

Factors Influencing Resident Choice of Prosthodontic Residency Program

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Abstract

Purpose: The decision by prosthodontic residency program directors to employ the Match process highlights the need to understand applicant priorities that influence their choice of which programs to rank highly. The purpose of this study is to determine the factors that were most important to residents when choosing from among nonmilitary based prosthodontics dental residency programs in the United States.

Materials and Methods: Following completion of a pilot study, all currently enrolled prosthodontic residents at nonmilitary residency programs were invited to participate via the internet. The study consisted of a survey instrument asking residents to rank 26 possible factors that might impact an applicant's choice of residency program. In addition, the instrument collected other possible influencing variables including gender and debt load. Mean rank scores were compared to determine the most and least important factors. Kruskal-Wallis test was used to compare specific factors between the possible influencing variables.

Results: Two hundred and thirty residents completed the survey instrument, representing a 54.1% response rate of possible participants. With regard to factors influencing program choice, reputation of the residency program was the factor ranked the highest by participants, followed in descending order by the program director's personality, curriculum content, access to use of the latest digital technology, and opportunities for dental implant placement. Quality of schools for children, community outreach opportunities, and the ability to moonlight were ranked as the least important factors. Male and female residents ranked factors such as tuition/stipend, curriculum content, and community outreach opportunities significantly differently. Depending on debt load, residents ranked the factors tuition/stipend, ability to moonlight, curriculum content, and safety of the area where the program is differently.

Conclusions: Current prosthodontic residents valued the reputation of the program as the most important factor when applying to residency. Participant gender and debt load influence the factors chosen by residents as more or less important. These data will assist prosthodontic educators position their programs in the best possible light to attract applicants to their programs.

Extracurricular activities and leadership or research experiences are believed to strengthen a candidate's application for acceptance into dental residency. Dental schools, professional societies, and student dental university groups hold information sessions regarding how to appear "well-rounded" and what constitutes a strong applicant with a focus on what it takes to be accepted by a residency program.

A series of previous reports have highlighted the factors that directors of different specialty programs consider important

when selecting applicants. In 2009, Yuan et al¹ conducted a survey of advanced education in prosthodontic residency program directors. The most important factor directors listed was the interview process, followed by dental school class rank, and dental school grades (specifically grades in prosthodontic courses). Advanced education in pediatric dentistry residency program directors were asked for perceived importance of candidate attributes, and the most important factors were National Board scores and dental school class rank.² Similarly, advanced

education in oral and maxillofacial surgery residency program directors ranked dental school class rank as the most important selection criterion in a written application.³ Advanced education in endodontic residency program directors also ranked dental school ranking as important, along with interview ratings and general practice residency or advanced education in general dentistry experience.⁴ Advanced education in periodontology program directors ranked interview ratings, dental school clinical grades, and dental school periodontics grades as the top three criteria when considering which applicants to accept.⁵ Galang *et al* reported that orthodontic program directors placed the most emphasis on interview performance, dental school class rank, and letters of recommendation.⁶

With many medical and dental programs participating in the Match application progress, residencies also have to be attractive to applicants if they aspire to attract their favorite applicants. To attract the most desirable applicants, a program director needs to know what factors applicants use to make their decision on which program to attend. For example, 67.2% of first-year pediatric dentistry residents indicated their critical criterion for selection of a pediatric program was amount of clinical experience of the program.⁷ In oral and maxillofacial surgery, Laskin *et al* observed that resident applicants ranked good relationships between residents and good relationships between residents and attendings as the most important criteria for applicants when evaluating residency programs.⁸ From medicine, evidence exists as well. Applicants to plastic surgery residency programs ranked their perception of the environment highly with resident happiness as the most important positive factor and a “malignant environment” as the most important negative factor.⁹ Two papers from obstetrics and gynecology also indicate a strong reliance on perception of the environment.^{10,11} Factors such as how much the residency program seemed to care about its trainees (98%), how satisfied the current residents are with their program (98%), how well the applicant thought he or she would fit into the program (97%), and how well the current residents seem to work with each other (94%) all ranked very highly. Both of these specialties use the match program.

Although prosthodontic residency programs do not currently participate in the Match program, the American College of Prosthodontists (ACP) has announced that the prosthodontic specialty will participate in the 2018 Match program. According to the American Dental Association (ADA),¹² there are 34 dental school prosthodontic residency programs and 11 nondental school prosthodontic residency programs; however, with 2153 applicants for approximately 150 places,¹³ competition for the most outstanding applicants will exist.

In 2009, Blissett *et al*¹⁴ conducted a survey of prosthodontic residents and found diversity of training experience to be the most important factor applicants used to select a prosthodontic residency program and their impression of the program director as the second most important factor; however, more recent information is needed, since the applicant pool for dental residency programs is dynamic in characteristics and desires. Da Fonseca and Stiers¹⁵ reported that the applicant's desires regarding a pediatric dentistry residency varied by gender. For example, 34.7% of women in this study preferred a university-based institution versus 21.9% of men. In addition, applicant

priorities change over time. Marciani *et al*¹⁶ conducted a survey of oral and maxillofacial surgery residency applicants and compared it to their 1977 study. Applicants in the year 2000 survey placed less importance on geographic location than the 1976 applicants.

Student debt load has increased in recent years and could impact thinking when it comes to choosing a program. Does debt load change an applicant's perception of the importance of either the availability of a stipend or if tuition costs need to be paid? In essence, as financial obligations are increasing pre-residency, the impact of this increase on a resident's prioritization of factors impacting residency selection is unknown.

The purposes of this study are to identify the most important factors affecting residents' selection of a nonmilitary based prosthodontics dental residency program in the United States and to determine whether resident gender and debt load affect their choice of most important factors.

Materials and methods

This study received Institutional Review Board approval from the University of California, Los Angeles (UCLA). A pilot study using an internet survey (SurveyMonkey.com) was conducted to obtain preliminary data and test/validate the survey instrument. The preliminary survey instrument consisted of questions regarding the degree of importance placed on a list of 23 possible factors that might impact an applicant's choice of residency program, gender, debt load when applying for residency, and if they entered residency straight from dental school. Based on the feedback received during the pilot study, the survey instrument was expanded to add three factors: dental assistant support, curriculum content, and opportunity for MS or PhD. In addition, participants were given the opportunity to type in comments (free response).

Subsequently, all prosthodontic residents at nonmilitary residency programs were invited to participate and complete the survey instrument using an internet-based mechanism (SurveyMonkey.com) (Fig 1). The survey link was e-mailed to all nonmilitary prosthodontic program directors with a request for them to distribute to their residents via e-mail, and follow-up requests were made by e-mail. Survey responses were anonymous, and individual participant responses could not be attributed to the individual resident, as participant identity was not recorded.

According to representatives of the ACP,¹⁷ the total number of enrolled prosthodontic residents in 2016 was 457 (including military program residents, but excluding maxillofacial prosthetics residents). The ADA 2014-2015 Survey of Advanced Dental Education¹⁸ reported that 32 of the current prosthodontic resident pool were enrolled in military residency programs. Therefore, as this survey instrument was not sent to military residency program directors, the total study population was determined to be 425.

Of the 26 factors survey participants were asked to rank, the mean rank score for each factor was used to determine the most important and least important factors. The Kruskal-Wallis test was used to compare responses regarding each factor between male and female participants and applicant debt load.

1. Please rank the following criteria in order of importance when you chose to apply to a prosthodontics residency program? (4 = Very Important, 3 = Somewhat Important, 2 = Neutral, 1 = Not Important)
 - a. Spouse/partner job opportunities
 - b. Opportunity for MS or PhD*
 - c. To be near family/spouse/partner
 - d. Number of other residents in the program
 - e. Curriculum content*
 - f. Access to use latest digital technology
 - g. Opportunities for implant placement
 - h. Licensing issues
 - i. Modern facilities/equipment
 - j. The program director's personality
 - k. Ability to live close to the program
 - l. Number of board-certified faculty
 - m. Dental assistant support*
 - n. Compatibility with other residents
 - o. Geographic location of program
 - p. The program director's reputation
 - q. Cost of living
 - r. Research opportunities
 - s. Resident health insurance benefits
 - t. Reputation of program
 - u. Travel funds for meetings
 - v. Amount of lab work you have to do yourself
 - w. Tuition/stipend
 - x. Ability to moonlight
 - y. Community outreach opportunities
 - z. Quality of schools for your children
 - aa. Safety of the area where the program is
2. Are you male or female?
 - a. Male
 - b. Female
3. What was your student debt load when you applied for residency?
 - a. Less than \$50,000
 - b. \$50,001-\$150,000
 - c. \$151,000-\$200,000
 - d. \$201,000-\$250,000
 - e. \$251,000-\$300,000
 - f. >\$300,000
4. Did you enter residency straight after dental school?
 - a. Yes
 - b. No

Figure 1 Survey questions conducted through SurveyMonkey.com.
*Added after pilot study.

Results

The number of responses obtained for this study was 230, which corresponds to a 54.1% response rate. Eighty (34.8%) of the respondents were women, and 150 (65.2%) of the respondents were men. One hundred and twenty (52.1%) of respondents had entered their residency right after dental school, and 110 (48.9%) had not.

Ranking of factors

Table 1 demonstrates the ranking of factors that current prosthodontic residents deemed most important to least important when applying to prosthodontic programs. Current prosthodontic residents valued the reputation of the program as the most important factor. Other highly ranked factors included, in descending order, the program director's personality, curriculum content, access to the latest digital technology, opportunities for implant placement, modern facilities, tuition/stipend, compatibility with other residents, and the program director's reputation.

The lowest ranked factor was "quality of schools for your children." Other less important factors included community outreach programs, ability to moonlight, spouse/partner job opportunities, resident health insurance benefits, and research opportunities.

Table 1 Factors arranged from most important to least important as ranked by current prosthodontic residents (n = 230)

Factor	Mean	Std Dev
Reputation of program	3.67	0.53
The program director's personality	3.63	0.63
Curriculum content	3.55	0.63
Access to use of latest digital technology	3.52	0.60
Opportunities for implant placement	3.50	0.81
Modern facilities/equipment	3.44	0.63
Tuition/stipend	3.43	0.83
Compatibility with other residents	3.42	0.75
The program director's reputation	3.40	0.74
Ability to live close to the program	3.13	0.84
Number of other residents in the program	3.13	0.80
Amount of lab work you have to do yourself	3.12	0.79
Cost of living	3.10	0.79
Geographic location of program	3.09	0.87
Dental assistant support	3.04	0.83
Safety of the area where the program is	3.02	0.87
Number of board-certified faculty	3.01	0.97
Travel funds for meetings	2.83	0.99
Opportunity for MS or PhD	2.80	1.12
To be near family/spouse/partner	2.79	1.00
Licensing issues	2.69	1.09
Research opportunities	2.68	0.97
Resident health insurance benefits	2.63	0.97
Spouse/partner job opportunities	2.50	1.05
Ability to moonlight	2.36	0.99
Community outreach opportunities	2.25	0.88
Quality of schools for your children	2.07	1.02

Table 2 Top three factors for men (n = 150)

Factor	Mean	Std Dev
Reputation of program	3.65	0.53
The program director's personality	3.58	0.66
Access to use of latest digital technology	3.51	0.61

Table 3 Top three factors for women (n = 80)

Factor	Mean	Std Dev
The program director's personality	3.71	0.58
Reputation of program	3.70	0.54
Curriculum content	3.66	0.65

Gender differences

The ranking of factors are different between men (Table 2) and women (Table 3) with respect to the latest technology, with men ranking using latest digital technology higher than women as a factor impacting choice of residency program. Conversely, women ranked curriculum content in their top three important factors. In addition, men and women tended to rank tuition/stipend, curriculum content, quality of schools for your children, and community outreach opportunities significantly differently ($p < 0.05$).

Table 4 Top three factors by debt load status

Debt load	Factor	Mean	Std Dev
Less than \$50,000 (n = 101)	The program director's personality	3.66	0.62
	Curriculum content	3.66	0.52
	Reputation of program	3.62	0.55
\$50,001-150,000 (n = 27)	Reputation of program	3.74	0.53
	Curriculum content	3.73	0.46
	Access to use of latest digital technology	3.70	0.47
\$151,000-200,000 (n = 19)	Tuition/stipend	3.72	0.46
	Curriculum content	3.72	0.46
	Reputation of program	3.63	0.68
\$201,000-250,000 (n = 22)	Tuition/stipend	3.82	0.39
	Reputation of program	3.77	0.43
	The program director's personality	3.62	0.59
\$251,000-300,000 (n = 22)	Reputation of program	3.68	0.57
	The program director's personality	3.59	0.67
	Tuition/stipend	3.55	0.60
>\$300,000 (n = 39)	Reputation of program	3.67	0.48
	The program director's personality	3.56	0.72
	Opportunities for implant placement	3.56	0.91

Table 5 Top three factors for those who entered residency after dental school (n = 110)

Factor	Mean	Std Dev
Reputation of program	3.67	0.53
The program director's personality	3.63	0.62
Tuition/stipend	3.61	0.58

Differences with respect to current debt load

Tuition/stipend was an important factor for those who had more debt ($p = 0.0132$; Table 4) and entered residency immediately after dental school (Table 5). For those who had debt between \$150,000 and \$250,000, tuition was ranked as the most important factor for residency choice. For those with lower and higher debt than \$150,000 to \$250,000, the importance of tuition was much less important.

Discussion

The ACP's move to participate in the Match program stresses the need to understand the priorities that influence applicants' ranking of programs. Overall, current prosthodontic residents value the reputation of the program and the program director's personality as the two most important factors. This finding differs from Blissett *et al*'s study,¹⁴ in which prosthodontic residents valued the diversity of the training experience followed

by "your impression of the program director." In Blissett *et al*'s work,¹⁴ the equivalent factor to our number one factor, "the prestige of the program/institution," ranked much lower (ranked 12th). Clearly, this is a significant change in the last 7 years; however, the number two ranked factor reported was "your impression of program director," which could be viewed as a similar factor to the number two ranked factor in the present study, "the program director's personality." This demonstrates that the program director's personality/impression remains a consistent factor in the choice of prosthodontic program.

Factors that are less important when applying to residency include family-related factors like quality of schools for children and spouse/job partner opportunities. These results seem similarly ranked to that of the previous study by Blissett *et al*.¹⁴ In addition, opportunity to moonlight, which was included in both studies, was ranked fairly low.

The data from the present study appear to align with reports on applicant preferences and priorities from other dental and medical residency programs,¹⁰⁻¹³ where factors related to a collegial atmosphere and working environment rate highly. These papers show that factors including a healthy resident interaction, the perception of a collegial atmosphere, good relationships between residents and staff, and how well the program cares about its residents, all matter greatly. The learning here is that the "culture" of a program may be more important to applicants than any other factor, and their perceptions of collegiality and friendliness carry significant weight.

Men ranked using the latest digital technology in their top three most important factors, but women did not. Instead women ranked curriculum content in their top three most important factors. In addition, men and women tended to rank several factors such as tuition/stipend differently. These findings indicate the importance of better understanding the reasons behind the differences in responses from male and female applicants if a program director wants to have a gender-balanced resident class/program. With the majority of prosthodontic residents still being male despite DDS/DMD classes having a relatively even balance between the genders, there is an opportunity to learn more about how to attract women into prosthodontics with future research. For example, since curriculum content is important to female applicants, understanding what type of curriculum content is attractive would be helpful.

According to the American Dental Education Association,¹⁹ the average debt load for Class of 2014 dental graduates was \$247,227. This study found that current prosthodontic residents ranked factors differently based on their debt load. A most intriguing observation is that students with little debt or a very high debt load were less influenced by their debt load when ranking tuition/stipend. Those with an intermediary amount of debt (\$150,000 to \$250,000) appeared to be more conscious of the tuition/stipend situation, possibly because they have needed to take student loans and are very concerned about additional debt. In essence, those with little debt or very high debt are tuition/stipend-insensitive with the former likely taking the attitude that they have so little debt that tuition/stipend is not important, and the latter taking the attitude that they have so much debt that why worry about even more debt.

Inasmuch as surveys have their limitations, the reader is made aware of some issues that could have impacted the results of the present study. First, it is known that self-reported outcomes as collected here are usually more variable, as the environment in which each participant takes the survey is not standardized. Second, the response rate in our study was just over 50%, and although this compares favorably with other studies, it still leaves open the possibility that our results would have been different if a larger percentage of residents had participated. Lastly, despite efforts to capture the important factors during survey design, an important factor or two may have been missed. The open response comment box used in the survey was a mechanism to identify missed factors. Interestingly, no themes different to the factors listed emerged; however, some participants used the comment box to stress how they felt about one or more of the factors. A total of 34 comments were left, and the philosophy of the program director, the availability of faculty, and a positive atmosphere were mentioned regularly.

Prosthodontic residency programs are defined, in part, by the accomplishments of their graduates and the impact their graduates have on shaping the specialty. Inasmuch as past performance is the best predictor of future performance, attracting applicants who have performed well in the past is the best predictor of accepting residents who perform well during the program and graduating residents who will perform well in their chosen career path as a prosthodontist. All programs are competing for the best applicants, as the ceiling is much higher with this group, and being attractive to the best is imperative. It is clear from the findings of the present study that the reputation of the program, the program director's personality, curriculum content, use of latest digital technology, opportunities for dental implant placement, modern facilities, and tuition/stipend are the seven most important factors used by applicants. Program directors and institutions wishing to position their program to appeal to the best applicants should contemplate how to make their programs more attractive with these factors in mind. Additionally, balancing their strengths across these areas will allow for broad appeal to both genders and to applicants with differing student loan debt levels.

Conclusions

Within the limitations of this study, the following conclusions were drawn:

1. Current prosthodontic residents valued the reputation of the program as the most important factor when applying to residency.
2. Participant gender and debt load influence the factors chosen by residents as more or less important. Male residents placed more emphasis on access to the latest digital technology, while female residents placed more emphasis on curriculum content. Residents with either very little or very high debt seemed less sensitive to the factor of tuition/stipend than residents with an intermediate amount of debt (\$150,000 to \$250,000).

These data will assist prosthodontic educators to position their programs in the best possible light to attract applicants to their programs.

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