



Review

Differences in dermatology training abroad: A comparative analysis of dermatology training in the United States and in India[☆]



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ABSTRACT

Dermatology residency training is not standardized internationally, and each country dictates how training is conducted within its own borders. This article highlights the types of variability in training that can occur from country to country by comparing dermatology residency training programs in the United States and India. This article specifically analyzes the differences that pertain to application and selection, residency program structure, and post-residency opportunities.

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Introduction

Dermatology residency training is not standardized internationally. Because each individual country dictates how training is conducted, training can vary significantly between countries. Despite this, there is a serious shortage of literature that compares dermatology training programs around the world. This article attempts to bridge that information gap by comparing dermatology residency training programs in the United States and India. These countries were chosen largely because they are among the most populous in the world. Also, one of the authors (Dr. P. Jhorar) completed a dermatology residency in India prior to moving to the United States. She is currently completing her dermatology residency here in the United States.

This article will address the residency application and selection process, the general overall structure of residency programs, and the post-training opportunities that are available to dermatology residents in both India and the United States. Comparing and contrasting dermatologic residency education in these two countries will help further understanding of the type of variability that exists in the training of dermatologists on an international level.

Application and selection for dermatology residency positions in the United States

In the United States, applications for dermatology residency positions open each September for residency positions that matriculate two Julys later (e.g., September 2016 application for July 2018 matriculation; [National Resident Matching Program, 2017a](#)). Participants must register through the NRMP, a national body that oversees and conducts the residency match, and apply through the Electronic Residency Application Service (ERAS), a centralized application service that distributes a general residency application to participating programs ([NRMP, 2017a](#)). All fourth-year U.S. allopathic or osteopathic medical students, graduates of U.S. allopathic or osteopathic medical schools, and international graduates who are certified by the Educational Commission of Foreign Medical Graduates (ECFMG) are eligible to apply ([NRMP, 2017c](#)). Applicants must also separately secure and satisfactorily complete a minimum of a 1-year internship in either internal medicine, pediatrics, transitional year, obstetrics and gynecology, general surgery, or family medicine to be eligible to begin their residency ([NRMP, 2017c](#)). Although the overwhelming majority of dermatology residency programs require that applicants obtain a separate internship position before starting a dermatology residency in their second year of post-graduate training, there are currently 21 4-year dermatology residency positions that include this internship as part of their training ([NRMP, 2017b](#)). Additionally, there are six combined internal medicine-dermatology residency positions that are 5 years in length ([NRMP, 2017b](#)). Finally, applicants must pass

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Table 1

Overview of training in India and the United States

Characteristics	United States	India
Number of Residency Positions	454	Approximately 500
Duration	3 years + 1-year internship	3 years for degree 2 years for diploma
Regulatory Board	ACGME and ABD	MCI
Position Allotment Body	NRMP	Medical Counseling Committee
Admission Requirements	Broad Application including USMLE examinations, MSPE, personal statement, and publications	NEET-PG examination
Graduation Requirements	Discretion of program director	Degree: Thesis + theory, clinical, and oral examinations Diploma: Theory, clinical, and oral examinations
Fellowship Opportunities	ACGME accredited: Dermatopathology and micrographic surgery ABD accredited: Pediatrics ASDS accredited: Cosmetics	No accredited fellowships Many unaccredited options available
Common Epidemiology	Actinic keratosis, non-melanoma skin cancer, benign keratosis, contact dermatitis, atopic dermatitis, psoriasis, and acne vulgaris	Infections, ectoparasites, leprosy, vitiligo, and psoriasis

ABD, American Board of Dermatology; ACGME, Accreditation Council for Graduate Medical Education; ASDS, American Society for Dermatologic Surgery; MCI, Medical Council of India; MSPE, Medical Student Performance Evaluation; NEET-PG, National Eligibility cum Entrance Test for Postgraduate Training; NRMP, National Resident Matching Program; USMLE, U.S. Medical Licensing Examinations.

all four of the U.S. Medical Licensing Examinations (USMLE) prior to matriculation (i.e., Step 1, Step 2 Clinical Knowledge [CK], Step 2 Clinical Skills [CS], and Step 3; NRMP, 2017c). These examinations cover information across all specialties and are not specific to dermatology.

As part of the application process, applicants must submit a USMLE Step 1 score, a personal statement, a minimum of three letters of recommendation, medical school transcripts, and a Medical Student Performance Evaluation (MSPE; NRMP, 2017c). International students must also complete Step 2 CK and Step 2 CS to be eligible to obtain ECFMG certification, which is required to apply for a U.S. residency position (ECFMG, 2017). The MSPE is a document that is generated by each medical school's dean's office and reviews the academic performance of each medical student (American Academy of Medical Colleges, 2017). This document contains clerkship grades and evaluations as well as a general overview of the applicant's performance.

Once the application is entered into the ERAS system, applicants specify which programs should receive their application. There is no limit to the number of programs that can be specified, but there is a fee to send each application. After reviewing applications from prospective residents, dermatology residency programs invite a small number of applicants to interview for a dermatology residency position. The average program extends approximately 10 interview invitations per available dermatology residency spot. Although the selection process varies from program to program, a recent survey of program directors across the United States revealed that interviews, letters of recommendation, USMLE Step 1 scores, and medical school transcripts are the most important factors when evaluating candidates (Gorouhi et al., 2014). Due to the large volume of applications, some programs will set a cutoff for reviewing applications on the basis of USMLE Step 1 scores. A score of 240 is cited as a common cutoff (Gorouhi et al., 2014). After interviews have been completed, both applicants and programs send in a rank list of their top programs and candidates, respectively. Those lists are then matched by the NRMP in an objective and secure manner (NRMP, 2017a). All applicants and programs are notified of their match on a specific date and time (NRMP, 2017a).

Obtaining a dermatology residency position in the United States is exceptionally difficult. In fact, in 2017, less than 70% of 651 applicants who applied for a dermatology residency position were matched to a program (NRMP, 2017b). This is perhaps due in part to the limited number of available residency positions. In 2017, there were 113 dermatology residency programs in the United States with only 455 available spots (NRMP, 2017b). As a result of the limited number of

training opportunities, dermatology applicants are expected to have outstanding USMLE Step 1 scores, class rank, and research output. Not surprisingly, dermatology matriculates have the second highest USMLE Step 1 average of any specialty (i.e., 249) and average nearly 12 abstracts, presentations, and publications (average of 11.7; NRMP, 2017b). Additionally, more than half (52.8%) of successful applicants are members of the Alpha Omega Alpha Honors Society, and nearly half of successful applicants (41.9%) graduate from one of the top 40 U.S. medical schools with the highest National Institute of Health funding (NRMP, 2017b).

Application and selection for dermatology postgraduate training positions in India

In India, the application and selection process for dermatology postgraduate training positions is distinctly different from the NRMP match. Rather than have applicants submit an extensive application, the selection of dermatology residents in India is based solely on the percentile score obtained on the National Eligibility cum Entrance Test for Postgraduate Training (NEET-PG; National Board of Examinations, 2017a). The NEET-PG is India's national board examination, which is administered to all medical students and medical school graduates who desire postgraduate training. It is worth noting that prior to 2017, admissions at the state level were determined by state-administered board examinations; however, the Medical Council of India has now abolished these examinations, and only the NEET-PG is used to allot postgraduate training positions (National Board of Examinations, 2017a). There is one exception to the use of NEET-PG for seat allotment: Three upper-echelon institutions utilize their own admissions test.

The NEET-PG is taken by medical students during the December of their internship, a mandatory year after 4.5 years of undergraduate medical training during which students rotate through a variety of departments. Only those who score above the 50th percentile on the NEET-PG are eligible for consideration for postgraduate training positions (National Board of Examinations, 2017a). However, due to an affirmative action effort by the Indian government designed to increase the number of individuals from scheduled castes (SC), scheduled tribes (ST), and other backwards classes (OBC) receiving training positions, members of these groups are only required to score in the 40th percentile or above on the NEET-PG to be considered eligible for postgraduate training positions (National Board of Examinations, 2017a). The government reserves positions specifically for members of these groups.

Once an applicant is deemed eligible for a postgraduate training position, they are required to attend a series of online “counseling sessions” (Medical Counseling Committee, 2017). Despite the name, counseling sessions do not involve actual counseling; this is simply the name given to the process by which postgraduate training positions are allotted. During this process, applicants are provided a list of available positions that they subsequently rank in order of preference. These positions are then allotted on the basis of NEET-PG scores. Applicants may list as many positions or specialties as they desire when making their list (Medical Counseling Committee, 2017). After submitting their rank list, applicants are notified whether they received a postgraduate training position. Those who are not matched to a postgraduate training position during the first round of counseling are eligible to go through a second round, during which additional postgraduate training positions are allotted. Of note, only one third of applicants who are eligible for counseling will receive a postgraduate training position in any of the available specialties (Medical Counseling Committee, 2017).

Additionally, three distinct types of counseling sessions are used to fill different types of postgraduate training positions. Specifically, half of public and half of private medical college postgraduate training positions are filled at a national counseling session that is overseen by the Medical Counseling Committee (2017). These positions are termed the “All India 50% Quota Seats.” The remaining half of public medical college positions are filled at the state level, and the remaining half of private medical college positions are filled through counseling sessions that occur at each individual private institute’s university. The private medical college counseling sessions are unique in that they not only use NEET-PG results for allotment but can also consider medical school performance and other applicant evaluation tools including interviews. Additionally, some of the positions at private institutions are termed “donation seats” and can be purchased (Sikdar, 2016).

In India, similar to the United States, obtaining a dermatology training position is extremely competitive. Only those scoring in the top 10 percentile are likely to be successful in being matched into one of these programs (Medical Counseling Committee, 2017). One factor that drives the competitiveness of the specialty is the limited number of programs. In India, approximately 240 degree and 95 diploma positions are available at government institutions (Jhorar, email communication, May 2017). Additionally, there are approximately 210 seats in private institutions (Jhorar, email communication, May 2017). This limited number of programs is partially explained by the dearth of dermatologists in India. As of 2007, there were only 5000 dermatologists in India for a population of nearly 1 billion people, with approximately 90% of these dermatologists practicing in urban areas despite the fact that 70% of India’s population is rural (Verma, 2007). Although there are now more than 9000 dermatologists in India, this still starkly contrasts with the United States, which has approximately 9600 dermatologists for 320 million people (Harris William & Co, 2017). This paucity of dermatologists in India is especially concerning because it is estimated that approximately 5% of Indians suffer from a dermatologic condition and up to a third of outpatient primary care appointments involve a discussion of dermatologic issues (Verma, 2007). However, it must be noted that these statistics reflect the rapid growth of dermatology in India because there were 3000 more dermatologists practicing in India in 2007 than in 1991, and this upward trend continues (Thappa and Kumari, 2009).

U.S. residency program structure

As a result of oversight by ACGME, dermatology residency programs are highly standardized in the United States. The 29-page document entitled “ACGME Program Requirements for Graduate Medical Education in Dermatology” outlines a variety of very specific dermatology program

accreditation requirements (ACGME, 2017). For example, all dermatology residencies must be 3 years in length (in addition to a required internship), must have a 3:1 faculty-to-resident ratio with 75% of the faculty serving as full-time faculty, and must have regularly scheduled didactic sessions. Additionally, the clinical component must incorporate outpatient continuity clinics, inpatient consultations, pediatric dermatology, dermatopathology, and procedural dermatology. Adherence to clinical requirements is monitored by the ACGME through self-reported resident case logging in the ACGME Case Log System, and adherence to other program requirements is monitored through resident surveys and site visits. The ultimate goal of these guidelines is to ensure that certain standards in training are met so that all residents receive adequate education and supervision and are prepared to practice independently upon completion of their residency.

Despite the similarity between the dermatology residency programs at their most basic level, there is often significant program-to-program variance in both clinical and didactic training. Dermatology residents were surveyed with regard to their training in each of the major subareas of dermatology, and these surveys routinely have shown differences in certain aspects of training. For example, although 62.5% of surveyed dermatology residents reported spending more than 1 month per year performing Mohs surgery, 10.9% spent less than 2 weeks per year, and 1.7% reported that they received no exposure to Mohs surgery (Lee et al., 2011). Similarly, although 82% of programs have dedicated pediatric clinics, only 56.1% had didactic time specifically dedicated to pediatrics. Yet, despite these potential reported variations, 91% of senior dermatology residents were “satisfied” or “very satisfied” with their procedural dermatology training, and 86.6% felt that “their training in pediatric dermatology will allow them to confidently see pediatric patients” (Akhavan et al., 2015).

To ensure the quality of dermatology training despite interprogram differences, the knowledge assessments of dermatology residents in the United States are nationally standardized. Annually, the American Board of Dermatology administers in-service training examinations (ITE) to residents to help assess their knowledge in relation to their peers and to help prepare residents for board examinations (American Board of Dermatology, 2017c). This examination is administered in a multiple-choice question format. Of note, 2017 will be the last year that the ITE is administered. All residents who enter dermatology residencies after July 2017 will be switched to a staged testing system (American Board of Dermatology, 2017c). In this new system, residents in their first year of dermatology training will take the BASIC examination, second- and third-year dermatology residents a CORE examination, and graduate students the APPLIED examination. Passage of the CORE and APPLIED examinations will be required as part of the board certification process (American Board of Dermatology, 2017c).

At the time of completion of residency, residents currently take the American Board of Dermatology’s primary certification examination. Passage of this examination is required to become board certified in dermatology. The certification examinations consists of 300 multiple-choice questions that cover basic science, dermatopathology, general dermatology, pediatric dermatology, and surgical dermatology (American Board of Dermatology, 2017a). In addition to these standardized tests, the ACGME, in conjunction with the American Board of Dermatology, has developed a set of milestones to assess residents. Implemented in 2016, these milestones attempt to evaluate the “knowledge, skills, attitudes, and performance” of residents. Examples of milestones that residents are expected to achieve at completion of their residency in dermatology include “consistently interpret[ing] and correlate[ing] [dermatopathology] specimens accurately” and being “usually able to select alternative medications for patients with recalcitrant disease or significant side effects from therapy” (American Board of Dermatology, 2017b). Residents are evaluated throughout their residency by faculty members to ensure that they

have achieved competency at each level of training in these milestones. However, it is important to recognize that to date, achievement of these competencies is not a graduation requirement. Rather, certification that individual dermatology residents have completed all mandatory requirements of the dermatology residency is at the discretion of each dermatology residency's program director. After completion of the residency program, graduates have to obtain a medical license in the particular state in which they wish to practice.

India residency program structure

Postgraduate training in India began at Bombay University in 1942, where a single diploma in Dermatology, Venereology, and Leprology was issued (Thappa and Kumari, 2009). In the 1950s, specialists who had trained either at one of the few programs in India or in Great Britain started dermatology departments across the country. By the 1960s, formal degree and diploma programs in dermatology, venereology, and leprology emerged across the country (Thappa and Kumari, 2009). Today, 75 years since the inception of dermatologic postgraduate training in India, the specialty has flourished, and more than 500 postgraduate residency positions are available.

In India, there are two different types of postgraduate residency training positions in dermatology: degree positions and diploma positions (Medical Council of India, 2017). Degree positions last 3 years and incorporate a research component that culminates in the presentation of a thesis (Medical Council of India, 2017). Diploma positions are 2 years in length and strictly clinical (Medical Council of India, 2017). Obtaining a degree position is much more difficult than obtaining a diploma position because the former allows individuals who have earned a degree to become assistant, associate, or full professors (Medical Counseling Committee, 2017). Individuals with a diploma cannot advance beyond the rank of senior resident doctor (Medical Council of India, 2017). If individuals with a diploma decide to obtain a degree, they must complete 2 additional years of training (Medical Council of India, 2017).

In addition to the dermatology training pathways overseen by the Medical Council of India, there is also a dermatology training pathway in India that is overseen by the National Board of Examinations and comprises a very small portion of all dermatology training programs (Hinshaw et al., 2009). This path awards a Diplomate of National Board (DNB) title. Like a dermatology degree program, DNB programs are 3 years in duration. However, unlike degree and diploma programs, DNP programs have separate admissions criteria and are overseen by a separate accrediting body. After completion of 3 years of training and the submission of a thesis, trainees are eligible to take an examination conducted by the National Board of Examinations (Wu et al., 2006). Candidates who complete a degree program are also eligible to sit for the DNB examination and can be double-certified with both degree and DNB certification (Wu et al., 2006). To become eligible for DNB examination, diploma candidates need to complete an additional year of training and write a thesis (Wu et al., 2006).

In addition to the two different residency training paths, there are also two different types of practice settings: government hospitals and private hospitals. Government hospitals treat all patients, including those who are indigent; therefore, they tend to have a much higher patient volume than private hospitals. Private hospitals tend to have greater access to advanced medical technology and often limit care to paying patients. Additionally, private hospitals usually have more funding available for academic pursuits (Jhorar, email communication, May 2017).

Regardless of the practice setting, all postgraduate training positions are overseen by the Medical Council of India. The document "Medical Council of India Postgraduate Medical Education Regulations" outlines the training requirements in detail (Medical Council

of India, 2017). Unlike the United States, program requirements in India do not differ from one specialty to another. For dermatology postgraduate training, each program must have at least three full-time teaching faculty and thirty dedicated dermatology beds.²⁰ Dermatology postgraduate training programs are actually multispecialty training programs encompassing dermatology as well as venereology and leprology. While there are no requirements for specific training experiences, programs are required to incorporate formal didactics, and trainees must maintain a case log, which is periodically reviewed by a trainee's formal teaching mentor. To graduate from a postgraduate training program, two sets of requirements must be met. First, trainees in degree programs must submit a thesis; second, after acceptance of the applicant's thesis, trainees must sit for theory, clinical, and oral examinations. The theory part of the examination consists of multiple-choice, short-answer, and long-answer questions. The clinical part entails multiple case presentations. The oral examination pairs each examinee with a panel of examiners comprising faculty members from his or her parent institution and faculty from outside institutions for discussion of a variety of clinical topics. Trainees must score a minimum of 50% on each of these categories to pass the examination (Medical Council of India, 2017). All physicians in India, regardless of whether they have an MBBS, MD, Diploma, or DNB certification, must be registered with either the Medical Council of India or the individual State Council to be eligible to practice.

Epidemiology of common dermatologic conditions in the United States versus India

Aside from demographics, one of the major differences in training between the United States and India is the type of dermatologic conditions that is commonly seen. Because dermatology training in India encompasses the three specialties of dermatology, venereology, and leprology, dermatologists in India see far more cases of leprosy and venereal disease than their counterparts in the United States (Thappa and Kumari, 2009). Additionally, the most common conditions encountered in an Indian dermatology clinic are infections (including bacterial, viral, and fungal), ectoparasites, leprosy, psoriasis, and vitiligo (Thappa and Kumari, 2009). This contrasts heavily with practices in the United States, where the most commonly encountered conditions are actinic keratosis, non-melanoma skin cancer, acne vulgaris, benign keratosis, psoriasis, atopic dermatitis, and contact dermatitis (Jhorar, email communication, May 2017). It is also worth noting that there is significantly greater access to complex drug therapy (e.g., biologic agents) and diagnostic testing in the United States compared with India.

Postgraduate opportunities in the United States

Graduates from dermatology residencies in the United States may take many different paths. Although statistics on dermatology postgraduate career paths in the United States are limited, a survey of senior residents in 2009 showed that 23% went on to enter fellowship training after graduation, 48% entered private groups, 29% joined academic departments, and 7% pursued a career in solo practice (Hinshaw et al., 2009). This 2009 survey also revealed that a growing number of dermatology graduates are choosing academic careers compared with a 2004 study that showed that less than 12.25% of all practicing dermatologists practiced as full-time academicians (Wu et al., 2006). The 2009 study also reflects the gradual decline of solo-practice dermatology (Hinshaw et al., 2009).

For those who choose fellowships, there are many options. Although the ACGME only accredits dermatopathology and microscopic surgery and dermatologic oncology fellowships, a number of other fellowships are available, including pediatric dermatology (accredited by the American Board of Dermatology), cosmetic

dermatology (accredited by the American Society of Dermatologic Surgeons), and complex medical dermatology (currently unaccredited; American Board of Dermatology, 2017a; American Board of Dermatology, 2017b; American Board of Dermatology, 2017c; American Board of Dermatology, 2017d; American Society for Dermatologic Surgery, 2017).

Postgraduate opportunities in India

There are no dermatology fellowship programs accredited by the Medical Council of India; however, there are a number of additional subspecialty dermatology training opportunities for degree and diploma graduates. Both public and private institutions offer fellowships in cosmetics, procedural dermatology, dermatopathology, and pediatric dermatology (Mysore, 2016). In fact, fellowship training in cosmetics has become so popular that there is concern among authorities that it is decreasing the already limited supply of medical dermatologists in India (Dogra, 2009). In addition to the 1-year fellowship programs, the Indian Association of Dermatologists, Venereologists, and Leprologists offers scholarships for 1-month-long observerships in a variety of training areas that range from lasers to trichology (Mysore, 2016). They also offer four stipends per year to individuals who are interested in traveling abroad for a 1-year dermatopathology fellowship at partner institutions in the United States and other countries (Mysore, 2016). Individuals may also independently seek out fellowship opportunities in other countries. Finally, for procedurally oriented individuals, many private practices offer paid observerships, in which they can learn a variety of procedural skills (Mysore, 2016). Unfortunately, due to the lack of a single oversight body for fellowship training, there is no available data that detail how many fellowships are available, nor is there data on what percentage of graduates seek a fellowship.

Conclusion

Dermatology training and residency selection in India differs markedly from dermatology training in the United States on many levels. Comparing and contrasting dermatology residency training in the United States and India may be helpful in evaluating and improving training in both countries. (See Table 1.) For example, the application process of the United States is specialty-specific and requires extensive and specific documentation, whereas in India, it is test-based initially and then followed by counseling that is similar for all specialties. The presence of a thesis requirement for degree candidates in India provides an interesting parallel to the publication requirements inherent in many U.S. dermatology programs. Comparing these similarities and differences is not meant to be value laden but instead is intended to highlight the different ways in which problems in dermatology training programs can be approached. A reflection on these similarities and differences also provides a needed opportunity for educators to ask themselves how they can improve their own educational methodology. It would be interesting to further compare training in other countries with that in the United States. However, accurate data can be complex and difficult to obtain in some countries. Given that the current dermatology literature has a serious dearth of articles that discuss the training of dermatologists outside the United States and Canada, the authors hope that this article stimulates an open dialogue on a global basis by demonstrating the role of comparative literature in helping educators better understand and identify the best practices for training dermatologists to serve our patients.

Epilogue

Jane Grant-Kels founded the dermatology division at the University of Connecticut in 1980. The division became a department in 1997,

and she built the department into a large and well-respected referral center. In 2006, she felt the department was ready to add a residency program. There was a considerable amount of work involved in getting approval for new residents as well as ensuring that the infrastructure and curriculum were complete and the faculty members were fully invested in the venture. In the subsequent 11 years, the residency program has grown from our initial two residents into a nine-resident dermatology program with additional Mohs and clinical trials fellowships. The residency program is comprehensive, well respected, and a vital piece of our ever-expanding dermatology department. Although she officially stepped down as Department Chair in 2015, the current state of the department and the residency program is a testament to Dr. Grant-Kels and her tenacious pursuit of building a nationally recognized dermatology department and residency program. Her energy, enthusiasm, and demand for excellence in all she does are the reasons she was able to create the unique and special environment that we enjoy here at the University of Connecticut.

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