

Clinical Experience of Residents with RPD Treatment in U.S. Graduate Prosthodontics Programs

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Abstract: This cross-sectional study was conducted to quantify the clinical experience of prosthodontic residents with cast metal removable partial denture (RPD) treatment based on their year of training, geographic location of the program, and nature of the program. A web-based survey consisting of five questions was e-mailed to program directors from forty-two programs across the United States. A 62 percent response rate was obtained (26/42). Thirteen of the programs (50 percent of respondents) stipulated a specific number of RPDs to be done prior to completion of the program. Clinical experience of residents varied vastly based on year of training, geographic location of the program, and nature of the program. Prosthodontic residents from southern states, university-based programs, and public school programs had more clinical experience than residents from other programs. The average clinical experience for a prosthodontic resident during three years of training was eight traditional RPDs and two implant-supported RPDs. This is the first study done exploring this topic and provides baseline information on residents' clinical experience in RPD treatment. Future studies will determine educational trends and reassess this portion of the curriculum in graduate prosthodontics.

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Keywords: removable partial denture, survey, clinical experience, prosthodontics residency, resident

Submitted for publication 7/30/09; accepted 10/23/09

A removable partial denture (RPD) is defined as "any prosthesis that replaces some teeth in a partially dentate arch. It can be removed from the mouth and replaced at will—also called partial removable dental prosthesis."¹ Along with conventional fixed partial dentures, RPDs have traditionally been the workhorse in the rehabilitation of partially edentulous patients. In graduate prosthodontic programs, the phenomenal increase in the use of dental implants may have been instrumental in successfully converting several prosthodontic therapies from the traditional removable ones to implant-borne fixed ones. A recent study reported that 18 percent of dental schools in the United States are allowing students to graduate without a stipulation for RPD clinical requirements.² This is probably attributable to the increased use of dental implants in partially edentulous patients.²

There seems to be incredible growth in the adult population requiring prosthodontic care in the United States.³⁻⁵ This phenomenon has been attributed to two

main reasons: the overall growth of the U.S. population and the increase in life expectancy.⁵ Douglass and Watson reported that the projected unmet needs for fixed and removable partial rehabilitation will increase by 15 percent from the year 2005 to 2020.⁵ The adult population that would benefit from prosthodontic care is varied in financial status. Therefore, there are a substantial number of people who are candidates for removable partial dentures. To serve this population, it behooves prosthodontic residency programs to reassess the clinical aspect of a resident's RPD training to ensure that the dental therapeutic needs of the society are met.

In the past, prosthodontic residency programs were dichotomized into either removable or fixed prosthodontics. Currently, prosthodontic residency programs provide a range of clinical experience to the residents.⁶ These include conventional removable and fixed prosthodontics, implant-based prosthodontics, surgical implantology, conscious sedation, perio-prosthodontics, and advanced dental

materials.^{6,7} While the current situation makes the learning process more exciting, it challenges the programs to keep up with traditional and modern prosthodontics in order to provide a consummate educational experience.

A majority of patients treated by residents at graduate prosthodontic clinics may be willing to make larger financial investments in their dental health, due to awareness of their complex needs or the nature of their incorporation into the graduate prosthodontic clinic for care. This would probably mean that a large number of this patient population could afford to pay for dental implants. However, use of an RPD may be necessary when a patient cannot afford a fixed implant prosthesis or when a patient's anatomic conditions dictate that an RPD is the appropriate treatment of choice. Furthermore, a patient who could afford a fixed implant prosthesis may choose not to have any implant surgical procedures due to medical or personal conditions. To qualify as true specialists, current and future prosthodontic residents need to gain enough clinical experience, including the use of RPDs, to be well rounded. The current guidelines for the certification process of the American Board of Prosthodontics require the performance of RPD treatment in one of its clinical sections.⁸

The aims of this survey were 1) to determine baseline information related to clinical experience of

prosthodontics residents with traditional RPD treatment (cast metal partial dentures); 2) to determine baseline information related to clinical experience of prosthodontics residents with implant-supported RPD treatment; and 3) to find out if there was any difference in the amount of clinical experience based on their year of training, geographical location of the program, and nature of the program.

Materials and Methods

A web-based survey containing five questions was e-mailed in March 2006 to forty-two directors of graduate prosthodontics programs (Figure 1). To maintain consistency of the cross-sectional nature of the study, April 1, 2006, was used as a reference date for the respondents to determine the exact numbers they reported. Programs that responded with vague answers or no answers to certain questions were eliminated from analysis of that portion of the study. All communications were maintained through e-mail only. No verbal response was reported. Four programs whose reporting numbers were considered abnormally high in comparison to others were contacted to clarify the terminology. It was emphasized that RPDs specifically meant a cast metal partial denture and not acrylic resin partial dentures, even if they were used as a definitive prosthesis. All the respondents stated

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1. Total number of residents in
Year 1 =
Year 2 =
Year 3 =
 2. Are there any requirements in your program for the number of RPDs (new term: partial RDP) each resident must complete during residency training? YES/NO
 3. If YES to question 3, please specify the total number per resident.
 4. Total number of traditional RPDs currently in progress and completed by
Year 1 Residents =
Year 2 Residents =
Year 3 Residents =
 5. Total number of implant-supported RPDs in progress and completed by
Year 1 Residents =
Year 2 Residents =
Year 3 Residents =

Figure 1. Survey of U.S. graduate prosthodontics program directors

that they understood the terminologies; hence, the same reporting numbers were maintained for analysis. The questions included in the survey required the total numbers only. All other statistical analysis was done by the authors.

In addition to the five questions, three additional elements, which did not require self-reporting, were incorporated into the data analysis. These were determination of the geographical region of the program (Northeast, South, Midwest, or Pacific), nature of the program (Veterans Affairs Health Administration [VA] or university-based), and whether the program was part of a public or private academic institution. The program and/or the school's website were used to provide the data for this section.

The reported numbers and the range were tabulated. As this was a cross-sectional study to gather baseline information, only descriptive statistics were used, and averages were calculated and reported. Average number of RPDs made by residents of each academic year (year 1, year 2, and year 3 residents) was calculated by tallying the reported number of RPDs made for each year and dividing it by the total number of residents of that year. The same process was followed to analyze the data based on various parameters such as location, nature, and affiliation of a program.

Results

A total of twenty-six out of forty-two programs responded to the survey, yielding a response rate of 62 percent. The average number of residents in each year was three, with a range of zero to eight. This was similar to the numbers reported by the American College of Prosthodontists.⁷ Thirteen out of twenty-six programs (50 percent) reported that they stipulated a certain number of RPDs to be completed by a resident prior to completion of a residency program. The average number of completed RPDs stipulated by a program was eleven. Programs located in the Midwest had the highest number of requirements.

To quantify the clinical experience of residents based on each year of training, collective averages were calculated. The clinical experience was categorized into traditional RPDs and implant-supported RPDs (Figure 2). First-year residents had clinical experience of three traditional RPDs and no implant-supported RPDs in progress or in completion. Second-year residents had an average clinical experience of five traditional RPDs and no implant-supported RPDs. Finally, third-year residents had an average clinic experience of eight traditional RPDs and two implant-supported RPDs. The national averages for traditional RPDs contrasted with the

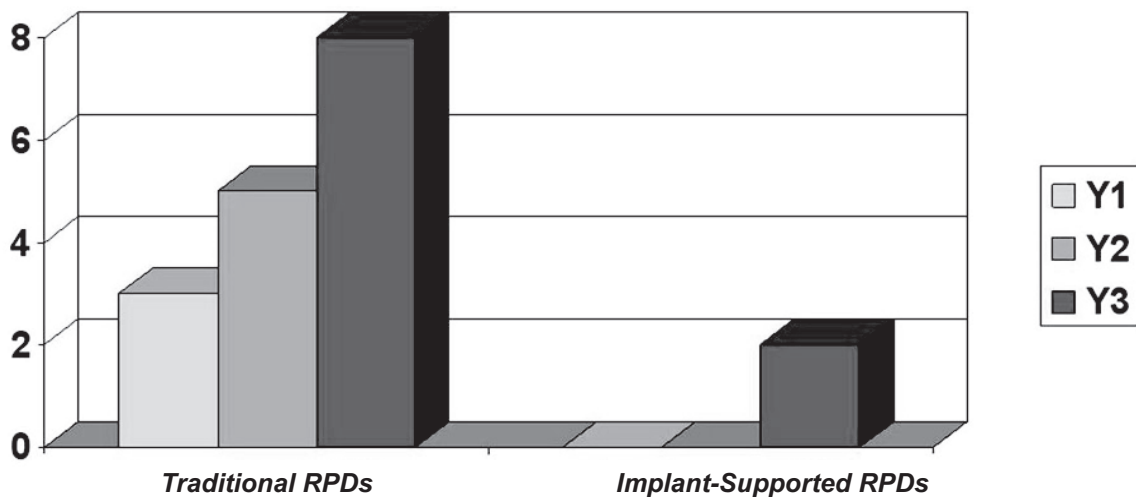


Figure 2. Average number of traditional and implant-supported RPDs made by residents in each year of three-year U.S. graduate prosthodontics programs

numbers for implant-supported RPDs for all years of training. National averages showed that first- and second-year residents had no clinical experience with implant-supported RPDs.

The average number of RPDs made by residents was categorized by geographic location of school, affiliation, and type of institution where the program was based. Four divisions of geographic regions were considered (Figure 3). The geographical proximity of a particular program to the predetermined region was ascertained and data analyzed. The average clinical experience for residents from programs in the South was the highest (twenty-two) followed by the Midwest (nineteen), Northeast (twelve), and Pacific (four) regions. It was interesting to note that third-year residents from programs in the Midwest (average thirteen RPDs) and Southern regions (average ten RPDs) had the largest amount of clinical experience compared to all others. Only second-year residents from the northeastern programs, second- and third-year residents from the southern programs, and third-year residents from the midwestern programs had clinical experiences that were equal to or higher than the national averages. When analyzed based

on the type of residency program, prosthodontics residents from all three years in university-based programs had clinical experiences that were equal to or greater than the national averages. Residents from any of the three years in the VA-based programs did not meet the national averages (Figure 4). Residents from all the years in public school programs had clinical experiences that were equal to the national averages, while residents from any of the three years in private school programs fell short of the national averages (Figure 5).

Discussion

The results from the survey show the differences existing in the clinical experience of residents regarding RPD training. Due to the cross-sectional nature of the study, the numbers noted here are a result of collective averages. This means that a national average of five RPDs made by a second-year resident represents the total number of RPDs made by a resident in two years of training till the date of the survey. It does not represent the number of RPDs

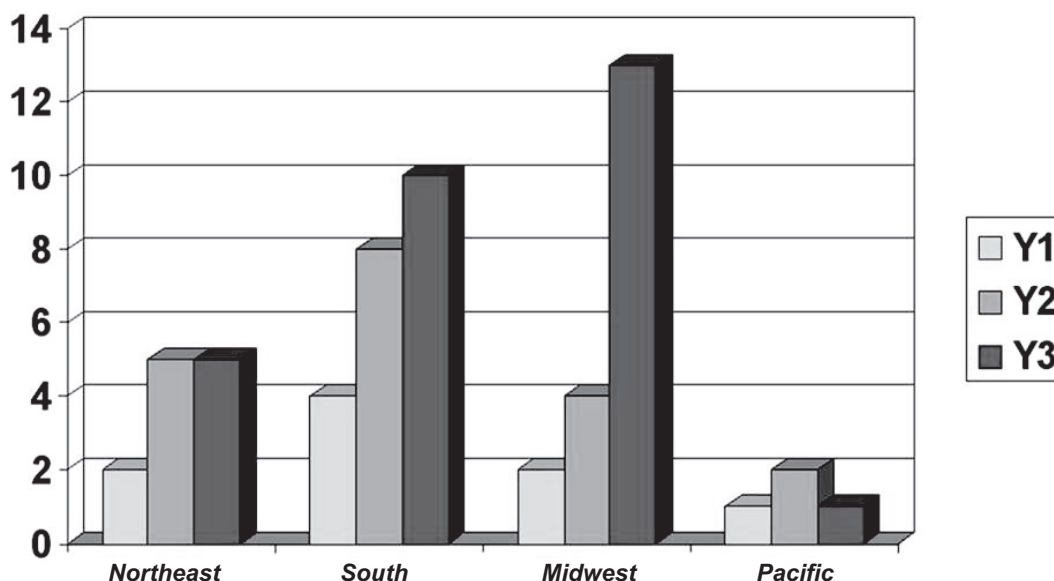


Figure 3. Average number of RPDs made by residents in each year of three-year U.S. graduate prosthodontics programs, by geographic region

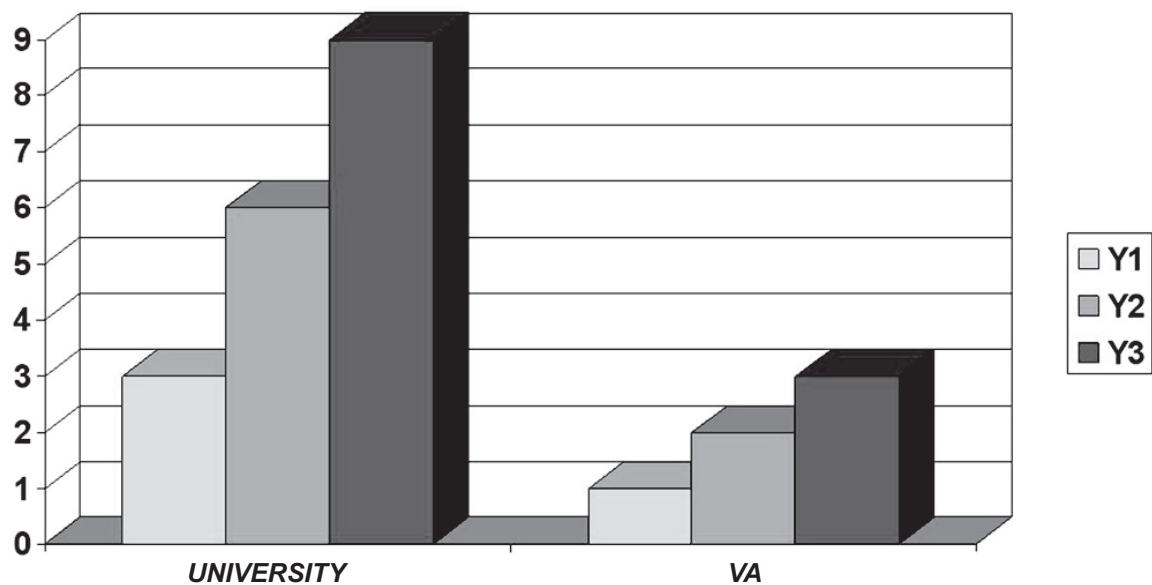


Figure 4. Average number of RPDs made in each year of three-year U.S. graduate prosthodontics programs by residents in university-based versus VA programs

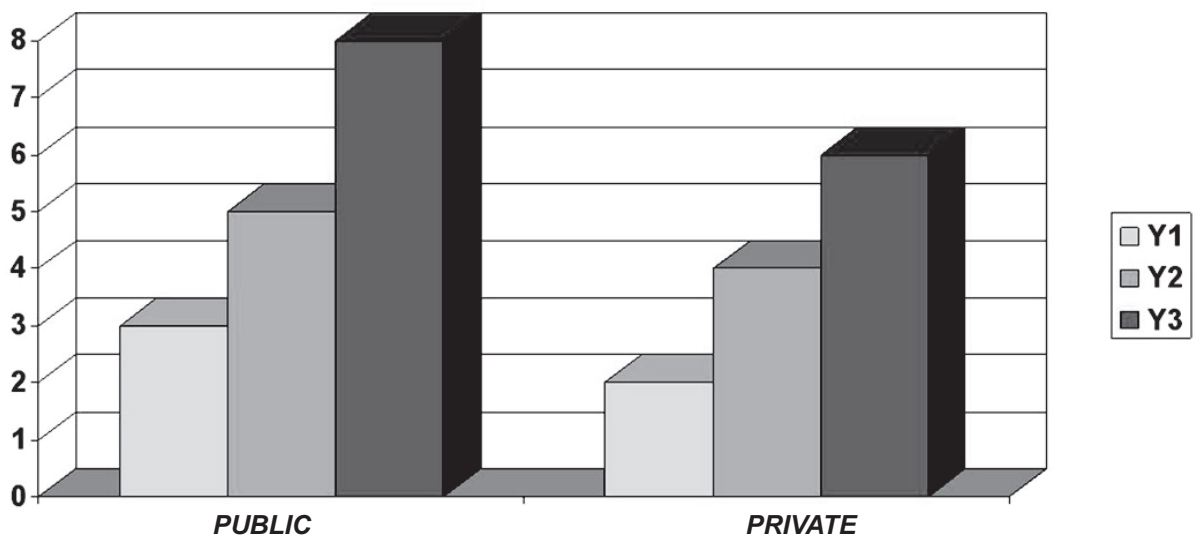


Figure 5. Average number of RPDs made in each year of three-year U.S. graduate prosthodontics programs by residents in public versus private institutions

made in one specific academic year. Similarly, the national average of ten RPDs made by a third-year resident represents the total number of RPDs made by the resident in three years of training and not in the third academic year alone. Therefore, third-year residents, in general, have higher numbers because of their collective clinical experience, in comparison to the first- and second-year residents.

Among the four geographic regions, residents from programs in the southern region had the highest clinical experience, while residents from the Pacific region had the lowest. This could probably be attributed to the economic conditions of these geographic regions, which could affect the type of treatment provided for a partially edentulous patient. Residents in public school programs had more clinical experience than residents in private school programs. This may be attributable to the nature and resources of patients seeking care at these places. These suppositions need to be validated by future research.

Though there is widespread use of dental implants, resident clinical experience with complete denture prosthodontics may be adequate due to the need for diagnostic, immediate, and overdentures during the course of implant treatment. However, this may not be the case in removable partial denture prosthodontics, as reflected by the small number of RPDs being done by prosthodontic residents reported in this national survey. The national average of ten RPDs made by graduating prosthodontics residents is less than the average number of eleven stipulated by a few programs for completion of the residency program. No previous data have documented the clinical experience of residents with RPD treatment. Some anecdotal information indicates that the current numbers may be less than what residents in the past accomplished. The appropriateness of completing ten RPDs by a graduating prosthodontist needs to be scrutinized. Perhaps residency program directors need to seek more patients needing RPDs in order to provide their residents with a better clinical experience.

A limitation to this study was that the data relied solely on self-reports of prosthodontics program directors. No effort was made to verify this information. However, this is the first study to be done on this topic. The data published here can help serve as baseline information for future studies. Follow-up studies ten years from now could begin to track the

education trends of graduate prosthodontic programs and help to reassess this portion of the curriculum in graduate prosthodontics.

Conclusion

A 62 percent response rate was obtained to this web-based cross-sectional survey to quantify the amount of clinical experience with removable partial dentures made by prosthodontic residents across the United States. The average clinical experience for a prosthodontic resident during three years of training was eight traditional RPDs and two implant-supported RPDs. Prosthodontic residents from the southern states, university-based programs, and public school programs had more clinical experience than residents from other programs.

Acknowledgments

The authors would like to thank all the respondents to the survey for their kind cooperation and patience.

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