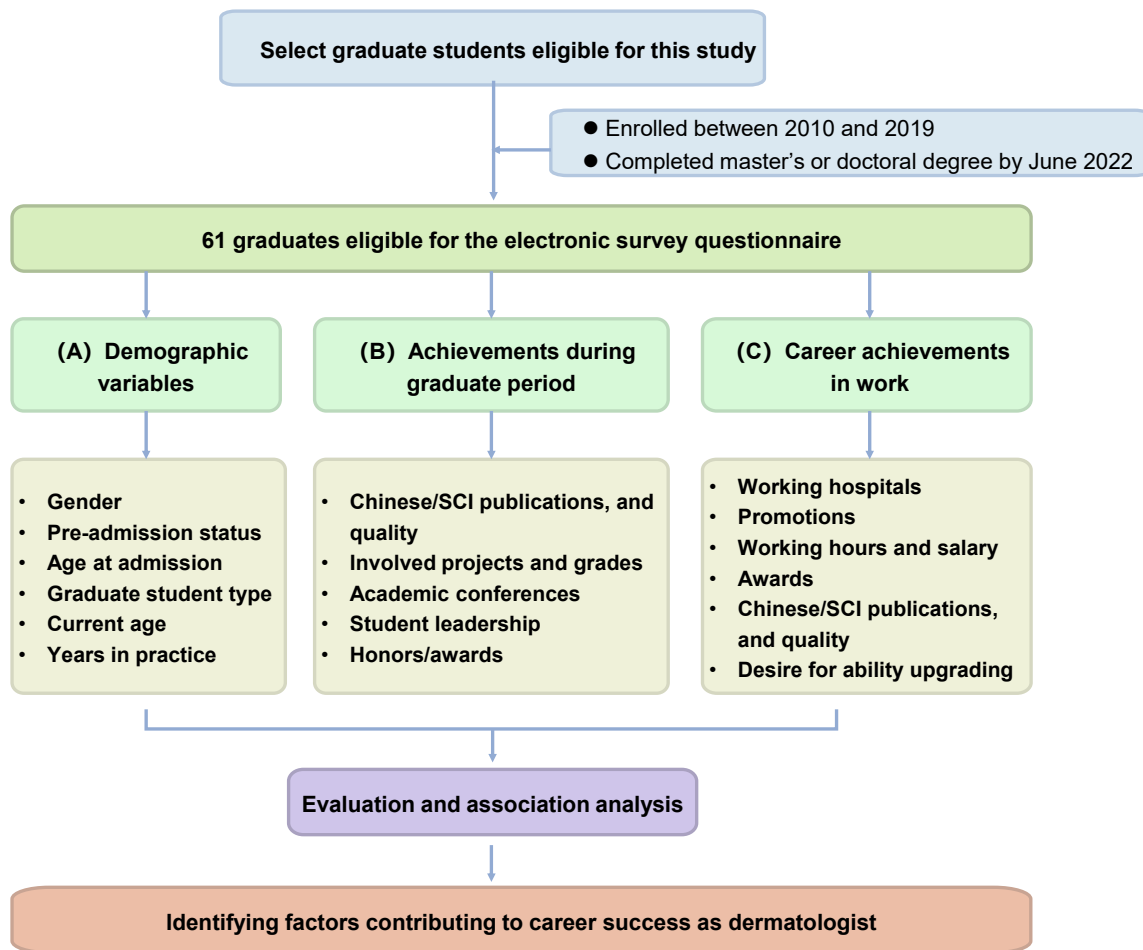


Figure 1: The flowchart showing the inclusive process, survey contents and data analysis for the retrospective study.

questionnaires were collected, of which 52 individuals (85.2 %) were female. It is worth noting that about 45.9 % of the participants had prior work experience before pursuing graduate degrees. The median age at the beginning of the graduate study was 27 years (range: 23–41 years). Among them, 21 individuals (34.4 %) obtained a doctoral degree. Both master's and doctorate graduates exhibited a slightly higher proportion of professional-oriented students than academic-oriented students. The median age of the respondents was 35 years (range: 23–41 years). All dermatology graduates transitioned clinical positions, with 35 individuals (57.4 %) having over five years of clinical experience.

The achievements of their graduate studies are shown in Figure 2B and Supplementary Table 2, focusing on research output, student leadership experience, and overall awards. The results revealed that over half (54.1 %) of the participants published one or two research papers in Chinese journals during their academic period, while 12 students (19.7 %) published three or more. Regarding science citation index (SCI) papers, nearly half (47.5 %) of the

students had publications as first author. The majority (83.6 %) had a cumulative impact factor (IF) below five for their SCI papers. Approximately half of the students (50.8 %) were involved in national-level research projects (Figure 2B), and a similar proportion (50.8 %) participated in three or more academic conferences (Supplementary Table 2). Additionally, seven dermatology graduate students (11.5 %) held student leadership positions, while 17 individuals (27.8 %) received various honors and awards of various levels during their graduate period.

Associations between students' demographic characteristics and intra-graduate school achievements

The associations between demographic characteristics prior to entering graduate school and comprehensive performance during school are presented in Table 1. The focus of achievements during this period includes the publications in both Chinese and English, IFs, the involvement

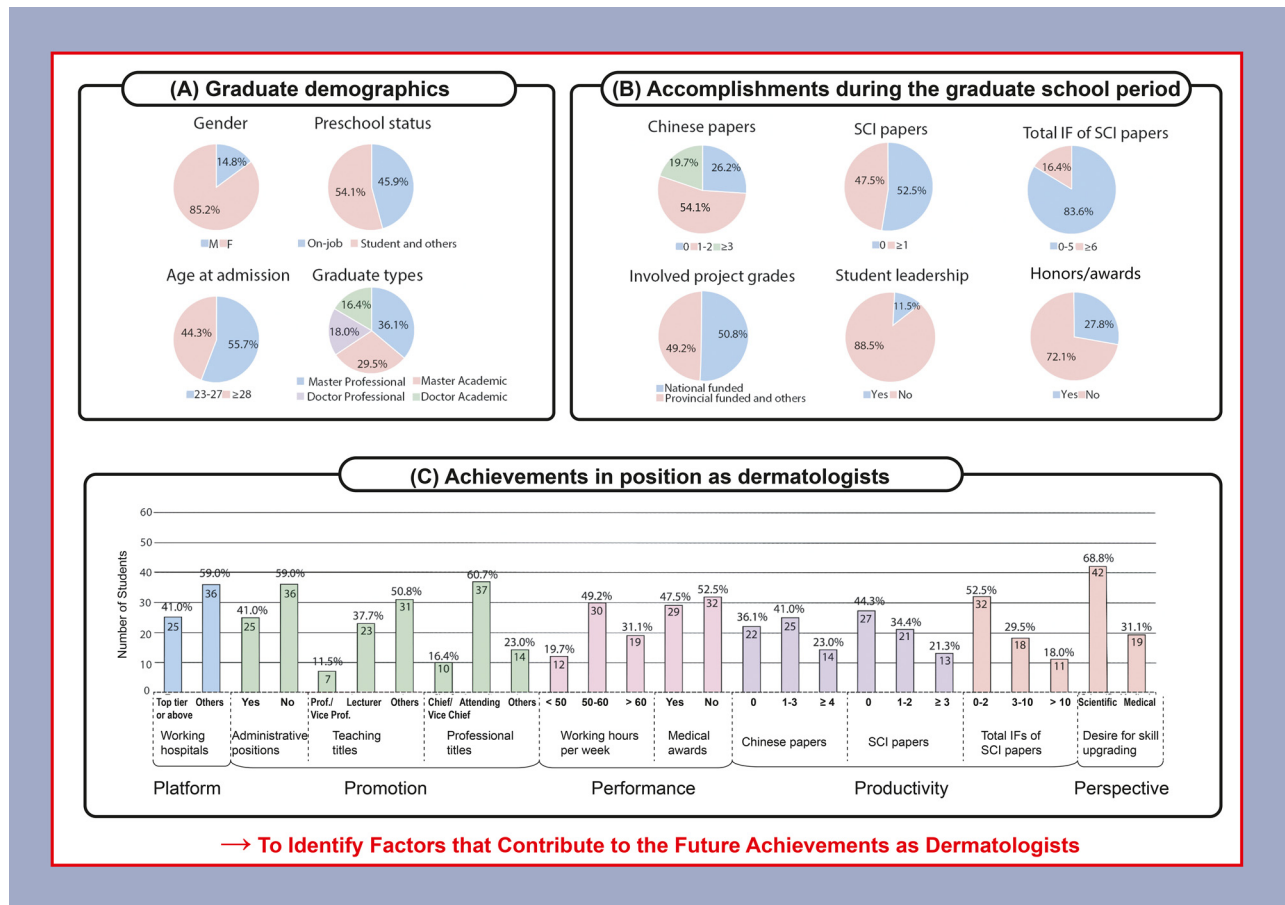


Figure 2: Overview of graduate demographics and achievements. (A) Graduate demographics and (B) accomplishments during the graduate school period, and (C) achievements in position as dermatologists. Abbreviations: SCI, science citation index; IF, impact factor.

Table 1: Associations between demographic variables and intra-graduate school achievements. Values in bold indicate $p < 0.05$, denoting a statistically significant correlation between the two variables.

	Chinese papers	SCI papers	Total IF of SCI papers	Involved project grades	Academic conferences	Student leadership	Honor awards
Gender, male/female	1.000	1.000	0.633	0.081	1.000	0.580	1.000
Preschool status (on job/student and others)	0.331	0.385	0.741	0.363	0.252	0.693	0.910
Age at start of graduate school (23–27/≥28 years)	0.012	0.008	0.092	0.161	0.375	1.000	0.396
Degrees (master/doctor)	0.290	0.000	0.079	0.004	0.367	0.220	0.059
Subtypes (professional/academic)	0.902	0.167	1.000	0.053	0.906	0.864	0.910

SCI, science citation index; IF, impact factor.

in national research projects, the frequency of conference participation, participation in student leadership positions, and honors and awards received. Statistical analysis revealed no significant associations between the gender or preschool status of graduate students and various academic indicators, such as their publication record, participation in research projects, conference attendance, student organization positions, and honors and awards. However,

intriguingly, individuals who entered graduate studies at the age of 27 years or older had a higher number of published Chinese papers ($p=0.012$) and SCI papers ($p=0.008$) during their time in school. Additionally, compared to master's students, doctoral students exhibited greater involvement in national-level research projects ($p=0.004$) and a higher number of published SCI papers ($p=0.000$). Notably, despite differences in goals and curricula between

professional-oriented and research-oriented graduate programs, no significant differences were observed in the evaluation of these two categories of students in the mentioned indicators.

Participants' achievements in their position as dermatologists

A comprehensive assessment of the current academic and professional success of dermatology graduates was performed based on five aspects, including work platform, promotion status, job performance, research output, and personal aspirations (Figure 2C and Supplementary Table 3). In terms of the working platform, 41.0 % of the graduates (25/61 graduates) were successfully employed in the Grade 3A tertiary hospitals in China. In terms of promotions, 41.0 % of graduates held administrative positions, with 11.5 % serving as professors or associate professors in universities, and 16.4 % as chief doctors leading medical teams. When it came to performance, 49 out of 61 (80.3 %) worked more than 50 h per week, with 31.1 % working over 60 h per week. However, despite the demanding workload, 65.5 % of them received an after-tax salary below 250,000 RMB (~35,081 USD). In terms of medical achievements, 29 out of 61 (47.5 %) have received medical awards. Regarding research output, 23.0 % have published four or more Chinese papers during their work, while 21.3 % have published three or more SCI papers. Moreover, 16.4 % have received research awards. Interestingly, a higher percentage of graduates (68.8 %) expressed a desire to improve their research abilities rather than their clinical proficiency in their work.

Associations between individual characteristics and academic career achievements

The relationship between demographic variables of graduates and their current academic career achievements as dermatologists was presented in Table 2. Firstly, gender differences did not show significant variations in hospital level, working hours, annual salary, and research productivity among graduates. However, male dermatologists were more likely to receive promotions in administrative ($p=0.025$), teaching ($p=0.013$), and clinical ($p=0.011$) positions. Notably, the age at enrollment did not influence career success. Strikingly, the completion of a doctoral training was closely associated with various aspects of professional achievements, including working in top-tier hospitals ($p=0.000$), smooth promotion to teaching positions ($p=0.041$) and professional titles ($p=0.017$), publishing more SCI papers ($p=0.007$) with

higher cumulative IFs ($p=0.015$). Meanwhile, doctoral graduates also generally continued to invest more time in their current work ($p=0.006$). Interestingly, similar to achievements during their study tenures, the type of graduate program showed no association with any indicators of career success. Furthermore, individuals aged 35 years and above were more likely to receive promotions in administrative positions ($p=0.001$), teaching titles ($p=0.000$), professional roles ($p=0.000$), and medical awards ($p=0.007$), as well as publishing more Chinese papers ($p=0.000$). Among them, having a work experience of more than five years was advantageous for obtaining the positions of professor and chief physician ($p=0.046$ and $p=0.000$, respectively), receiving medical and scientific awards ($p=0.005$ and $p=0.023$, respectively), and publishing Chinese papers ($p=0.000$). However, age and work experience did not seem to confer advantages in terms of publishing SCI papers in their work.

The performance during graduate school were also associated with the career development of dermatologists (Table 3). Specifically, engaging in research training and achieving substantial outcomes during the graduate period held significant meaning. For example, the number and quality of SCI papers published during the academic years, as well as participation in national-level research projects, emerged as advantageous factors determining entry into top-tier medical institutions ($p=0.008$, $p=0.006$, and $p=0.025$, respectively). Furthermore, individuals with fewer SCI papers and lower IFs during their academic years expressed a strong desire for promoting the scientific skills, even after several years in the workforce ($p=0.028$ and $p=0.031$, respectively). Additionally, those who actively engage in academic conferences and assume leadership roles during their graduate studies were inclined to invest more time in their professional endeavors ($p=0.042$ and $p=0.045$, respectively). Moreover, experience in student leadership roles during graduate school positively correlated with receiving medical awards ($p=0.007$).

Discussion

Although the entry requirements for medical practice in China are not high, completing a 5-year undergraduate clinical medical program is sufficient for independent medical work. For medical students with ambitious career aspirations, continuing their studies in a 3-year master's program or even a 6-year combined master's and doctoral program remains a necessary path to future professional success. Moreover, as national requirements for graduate education including dermatology specialty continue to rise, the

Table 2: Associations between graduates' demographic characteristics and their career achievements. Values in bold indicate $p < 0.05$, denoting a statistically significant correlation between the two variables.

	Platform	Promotion			Performance			Productivity			Perspective	
	Working hospitals (≥Grade 3A tertiary hospitals/others)	Administrative positions, Y/N	Teaching titles (professor/lecturer/others)	Professional titles (chief/attending/others)	Working hours (<50/50–60/>60 h)	Annual salary (<150 k/150 k–250 k/>250 k RMB)	Medical awards, Y/N	Scientific awards, Y/N	Chinese papers (0/1–3/≥4)	SCI papers (0/1–2/≥3)	Total IFs (<2/3–10/>10)	Desire for ability improvements (scientific/medical care)
Gender, male/female	0.286	0.025	0.013	0.011	0.507	0.078	1.000	1.000	0.735	1.000	0.896	1.000
	0.426	0.784	0.505	0.272	0.331	0.149	0.723	0.164	0.529	0.806	0.413	0.877
Preschool status (on job/student and others)	0.624	0.311	0.191	0.058	0.943	0.781	0.933	1.000	0.752	0.339	0.230	0.743
Age at start of graduate school (23–27/≥28 years)												
Degrees (master/doctor)	0.000	0.740	0.038	0.019	0.006	0.145	0.596	0.725	0.145	0.007	0.015	0.396
Subtypes (professional/academic)	0.804	0.784	0.580	0.273	0.946	0.320	0.058	1.000	0.743	0.086	0.566	0.689
Current age (25–34/≥35 years)	0.375	0.001	0.000	0.000	0.673	0.281	0.007	0.301	0.000	0.337	0.963	0.849
Years in practice (0–5/≥6 years)	0.078	0.054	0.053	0.000	0.439	0.414	0.005	0.034	0.000	0.581	0.897	0.288

SCI, science citation index; IF, impact factor; Y, yes; N, no.

Table 3: Associations between graduate school performance and career achievements. Values in bold indicate $p < 0.05$, denoting a statistically significant correlation between the two variables.

	Platform		Promotion		Performance			Productivity			Perspective	
	Working hospitals (≥ Grade 3A tertiary hospitals/others)	Administrative positions, Y/N	Teaching titles (professor/ lecturer/ others)	Professional titles (chief/ attending/ others)	Working hours (<50/ 50–60/ >60)	Annual salary (<150 k/ 150 k–250 k/ >250 k RMB)	Medical awards, Y/N	Scientific awards, Y/N	Chinese papers (0/1–3/ ≥4)	SCI papers (0/1–2/ ≥3)	Total IFs (<2/ 3–10/ >10)	Desire for ability improvements (scientific/ medical care)
Chinese papers (0/1–2/≥3)	0.154	0.400	0.677	0.976	0.581	0.771	0.939	1.000	0.215	0.781	0.446	0.567
SCI papers (0/≥1)	0.008	0.104	0.709	0.393	0.409	0.810	0.686	0.735	0.053	0.856	0.966	0.028
Total IF of SCI papers (0/≥6)	0.011	0.505	1.000	0.791	0.899	1.000	0.307	1.000	0.038	0.453	1.000	0.057
Involved project grades (national/others)	0.025	0.878	0.303	0.731	0.180	0.640	0.893	0.525	0.902	0.337	0.629	0.457
Academic conferences (0–2/≥3)	0.054	0.375	0.088	0.123	0.042	0.354	0.893	0.731	0.270	0.930	0.195	0.717
Student leadership, Y/N	0.112	1.000	0.518	0.074	0.044	0.683	0.011	1.000	0.138	0.515	0.353	0.418
Honor awards, Y/N	0.003	0.253	0.971	0.289	0.226	0.685	0.078	0.711	0.001	0.946	0.348	0.664

SCI, science citation index; IF, impact factor; Y, yes; N, no.

competition pressure for dermatology graduate students has been increasing. On the other hand, high-level medical schools that offer graduate programs also need to recognize the important demand for nurturing future leaders in the field, leading to continuous analysis and reform of teaching objectives and plans [9]. Therefore, we conducted in-depth analysis of associations between several important individual variables of graduates and their career development in the workplace.

Individuals who got promotion successfully tend to be over the age of 35, have more than five years of work experience, and complete an extra three- or six-year doctoral training. Dermatologists who achieved a doctoral degree also tend to work longer hours per week in their position. This suggests that sustained long-term efforts appear to be most crucial factors in achieving professional success as a dermatologist. Additionally, obtaining a Doctor of Medicine degree in graduate studies is crucial for becoming a successful dermatologist in Chinese society. Whether pursuing a professional or research-oriented doctoral degree, obtaining a doctoral qualification signifies the completion of rigorous training in research thinking during the graduate stage and the achievement of corresponding outcomes, such as publication of articles. This not only facilitates entry into top-tier hospital platforms but also benefits career development after graduation. It is worth noting that we found that nearly half (45.9 %) of dermatology graduates had prior work experience before entering graduate school, and 44.3 % of the individuals began their graduate studies at or after the age of 28 (Supplementary Table 1). However, this experience did not have an adverse impact on their future achievements as an outstanding dermatologist (Table 2). When targeting older students, it is imperative to adopt differentiated teaching and training methodologies tailored to each individual. Furthermore, heightened consideration must be given to their personal and emotional needs. Additionally, the training programs should be flexibly adjusted to assist them in effectively managing the potential challenges they may face. This holistic approach ensures that the learning experience is both effective and supportive of their unique requirements.

Unlike dermatology graduates in developed countries who may choose private practice, the most outstanding graduates in China predominantly consider large general hospital systems as their preferred career option due to various factors [10–13]. Doctors in China's top general hospitals often undertake the task of scientific research and innovation, and the cultivation of dermatologists with research capabilities is an important component of graduate medical education [14, 15]. Our research findings also support that

in-depth training of medical research during doctorate study with more than one SCI paper and total IFs higher than five is the key factor for entering top-tier general hospitals (Table 3). Interestingly, in the study by Stephens MR, it was also found that only first-authored and high-quality academic research conducted by dermatology medical students during their schooling was positively correlated with their future academic achievements, while merely publishing case reports was negatively correlated [16]. The training of research critical thinking and methods for clinical doctors have been overlooked in current education management. Actually, they provide useful tools not only for research need but also for solving clinical problems at work. Furthermore, a considerable proportion of graduates express the desire to improve their research abilities in their work, particularly among those who had relatively limited research accomplishments during their graduate studies. These findings emphasize the importance of providing research training for dermatology graduates in the current professional landscape for doctors.

It is noteworthy that male graduate students are significantly more likely than female students to be promoted in administrative positions, teaching positions, and medical positions (Table 3). Importantly, in our study population, females actually account for as much as 85.2 % of dermatology graduates, but the absolute number of females who achieve promotion in the aforementioned fields is quite small. This suggests that female dermatologists may still face various challenges in areas such as administrative management and academic recognition, despite having received comparable educational backgrounds. This phenomenon is also observed among doctors in other medical specialties and in other countries, which reflect the difficulties commonly faced by female physicians in the workplace [17, 18]. To prevent issues caused by gender disparities, we can establish policies that promote a more equitable promotion system, provide leadership development courses specifically for female healthcare workers, and set up dedicated funds to support their research projects. Implementing these measures will aid in eliminating gender discrimination, elevating the status and influence of female medical professionals, and consequently fostering the sustained and healthy development of the entire healthcare sector. Encouragingly, in our surveyed population, female graduates showed no differences compared to male graduates in terms of hospital employment, salary, paper publications, and self-assessment of satisfaction.

Finally, based on the findings of this study, future research could further explore multicenter studies to assess

the impact of different regions and hospital levels on the training and academic achievements of dermatologists. Additionally, specific interventions such as mentorship programs or targeted research training that support the career development of female dermatologists could be further investigated. Examining the importance of continuous professional development and its impact on maintaining a competitive edge in the rapidly evolving field of dermatology would also be highly beneficial. These studies could provide valuable insights to improve the quality and effectiveness of dermatology education and training programs in China and other countries.

Limitations

This study has several limitations. The primary limitation is the single-center research design, resulting in a relatively small sample size. Despite being one of the largest centers for awarding dermatology graduate degrees in the central region of China, the scale is still relatively modest. According to relevant statistics from the National Health Commission in 2012, there were approximately 25,500 registered dermatologists in China, with an average of 22.68 % having a master's degree or above. Estimating the total number of dermatology graduates with a master's degree or above nationwide to be around 5800, of which the participants in our study constitute only about 1.1 %. Secondly, it is essential to note the retrospective nature of this study, which may introduce certain biases in the analysis and conclusions. Specifically, limitations in obtaining accurate and available information on physicians' training processes, career trajectories, and other relevant details from past records exist. To mitigate this limitation, various methods of data verification and cross-checking were employed, but the potential impact cannot be entirely eliminated. Besides, incorporating third-party evaluation indicators in future research, such as independent assessments of postgraduate research outputs by external experts to enhance the study's reliability is essential. Additionally, among the participants in our study, 34.4 % held a Doctor of Medicine degree, indicating a relatively high level of education. However, this may result in an overconcentration of the sample in terms of education level and may not adequately represent the entire physician population, since the participants in this study have a relatively higher education level, compared to that of national average. Therefore, caution should be exercised when generalizing the study conclusions to the overall physician population.

Conclusions

In conclusion, the study revealed that pursuing a doctoral degree after completing master's training was closely associated with future career achievements in dermatology, while other factors like the age of enrollment or the graduate subtype were less decisive. The research also highlighted the critical role of in-depth research training, particularly the involvement in national projects and the publication of high-quality SCI papers, in shaping professional development. Additionally, male graduates showed a distinct advantage in future promotions to administrative, teaching, and medical titles. These results indicate that in the medical field, the duration and quality of training play a more critical role in career development than factors like enrollment age. It's crucial to emphasize the implications of these findings for educational practices and policy making. Future research should consider conducting longitudinal studies and exploring specific interventions, such as targeted research training and more equitable evaluation systems, to promote better career development for dermatologists.

Acknowledgments: We are grateful for the support of colleagues from the Tongji Medical College for Dr. Chang Peng and Prof. Yuyi Zhen for the guidance of statistical analysis.

Research ethics: Not applicable.

Informed consent: Informed consent was obtained from all individuals included in this study, or their legal guardians or wards.

Author contributions: CS and KY designed the data collection instruments, collected data, and carried out the initial analyses. PZ, QZ, and BW reviewed and revised the manuscript. JY and JT conceptualized and designed the study, coordinated and supervised data collection, and revised the manuscript for language and content.

Use of Large Language Models, AI and Machine Learning Tools: None declared.

Conflict of interest: The authors state no conflict of interest.

Research funding: The study was funded by post-graduation teaching reform project hosted by Dr. Chen Shen and Jing Yang at the First Affiliated Hospital of the Huazhong University of Science and Technology (HUST) in Wuhan, China.

Data availability: The datasets used and analyzed during the current study can be provided by the first author on a reasonable request.

References

1. Zhou Y, Sheng Y, Gao J, Zhang X. Dermatology in China. *J Invest Dermatol Symp Proc* 2015;17:12–14.

2. Wang G. Training and retaining physician—scientists in dermatology: China. *JID Innov* 2022;2:100080.
3. Wang W. Medical education in China: progress in the past 70 years and a vision for the future. *BMC Med Educ* 2021;21:453.
4. Mei A, Gao D, Jiang J, Qiao T, Wang F, Li D. The medical education systems in China and Thailand: a comparative study. *Health Sci Rep* 2022;5:e826.
5. Wu L, Wang Y, Peng X, Song M, Guo X, Nelson H, et al. Development of a medical academic degree system in China. *Med Educ Online* 2014;19:23141.
6. Zhu J, Li W, Chen L. Doctors in China: improving quality through modernisation of residency education. *Lancet* 2016;388:1922–9.
7. Wolfson RK, Alberson K, McGinty M, Schwanz K, Dickins K, Arora VM. The impact of a scholarly concentration program on student interest in career-long research: a longitudinal study. *Acad Med* 2017;92:1196–203.
8. 廖凯举, 侯建林, 由由, 谢阿娜, 武宁, 王维民. 2002–2018年我国临床医师人力资源与人才培养情况的研究. *中国卫生政策研究* 2020;13:63–9. [English] Liao K, Hou J, You Y, Xie A, Wu N, Wang W. Study on the status of human resources and professional training among clinical practitioners in China from 2002 to 2018. *Chinese J Health Policy* 2020;13(11):63–69.
9. Green EP, Borkan JM, Pross SH, Adler SR, Nothnagle M, Parsonnet J, et al. Encouraging scholarship: medical school programs to promote student inquiry beyond the traditional medical curriculum. *Acad Med* 2010;85:409–18.
10. Liu S, Li S, Yang R, Liu T, Chen G. Job preferences for medical students in China: a discrete choice experiment. *Medicine (Baltimore)* 2018;97:e12358.
11. Ie K, Murata A, Tahara M, Komiyama M, Ichikawa S, Takemura YC, et al. What determines medical students' career preference for general practice residency training? A multicenter survey in Japan. *Asia Pac Fam Med* 2018;17:2.
12. Guraya SY, Almaramhy HH. Mapping the factors that influence the career specialty preferences by the undergraduate medical students. *Saudi J Biol Sci* 2018;25:1096–101.
13. Bao M, Huang C. Job preferences of medical and nursing students seeking employment in rural China: a discrete choice experiment. *BMC Med Educ* 2021;21:146.
14. Murase JE, Sabic D. Understanding the importance of dermatology training in undergraduate medical education. *Dermatol Pract Concept* 2015;5:95–6.
15. Cahn BA, Harper HE, Halverstam CP, Lipoff JB. Current status of dermatologic education in US medical schools. *JAMA Dermatol* 2020;156:468–70.
16. Stephens MR, Barbieri JS, Lipoff JB. Predicting future dermatology academic productivity from medical school publications. *J Am Acad Dermatol* 2020;83:624–6.
17. Wu AG, Lipner SR. National trends in gender and ethnicity in dermatology training: 2006 to 2018. *J Am Acad Dermatol* 2022;86:211–13.
18. Ashrafzadeh S, Peters GA, Buzney EA, Lee H, Asgari MM. Gender differences in dermatologist practice locations in the United States: a cross-sectional analysis of current gender gaps. *Int J Womens Dermatol* 2021;7:435–40.

Supplementary Material: This article contains supplementary material (<https://doi.org/10.1515/gme-2024-0010>).