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Foreign-Trained Dentists in Advanced Education in Prosthodontics Programs in the United States: Demographics, Perspectives on Current Training, and Future Goals

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Abstract

Purpose: This study investigated the perspectives of foreign-trained dentists (FTDs) in comparison with US-trained Dentists (USTDs) in Advanced Education in Prosthodontics (AEP) programs on their current clinical training and future goals.
Materials and Methods: This study was conducted by analyzing data from previously published literature. When appropriate, Chi-square statistical analysis was conducted to determine the influence of where the AEP residents earned their DMD/DDS degree (FTDs/USTDs) on all variables. Only results that yielded significant differences were discussed.
Results: A majority of both FTDs and USTDs were male. Most USTDs were married, while most FTDs were single. Most FTDs were not US citizens and most originated from Asia, followed by the Middle East, South America, and Europe. Significantly more FTDs had higher ranks in their dental schools, had more advanced degrees, and spent more time practicing before entering the AEP programs. In selecting AEP programs, FTDs placed significantly higher values on a program's reputation and research opportunities. During their AEP training, FTDs paid significantly higher tuition and received lower stipends, but obtained more financial support from families. On the other hand, USTDs received significantly more financial aid and earned income from part-time work, but had significantly higher total educational debts. USTDs showed a significantly higher interest in becoming a student member of the American College of Prosthodontists and participated actively in prosthodontics organizations. USTDs were more interested in becoming maxillofacial prosthodontists, while FTDs were more interested in pursuing academic careers.
Conclusion: FTDs differed from USTDs in several ways. Because of their interests in academics and research, FTDs may potentially have a positive impact on the development of the prosthodontics discipline. This information may be beneficial for AEP program directors in accommodating the needs of FTDs, and for FTDs in better preparing for their AEP training.

The US attracts many foreign students seeking advanced training as healthcare professionals, either in medicine or dentistry. In the field of medicine, foreign-trained doctors, or international medical graduates (IMGs), make up a substantial part of the US physician workforce.[1] Moreover, data indicate that 70 to 75% of IMGs stay in the United States after the completion of their graduate medical education.[2] Numerous studies have examined the performance and characteristics of IMGs during and after finishing their residency training.[3–8] Some studies suggest that the presence of IMGs had a positive impact on the medical field by covering healthcare needs in medically underserved areas, contributing to the academic and research environment, and enriching the US medical system.[6–8] However, others suggest different views. For example, IMGs were perceived as having inferior clinical training levels in comparison with United States medical graduates (USMGs). They also faced cultural barriers,

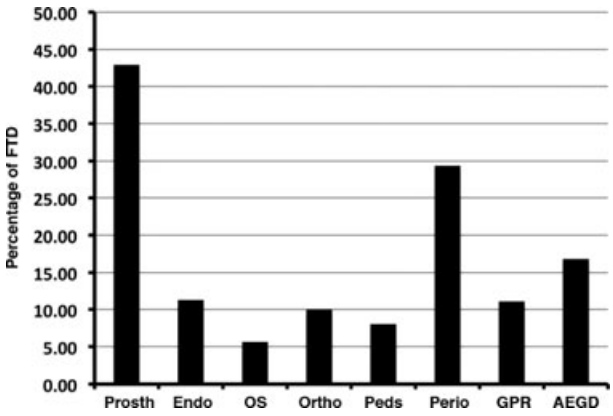

Figure 1 Percentage of foreign-trained dentists entering different advanced dental education programs in 2007/2008. Data retrieved from the American Dental Association.

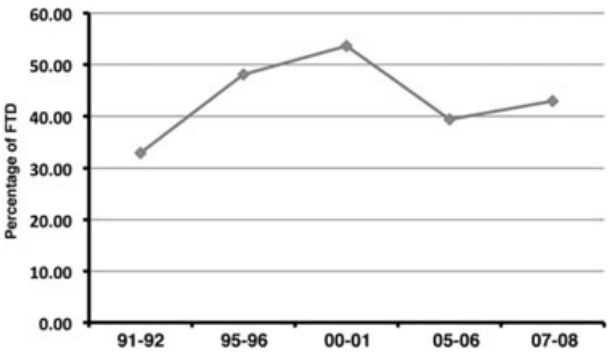

Figure 2 Enrollment rate of foreign-trained dentists in Advanced Education in Prosthodontics programs over the past 18 years. Data retrieved from the American Dental Association.

which could negatively shape their doctor-patient relationships and reduce the quality of their medical care.[4,7,8]

In dentistry, upon completion of their dental training, many foreign-trained dentists (FTDs) enter international dental studies (IDS) or advanced dental education (ADE) programs in the United States. The total number of FTDs entering ADE varies over the years.[9] Many FTDs in ADE are considered talented, knowledgeable, and highly motivated individuals who perform well during their training. Upon finishing their advanced studies, many FTDs return to their home countries, but some stay in the United States to practice or teach.[10] Many studies have analyzed the performance of FTDs in IDS[10-13]; however, none could be identified in the ADE programs. Without understanding their background and expectations, residency programs may not adequately support FTDs and may even impact them negatively.

Prosthodontics is the sixth largest of the nine recognized dental specialties.[14] In 2001, there were 3237 professionally active prosthodontists practicing in the United States, 78.6% of whom were private practitioners.[14] Compared to other specialties, advanced education in prosthodontics (AEP) programs have the highest percentage of enrolled (Fig 1) and graduated FTDs.[9] The FTD enrollment rate has fluctuated over the last 18 years. It peaked in 2000/2001, declined slightly in 2005/2006, and rose again in 2007/2008 (Fig 2). A recent survey of AEP program directors conducted by the American College of Prosthodontists (ACP) in 2002/2003 indicated that the number of FTD residents in AEP programs reached nearly 50%.[15] Due to the high percentage of FTDs joining the specialty, it is important to know their expectations and perceptions of AEP programs; however, no report in the literature has addressed this important issue.

The purpose of this study was to investigate FTDs' perspectives of their current prosthodontics clinical training and future goals and compare these perspectives to those of USTDs. Demographic data between FTDs and USTDs were also compared and presented.

Materials and methods

The study was performed using data from a previously published study, representing approximately 48% of all prosthodontic residents in the United States.[16] Data regarding FTDs in AEP programs were retrieved from the American Dental Association (ADA).[9] A 52-item survey, approved by the Internal Review Board (IRB) office at the Harvard Medical School Office for Research Subject Protection (IRB Approval #M14529–101), was distributed to prosthodontic residents in the United States.

The survey had three parts: Part A assessed the residents' demographic information; Part B assessed the prosthodontic programs; Part C assessed the residents' future goals. The only identifiers in the survey were gender, age, marital status, level of education, citizenship (US or other), and whether the respondent earned a DDS/DMD degree from a US or non-US Dental School. Participants were also asked to state their academic ranks if available. Space was allotted for additional comments.

Data collected were entered into Microsoft Excel 2003 (Microsoft, Seattle, WA) and analyzed using SPSS V15.0 (SPSS Inc, Chicago, IL). The means and standard deviations for each response were calculated and ranked. Data were analyzed by both descriptive and analytic statistics. Chi-square test was conducted to determine the association of where the degrees were earned (FTDs vs. USTDs) on all variables. A significance level of 0.05 was used.

Results

Demographic

The response rate was 43% (191/450), representing approximately 48% of all prosthodontic residents in the United States (Table 1). From the total respondents (191), 85 were FTDs, representing 48% of the total FTDs in AEP population (176, excluding Canadian). A majority of the FTDs and USTDs were male. The mean age of USTDs and FTDs was 30.96 ± 4.58 and 30.89 ± 4.30, respectively. A majority of FTDs were not US citizens ($p = 0.00$), and they came mostly from Asia, followed by the Middle East, then South America, and Europe (Table 2). A majority of USTDs were married, whereas the majority of

Table 1 Number of responding residents based on gender and foreign-trained dentists/US-trained dentists (FTD/USTD)

	Male	Female	Total
USTD	68 (64.1%)	38 (35.8%)	106 (100%)
FTD	53 (62.3%)	32 (37.6%)	85 (100%)
Total	121 (63.3%)	70 (36.6%)	191 (100%)

Table 3 Number of responding residents based on marital status and FTD/USTD

	Single	Married	Divorced	Total
USTD	50 (47.1%)	54 (50.9%)	2 (1.8%)	106 (100%)
FTD	44 (51.7%)	37 (43.5%)	4 (4.7%)	85 (100%)
Total	94 (49.3%)	91 (47.6%)	6 (3.1%)	191 (100%)

FTDs were single (Table 3). There were significantly higher percentage of FTDs holding master's (FTDs 14%, USTDs 4.7%, $p = 0.02$) and PhD (FTDs 8%, USTDs 1%, $p = 0.01$) degrees. Before entering the program, FTDs spent more time working (> 5 years: FTDs 36.4%, USTDs 9.4%, $p = 0.00$; 0 year: FTDs 0.08%, USTDs 60.3%, $p = 0.00$) either in private practice (FTDs 62%, USTDs 17%, $p = 0.00$) or pursuing other education (FTDs 13%, USTDs 1.8%, $p = 0.00$). FTDs also had significantly higher dental school academic ranks (Top 5%: FTDs 30%, USTDs 14.1%, $p = 0.00$; Top 5–10%: FTDs 32.1%, USTDs 16.1%, $p = 0.00$).

Perception of current training and programs

A significantly higher percentage of FTDs placed a higher value on the importance of a program's reputation (Most Important: FTDs 48.2%, USTDs 31.4%, $p = 0.00$) and research opportunities (FTDs 76.4%, USTDs 42.8%, $p = 0.00$). FTDs also presented a significantly higher interest in conducting research (FTDs 76.4%, USTDs 42.8%, $p = 0.00$), publishing research (FTDs 82.3%, USTDs 57.8%, $p = 0.00$), and publishing clinical cases (FTDs 72.6%, USTDs 50.4%, $p = 0.00$). On the other hand, USTDs showed a significantly higher interest in becoming student members of the ACP (USTDs 98%, FTDs 89.4%, $p = 0.01$).

FTDs paid significantly higher tuitions (>$40,000: FTDs 33.3%, USTDs 18.2%, $p = 0.00$), received significantly lower stipends during their first ($0: FTDs 62.5%, USTDs 29.5%, $p = 0.00$), second ($0: FTDs 66.6%, USTDs 31.8%, $p = 0.00$), and third ($0: FTDs 66.6%, USTDs 33.3%, $p = 0.00$) year of training. FTDs received significantly more financial support from family (FTDs 56.4%, USTDs 37.1%, $p = 0.00$). On the other hand, USTDs received significantly more financial aid (USTDs 32.3%, FTDs 15.2%, $p = 0.00$), and earned self-supporting income from part-time work (USTDs 10.5%, FTDs 1.1%, $p = 0.00$). USTDs had a significantly higher total educational debt than did FTDs ($151–200,000: USTDs 18%, FTDs 11.25%, $p = 0.00$), a likely factor restricting them from becoming full-time academics. Educational debts, however, did not restrict FTDs from pursuing full-time academic careers (USTDs 70.2%, FTDs 46.1%, $p = 0.00$).

Table 2 Number of foreign-trained dentists based on their nationalities

Nationality	Total
Asia	26 (30.5%)
Middle East	16 (18.8%)
South/Central America	9 (10.5%)
Europe/Eastern Europe	9 (10.5%)
Canada	2 (2.3%)
Other/not mentioned	23 (30.5%)
Total	85 (100%)

Future goals

FTDs showed significantly higher interests in planning an academic or research career (FTDs 31.7%, USTDs 12.7%, $p = 0.00$) and becoming full-time academicians if income were to improve (FTDs 70.5%, USTDs 51.4%, $p = 0.00$). On the other hand, USTDs showed a significantly higher interest in becoming maxillofacial prosthodontists (USTDs 9.4%, FTDs 2.3%, $p = 0.04$) and being active in prosthodontics organizations (USTDs 86.6%, FTDs 72%, $p = 0.01$).

Discussion

Demographics

Total enrollment of FTDs in AEP programs declined from 2002 until 2006 and recently increased again to a total of 176, which represented 41% of all AEP residents.[9] The respondent ratio of FTDs/USTDs (55%/44%) in this study was similar to the AEP residents' demographic information retrieved from the ADA (FTDs/USTDs: 53%/46%).[9] The FTD respondents from this study were from many different continents. This trend followed the results shown in the most recent study on FTDs licensed to practice in the United States.[10] In that study, the authors explored the origins of FTDs seeking licensures in the United States by looking at the data received from the ADA Department of Testing Services. Their study showed that the greatest number of potential US licensees were primarily from Asia, the Middle East, and South America.[10] Another study also showed that foreign-born IMGs most frequently graduated from schools in South Asia, followed by the Middle East.[3] Foreign doctors and dentists who graduate from countries that use English as a second language, such as India and the Philippines, might have greater advantages during the application and matriculation processes in entering the United States educational and healthcare systems.

Unlike USTDs, a majority of FTDs were single; however, a previous study reported a different finding.[17] IMG residents at six Baltimore Internal Medicine residency programs were significantly more likely to be married and have children than USMGs.[17] Another recent study showed that the married applicants reported a significant spousal influence in their program choice.[18] It remains unclear why such a discrepancy exists between our finding and the current literature.

A significantly higher percentage of FTDs held more advanced degrees than USTDs in this study. Studies from medical journals also noted a similar pattern: that IMGs were more likely to have higher degrees than were USMGs.[17] Considering the competitiveness of entering US residency programs, only top foreign students could be selected; however, due to extreme variations in educational and grading systems worldwide, academic ranks may not represent an objective indicator to determine students' performance in their previous training.[4,11] Although having a higher degree might indicate an academic engagement and could be considered favorable by program directors, similar to research and scholarly activities, attainment of an advanced degree does not predict the resident's performance or future career in academics.[19]

Perceptions of current training and programs

Like IMGs, some FTDs return to their countries of origin upon graduation[10] and become prominent members in academics or the profession because of their advanced education.[20] Therefore, reputation of the institution is an important factor for FTDs. FTDs' higher interest in performing research and publishing might reflect their intention to pursue academic careers. This is in agreement with previous studies demonstrating that IMGs had significantly more scholarly works than did USMGs.[3,8]

Because USTDs could get government loans, they were more likely to have higher educational debts than FTDs. In addition, USTDs could receive additional sources of funding, such as from military scholarships or the National Health Service Corps.[8] A similar trend was observed in USMGs;[17] however, this situation did not apply to FTDs. FTDs need to attain different sources of funding, such as from their government or an international agency such as the Fulbright Program (http://fulbright.state.gov/).

The application process to residency programs in the United States is long, meticulous, exhausting, and often takes many years to prepare. Knowing that the admission process is highly competitive, some prospective students may spend extra time after graduation preparing for the admission process by improving their TOEFL score, continuing their education to graduate level, or working in private practice to gain more experience. Our study showed that before entering their residency program, FTDs spent significantly more time working in private practice, partly in preparation for the high educational expenses in the United States. By doing so, they were more likely to have some savings to pay for their future educational expenses. This also explains why FTDs have more clinical experience than USTDs. It had been suggested that these experiences might benefit US training programs by adding diversity, maturity, and different perspectives on healthcare;[3,8] however, one study showed that having dental licenses from foreign countries did not predict students' success in US dental programs.[11]

FTDs paid significantly higher tuition than USTDs. When entering US public institutions, FTDs are charged with higher out-of-state tuition or nonresident fees. It might also be that a higher proportion of FTDs attended private institutions. One study found that many IMGs were more likely to seek training in urban settings where most private schools were located, because urban settings were typically more diverse, and patients, staff, and community might be more accepting of FTDs' different cultural backgrounds.[3]

Future trends

In comparison with USTDs, a lower proportion of FTDs became ACP student members and participated in prosthodontics organizations. This may indicate their plans to return to their home countries upon graduation and, as such, they see minimal benefit in becoming members of these organizations.

Compared to USTDs, a significantly lower proportion of FTDs showed an interest in continuing their studies in maxillofacial fellowship programs. Some possible explanations for this trend might include the different perception of maxillofacial prosthodontics training by FTDs and the even more limited funding for them to pursue such a specialty. In addition, this study found that a higher proportion of FTDs was more likely to choose an academic or research career. If FTDs decide to stay in the United States, they may potentially serve as clinical faculty members or researchers. It has been noted that many IMGs have made significant contributions to the improvement of clinical practices, biomedical research, and undergraduate or postgraduate education.[6,20]

Contribution to our profession

The presence of FTDs in AEP programs may potentially positively impact patients, AEP programs, and dental communities. The education of immigrant health professionals and their interest in practicing in the United States could provide much-needed personnel to deliver care to various ethnic groups. A substantial number of the residents come from the native countries of certain minority or ethnic population groups in the United States, where access to healthcare is often identified as a problem due to cultural, attitudinal, language, and other nonfinancial barriers.[10,21]

In addition, FTDs can also be recruited to fill the rising numbers of vacant prosthodontist positions in US dental schools.[22] Many of these FTDs are internationally recognized experts and highly qualified professionals. Many prominent positions in US dental schools, such as department chairs, AEP program directors, prosthodontic faculty, and researchers, were held by foreign-trained dentist AEP program graduates. In addition, FTDs who return to their countries usually become prominent members in academics or community practices, and by doing so, may disseminate the philosophy of US healthcare and education to other parts of the globe.[4]

Despite their positive contributions, a recent study showed that many foreign-trained healthcare professionals were experiencing problems when entering residency programs.[23] Poor residency performance of IMGs has been reported. It was suggested that the reasons included inadequate command of the English language, cultural differences, a low level of basic medical knowledge, different attitudes, poor time management and multitasking techniques, and lack of understanding of technological development and procedures unique to the US healthcare system.[4] Therefore, more research is warranted to explore the journey of FTDs to ADE programs, particularly in prosthodontics.

Finally, to the best of the authors' knowledge, this is the first study examining the roles of FTDs in ADE, particularly in AEP programs. By understanding FTDs' expectations, perceptions, and limitations, program directors may support them better academically in the future. To effectively ensure a positive experience for FTDs in AEP programs in the United States, further research in several areas is needed, including academic and cultural adjustment, academic performance comparison between FTDs and USTDs, as well as AEP program directors' perceptions of their FTDs residents.

Limitations of this study

The available literature on this topic is limited, and it is difficult to compare and contrast our finding with the current literature. Therefore, some subjective or speculated statements were made to provide explanation and rationale to support our finding. The data achieved may serve as a baseline for future studies regarding this issue. Additionally, data from this study were self-reported, and the response rate was <50%, which might not represent the opinion of the majority of FTDs in AEP programs. We also acknowledge some additional questions could have been asked to improve this study, thus providing more insight to the profession.

Conclusion

FTDs' demographics, perspectives on clinical training, and future goals were presented. FTDs differed from USTDs in several ways. Because of their interest in academics and research, FTDs might positively impact the prosthodontics discipline. This information may be beneficial for AEP program directors considering FTDs as their future residents and in raising awareness in their expectations or limitations. It may also help FTDs in better preparing for their advanced training.

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