Patient Recall in Advanced Education in Prosthodontics Programs in the United States

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Abstract

Purpose: This study surveyed program directors of Advanced Education Programs in Prosthodontics (AEPP) in the United States to determine the extent, type, incidence, and perceived effectiveness of implemented recall systems.

Material and Methods: Surveys were sent to AEPP directors across the United States to assess their program's recall protocol. This survey first identified whether an active recall program existed. For programs with recall systems, rigor in promoting ongoing oral health was surveyed by focusing on recall frequency, patient tracking protocol, involved personnel, interaction with other university departments, provided clinical procedures, and therapy completion protocol. Whether the directors perceived that their recall system was successful was also investigated.

Results: Thirty-three of 46 programs responded, giving a response rate of 72%. Of these 33 programs, only 21 (64%) had an active recall system, although 30 (91%) believed recall to be important. Twelve (57%) directors with recall programs considered their system to be effective.

Conclusions: Prosthodontic program directors felt their program's recall effectiveness could be improved. Due to the numerous potential benefits of an active recall system, AEPPs should consider implementing or enhancing their recall programs. Further studies are indicated to determine specific criteria that describe an effective recall system for prosthodontic programs within the context of patient health promotion, program curriculum, and financial ramifications.

Ongoing periodic dental evaluations have a myriad of practical benefits ranging from health promotion, disease prevention, and monitoring of existing prostheses. Definitive rehabilitative treatment continues with the placement of patients on a regular recall schedule. The 6-month periodic examination has been advocated by practitioners in many countries.[1] Although according to a 2005 Cochrane Systematic Review,[2] there is insufficient evidence to support or refute the practice of encouraging patients to attend dental checkups at regular intervals, recall can be used as a means of assessing patients' oral health needs on a regular basis with the aid of a clinical examination and radiographs. The practical benefits of recall have the potential to minimize the need for future complex rehabilitation and could improve patients' quality of life. Furthermore, in an educational setting, periodic dental evaluation can be used as a means of gathering data for the purposes of learning, teaching, and research.

Prosthodontics is the dental specialty that focuses on diagnosis, treatment planning, rehabilitation, and maintenance of the oral function, appearance, and health of patients with clinical conditions associated with missing or deficient teeth and/or maxillofacial tissues using biocompatible substitutes.[3] According to the January 2009 American Dental Association (ADA) Commission on Dental Accreditation (CODA) standards for Advanced Education Programs in Prosthodontics (AEPP),[4] students must achieve proficiency in comprehensive prosthodontic therapy through clinical experience in diagnosis, treatment planning, and rehabilitation of edentulous, partially edentulous, and dentate patients. Patient maintenance is not emphasized but implied through critical evaluation of treatment results, which

can occur on an ongoing basis. Ongoing patient maintenance following rehabilitation is a key component of oral health promotion.

Recall program implementation or enhancement could further the well-being of patients, students, and prosthodontic programs from many perspectives. As an example, recall programs are particularly important for the continual growth in dental implant applications to restore patient function and esthetics and to improve patient quality of life. In the United States alone, more than 200 million individuals are partially or completely edentulous and could benefit from implants.[5,6] Although implant-supported prostheses are considered predictable alternatives to traditional approaches to replace missing teeth, complications can arise, ranging from periodic denture retentive component replacement or screw loosening to loss of osseointegration, and implant failure.[7,8] Because problems requiring maintenance should be expected with implant patients, and because such problems are patient-dependent and unpredictable in their occurrence, patient recall in AEPPs is an important mechanism for assessing functional acceptability from perspectives of the osseointegrated interface and the prosthesis it supports. Furthermore, because the proportion of implant patients in AEPPs is likely greater than the proportion in private practice, programs must be well-prepared to manage complications arising from their own patient pool, as well as any that may be referred to their programs from other practitioners.

AEPPs have anecdotally had various approaches toward patient maintenance following definitive rehabilitative treatment. Some patients may be placed on a recall schedule with the dental school's predoctoral program or with the program's own in-house hygienist. Other programs may dismiss patients from the clinic for follow-up in private practice. Patients may never be seen again until a dental emergency arises, and the patient actively seeks care at the dental school.

No study has reported the incidence and extent of recall in prosthodontic practices or AEPPs, although studies that assessed recall in the specialties of endodontics,[9] orthodontics,[10] and dental hygiene programs[11] have been performed. Studies in these areas discussed program successes, failures, and challenges in managing patient recall. Factors were identified ranging from the individuals responsible for ensuring patients are recalled[11] to the incidence of patients who returned for recall.[9] Such information, which is not available for AEPPs or prosthodontic practices, could be helpful for individuals who consider enhancing prosthodontic patient recall.

The purpose of this study was to determine the extent to which AEPPs across the United States use an active recall system. If recall systems were used, the type of recall system they implemented and the directors' perception as to its effectiveness was also assessed.

Materials and methods

A survey was created and sent for approval by the University of Illinois at Chicago Office for the Protection of Research Subjects for Institutional Review Board (IRB) approval. After IRB approval (20070804-37021-1), this survey was mailed to program directors at all university- and hospital-based AEPPs across the United States. AEPPs were defined as those programs officially recognized by CODA. The list of director names and addresses were obtained through the American College of Prosthodontists. A packet was sent in January 2008 to the directors and contained a cover letter with thorough directions, director survey, and prestamped envelopes with no form of labeling or identification. Directors were requested to complete the survey voluntarily. After 2 months, this same packet was sent out a second time with instructions to the directors to disregard the survey if it had already been completed. Table 1 shows the survey mailed to the program directors. Data were collected until May 2008.

Upon receipt of the surveys via mail, the raw data were entered into Microsoft Excel 2003 (Microsoft, Seattle, WA) for analysis. The incidence for each question was calculated and reported as counts (n) and percentages.

Results

Of the 46 AEPP directors contacted, 33 responded, giving a response rate of 72%. The findings for each survey question are provided in Table 1. The listed ratios are either based on the 33 program directors who did respond to the survey or the 21 programs that reported having an active recall system. The percentages are calculated based on this reported ratio. Following is a summary of important facts gathered from the survey results:

(1) The length of time as the director for each specific AEPP ranged from 7 months to 13 years with an average of 6 years. When divided into intervals, three directors had less than 2 years of experience, thirteen directors had 2–5 years of experience, nine directors had 5–10 years of experience, and six had over 10 years of experience.
(2) Most responding programs were in public educational institutions (n = 24 of 33), while only a few were private (n = 8), and military (n = 1) institutions.
(3) Most institutions had advanced programs in prosthodontics, oral surgery, periodontics, and endodontics.
(4) Most programs used hygiene students and/or an in-house hygienist to complete pre-restorative hygiene or supragingival scaling. Of the thirty-three programs, 79% (n = 26) had a periodontic resident OR an in-house hygienist perform the prophylaxis. (Note: since programs were allowed to choose multiple responses to survey question, this percentage is based on raw data rather than that shown on Table 1). Most pre-restorative subgingival scaling and root planing procedures were done by the periodontic resident. Of the thirty-three programs, 94% (n = 31) had a periodontic resident OR an in-house hygienist perform the scaling and root planing. (Note: since programs were allowed to choose multiple responses to survey question, this percentage is based on raw data rather than that shown on Table 1).
(5) Most prerestorative subgingival scaling and root planing procedures were done by the periodontic resident. Of the 33 programs, 94% (n = 31) had a periodontic resident or hygiene student perform the scaling and root planing.
(6) Ninety-one percent (n = 30) of program directors believed that a recall program was important for their program. After therapy completion, two-thirds of programs retained

Table 1 Survey of prosthodontic recall procedures and tabulated responses. All results are based on the 33 program directors who responded to the survey

Ratio	Program percentage	Questions	Possible answers
See results		1. How long have you been the director of the prosthodontic program at your school?	_____
33/33	100% yes	2. Is your school accredited?	Yes No
8/33	24% private	3. Is your school private or public?	Private Public
24/33	73% public		
1/33	3% military		
		4. Does your school have other specialty programs? (check all that apply)	(check all that apply)
27/33	82%	Oral surgery	[ ]
26/33	79%	Periodontics	[ ]
24/33	73%	Endodontics	[ ]
22/33	67%	Pediatric dentistry	[ ]
25/33	76%	GPR	[ ]
18/33	55%	Hygiene program	[ ]
		5. Who does the prerestorative hygiene procedure for prosthodontic patients?	(check all that apply)
8/33	24%	Prosthodontic resident	[ ]
10/33	30%	Periodontic resident	[ ]
4/33	12%	Predoctoral student	[ ]
18/33	55%	Hygiene student	[ ]
20/33	61%	In-house hygienist	[ ]
0/33	0%	Other	_____
		6. Who does the prerestorative SC/RP (if needed) for prosthodontic patients?	(check all that apply)
7/33	21%	Prosthodontic resident	[ ]
21/33	64%	Periodontic resident	[ ]
5/33	15%	Predoctoral student	[ ]
10/33	30%	Hygiene student	[ ]
18/33	55%	In-house hygienist	[ ]
0/33	0%	Other	_____
30/33	91% yes	7. Do you believe that a recall system is important for your program?	Yes No
9/33	27% yes	8. Once treatment is completed, is the patient transferred to another department for recall?	Yes No
22/33	67% yes	Or kept in the prosthodontic department?	Yes No
		9. If they are transferred, to which department?	
1/33	3%	Predoctoral program	[ ]
6/33	18%	Periodontics	[ ]
4/33	12%	Hygiene program	[ ]
2/33	6% FP*	Other	_____
3/33	9% dismissed		
21/33	64% yes	10. Does your program have an active patient recall system?	Yes No
		(if answer No, skip all questions below)	
10/21	48% yes	11. Does your program have a written protocol regarding recall?	Yes No
		12. How often do you recall the patient after treatment completion?	
1/21	5%	Four times a year	[ ]
1/21	5%	Three times a year	[ ]
12/21	57%	Twice a year	[ ]
5/21	24%	Once a year	[ ]
1/21	5%	Once every other year	[ ]
0/21	0%	Other	_____
		13. How does the program keep track of when patients are due for a recall?	(check all that apply)
7/21	33%	Dated ledger/postcard	[ ]
14/21	67%	Computer program	[ ]
7/21	33%	Patient initiative	[ ]
0/21	0%	Other	_____
		14. Who does the recall check-up?	(check all that apply)
9/21	43%	Faculty	[ ]
15/21	71%	Prosthodontic residents	[ ]
6/21	29%	In-house hygienist	[ ]

Continued

Table 1 Continued

Ratio	Program percentage	Questions	Possible answers
1/21	5%	Predoctoral students	[ ]
0/21	0%	Other	_____
		15. What services are provided during the recall visit?	(check all that apply)
20/21	95%	Hard tissue exam	[ ]
17/21	81%	Periodontal exam including periodontal probing	[ ]
18/21	86%	Radiographs	[ ]
16/21	76%	Prophylaxis	[ ]
10/21	48%	Occlusal adjustments	[ ]
0/21	0%	Other	_____
		16. If a problem is found in recall, is the patient transferred to the department that can best treat them?	
8/21	40% yes		Yes No Do not know
5/21	25% yes	Or kept in the prosthodontic department?	Yes No Do not know
12/21	57% yes	17. In your opinion, is your program's recall system effective?	Yes No

*Faculty practice (FP).

The percentages are calculated based on the listed ratios. Some questions can have multiple responses.

patients for recall within their department. One-third referred their patients to other clinical departments, most often to the periodontic department or hygiene program. Although not directly asked in the survey, none of the programs referred their patients to oral surgery for ongoing evaluation.

(7) When an established recall program existed, most programs recalled their patients once (n = 5 of 20) or twice (n = 12 of 20) per year. This recall was performed most often by prosthodontic residents and was tracked via a computer tracking system. Nearly half the programs (n = 9 of 21) used recall procedures that included hard and soft tissue exam, radiographs, prophylaxis, and occlusal adjustments.

Discussion

The results of this study identified an inconsistency between program director reports of the perceived value of an active AEPP recall system and the implementation of a recall protocol within their programs. Ongoing periodic evaluation of prosthodontic patients has been recognized as critical, but implementation of these programs within an AEPP institutional setting appeared difficult. Of the 33 program directors who responded to the survey, 91% of AEPP directors stated that a recall system was important for their program; however, only 21 (64%) reported having an active recall system encompassing varieties of procedures including hard tissue and soft tissue exams, radiographs, and a prophylaxis. This inconsistency indicates directors are aware of the benefits of a broad-based rigorous recall system, but implementing the system could be a complex endeavor requiring allocated resources for facility, personnel, and supplies.

Many aspects of AEPP clinics model a dental practice in providing comprehensive care with an emphasis on evidence-based decision making. A traditional dental practice typically offers three main phases in dental care: (1) comprehensive assessment, diagnosis, and treatment planning; (2) active therapy; (3) recall and maintenance. An active recall and maintenance system is an important aspect of patient care that can potentially benefit postgraduate programs in myriad ways. Some benefits include health promotion by reiterating oral hygiene instructions on each visit, disease prevention with a simple examination and radiographs, and monitoring of existing prostheses. On the basis of clinical findings, patient consultation to promote oral and systemic health can be performed. Furthermore, because educational institutions and advanced specialty programs deal with large populations of patients with diverse treatment needs, a rigorous broad-based recall system can assist in documentation of success and failure rates of the latest therapy approaches and dental materials. The need for ongoing maintenance of patients who have received implant therapy more strongly emphasizes the requisite for recall and maintenance. Collected data from various physiologic, psychological, and economic categories can help in future retrospective and prospective studies.

Another benefit of having an ongoing recall program is the promotion of many CODA standards that must be met, including diagnosis, risk assessment, and outcomes. No accreditation standard defines the specifics of prosthodontic patient maintenance, but expectations for recall and maintenance are replete in the prosthodontic practice philosophy. Although advanced prosthodontic patients receive complex care that can require unique maintenance approaches, the fundamental maintenance philosophies parallel those that permeate all areas in dentistry. According to this study, only ten (48%) programs with a recall system have a written protocol regarding recall, perhaps in part because a CODA educational standard does not exist. Nevertheless, maintenance concepts are outlined in the Prosthodontics Parameters of Care,[12] which are the prosthodontic practice foundation. A well-managed prosthodontic recall program would promote effective patient management in the advanced

prosthodontic program and the clinical private practice environments.

Before committing time and resources for a rigorous advanced program recall system, it is important to first define recall effectiveness and the underlying factors that make recall beneficial. According to this survey study, only 57% of directors in programs with active recall systems reported that their recall system is effective. It should be noted that the survey question as to the effectiveness of the existing recall system was very subjective, as individuals were allowed to define "effectiveness" differently using their own guidelines. Furthermore, these guidelines, as well as the ability of a program to accomplish its goals, are dependent on student numbers, staff numbers, available facilities, and overall budget. Future studies could serve to identify how directors define recall effectiveness, what are specific barriers that prevent implementation of an enhanced recall system, and what could be done to improve the system from the perspective of patients, students, research, and budget allocation.

If programs do not have a regular recall system, patients must be clearly informed prior to the initiation of therapy. Programs may dismiss the patient once rehabilitative treatment is complete or refer them back to their original general practitioner or other dental school clinics. As can be seen from the survey results, of the programs that did not retain their patients after treatment completion, 6% transferred them to faculty practice, 9% dismissed the patient, while the rest transferred the patient to other school departments. Some programs did a combination of all three. If a program opts for patient transfer rather than establishing a rigorous recall system for their program, patients should be informed prior to initiation of therapy that they must seek maintenance care elsewhere once rehabilitative treatment is complete.

Prosthodontist long-term monitoring of the implant-supported prosthesis must also include assessment of the supporting implants. Although some programs referred patients to the periodontic or hygiene programs for assessment of associated tooth- or implant-supporting tissues, none of the programs referred their patients back to oral surgery upon completion of therapy. Presumably a significant portion of all implants were surgically placed in the oral surgery department. This prompts the question of who exactly would be responsible for long-term monitoring of the root-form implant portion of the prosthesis and the associated bone augmentation or other surgical procedures that ultimately led to definitive restoration. Prosthodontists and others on the rehabilitative team must be responsible for regular follow-up and maintenance.

Four (19%) of the 21 programs with a recall system solely relied on patient initiative as a means of keeping track as to when patients are due for recall. For that reason, another main factor that helps establish the "effectiveness" of a recall system is patient initiative to continue with dental care at a university-based clinic. Some patients may prefer to return to their referring general dentist or find a dentist who is closer to home and has evening and weekend availabilities. Therefore, additional questions could have been asked to provide us with more valuable information on this matter. For instance, one might discover the approximate percentage of patients who use the recall system versus those who return to their own general dentists following completion of treatment. The percentage of patients who come from a private dentist and continue to obtain regular exams and prophylaxis there throughout their treatment phase would also be important. This information could identify whether an active recall system would be used and appreciated by patients before time and money is allocated to such a large endeavor.

Difficulty arises in comparing the results of this study with other studies[9-11] of recall, because published information pertinent to other programs did not apply to prosthodontics. For example, according to an endodontic survey completed in the private setting,[9] only 34% of patients returned for an endodontic therapy follow-up evaluation after treatment was rendered. Furthermore, the majority of endodontists without a recall system relied on general dentists or the patient to inform them of treatment failure. These results contrasted with this study of AEPPs in that prosthodontists act as a primary care provider who can provide all aspects of restorative care and act as referring dentist. Future studies that assess incidence of prosthodontic recall may indicate greater overall recall compliance due to the prosthodontic specialist's unique role. Nevertheless, results from this study identified a program director's recognized trend toward the need for recall enhancement within their programs.

Another conclusion surmised from this study is that AEPPs place an emphasis on the importance of periodontal health by a professional before the restorative phase is initiated. Seventy-nine percent and 94% of programs referred patients to a periodontic resident or an in-house hygienist, respectively, to perform prerestorative prophylaxis and scaling and root planning. Furthermore, at minimum, 22 of the 33 programs had an in-house hygienist they use for prerestorative periodontal care or recall. This indicated that in addition to the prosthodontic residents and dental students, there are other available personnel who can be used for recall. Therefore, the potential exists for interdisciplinary communication and collaboration, as the prerestorative periodontal health philosophy is translated to postrestorative care. Interdisciplinary communication would increase rigor in patient care and promote health. Such collaboration improves health care while fully supporting the CODA prosthodontics expectation that outlines the need for interdisciplinary communication at the advanced level.

A rigorous university-based recall system could have benefits that potentially far outweigh the time and money that may initially go into establishing one. In an educational setting, it will assist in ongoing patient care while teaching predoctoral and postgraduate students its importance. It will also support future research advancements in diverse aspects of dentistry. For AEPPs, a well-organized recall system has the potential to become a self-supporting, net-positive financial outcome for university-based clinics and an important asset to the field of dentistry. Most importantly, patients in these programs will receive ongoing oral health care of the best quality.

Conclusions

A survey was performed to assess the existence and type of recall system in AEPP. The results of this study indicate the following:

1. More than half of all responding AEPPs in the United States had a recall program.

2. Almost all program directors stated that recall is important for their programs, yet only about half the programs with a recall system perceived it to be effective.
3. Future research is necessary to identify ways to best define an effective recall program at the advanced program level.

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