

Perceptions of Predoctoral Dental Education and Practice Patterns in Special Care Dentistry

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Abstract: The objective of this research project was to compare alumni perceptions of predoctoral dental education in the care and management of patients with complex needs to alumni practice patterns. Alumni from the University of the Pacific Arthur A. Dugoni School of Dentistry who graduated from 1997 to 2007 were surveyed regarding perceptions of their predoctoral education in the care of patients categorized and defined as medically compromised, frail elders, and developmentally disabled, as well as their practice patterns. Perceptions were rated on a Likert scale. Regression analyses were utilized. Three primary relationships were identified: 1) positive relationships emerged between perceptions of educational value, as students and practitioners, of the training they received compared to percentages of medically compromised patients they currently treat ($p \leq 0.05$); 2) after practice experience, 2003–07 graduates reported significantly higher value of their education in this area compared to 1997–2002 graduates; and 3) alumni who reported treating more patients with complex needs during school reported treating significantly more of these patients in practice ($p \leq 0.05$). We conclude that alumni who reported educational experiences as more valuable treat more patients with complex needs compared to those who valued them less. Alumni who reported having more opportunities to treat patients with complex needs as students treat a higher percentage of those patients than those reporting fewer. Even positive perceptions may underestimate the value of educational experiences as they relate to future practice.

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Keywords: dental education, special care dentistry, patients with special needs, aging, practice patterns

Submitted for publication 10/4/10; accepted 12/8/10

Medicare data projects that, by 2030, California's population over sixty-five will be more than double what it was in 2000. Between 2000 and 2030, the number of Californians sixty-five and older is expected to increase by 131 percent, compared to 104 percent for the United States overall. In 2005, 79 percent of Medicare beneficiaries reported having two or more chronic conditions; 37 percent reported four or more. In California, 14 percent of Medicare beneficiaries are disabled but not seniors. Compared to the nation as a whole, a higher proportion of California's disabled Medicare beneficiaries live in nursing homes; however, the opposite is true among beneficiaries eighty-five and older. By 2030, the elderly population in California will likely be more ethnically, racially, and linguistically diverse as well.¹

There is much evidence that large segments of the population do not have access to dental care through the traditional private practice model and that there are worsening disparities in the oral health status of certain population groups. Underserved groups include people with a low income, those who live in rural communities, minority groups, non-English speakers, children, the elderly, those with a developmental disability, and those with complex medical needs. More than 80 percent of general dentists are in general practice. Most dental students are trained within the private practice model, leaving little room for developing a different type of practitioner who might address unmet needs within these underserved groups.²

Data from the third National Health and Nutrition Examination Survey (NHANES III) indicated that 30 percent of all adults had untreated dental decay and only 15 percent had never had caries.

Almost 40 percent of dentate persons aged sixty-five years or older in the United States had at least one decayed or filled root surface. Nearly 75 percent of all persons aged fifty-five years and older have fewer than twenty natural teeth. However, the baby boomer generation will likely lose fewer teeth as they age but will have more teeth that are at risk for dental caries and periodontal disease as people live longer with more chronic diseases. Declines in physical and cognitive health, use of xerostomic medications, and inadequate access to dental care all increase the risks of oral diseases such as caries, periodontal disease, and oral pathology such as candida and oral cancer.³

Over the past ten years, there has been an evolution in the didactic and clinical experiences provided to students at the University of the Pacific Arthur A. Dugoni School of Dentistry in the care of patients with complex needs. During this time, there have been several national calls to increase student training in the care of patients with special needs—yet, according to one study, a limited response.⁴ One review of education in geriatric dentistry indicated didactic training has increased over the years but clinical experiences lag behind.⁵ Further, it is not clear to what extent education in the care of patients with special or complex needs has had on practice patterns and to what extent this relates to the practitioners' perceptions about their education in this area.

In 2001, opportunities for Pacific dental students to participate in the care of frail and medically compromised patients began to expand through community partnerships with public health organizations such as La Clinica De La Raza in Oakland, the San Francisco Department of Public Health, and organizations that address the needs of seniors such as On Lok Lifeways in San Francisco.^{6,7} Then, in 2004, Pacific's dental school became part of the Pipeline, Profession, and Practice: Community-Based Dental Education program, which allowed for significant expansion of these outreach services.⁸ In this national program, the Robert Wood Johnson Foundation, in conjunction with The California Endowment, funded programs at fifteen dental schools to improve dental delivery for patients encountering access to care barriers. The initial mission of the program was in three parts. First, schools made a commitment to increase senior extramural rotation days to sixty. By increasing community-based education, students would be able to increase care to vulnerable populations while learning how conditions in the community influence a population's oral health. Second was recruitment

of underrepresented minorities and low-income students, and third was the expansion of cultural issues relating to oral health access in the curriculum. According to Bailit et al., students and residents could add a potential pool of 3,500 providers per year delivering educational, preventive, restorative, and surgical care to populations who might otherwise not receive dental care.⁹ The partnerships that were created and expanded as part of the Pipeline program exposed Pacific students to practice models different from the private practice model with which most were familiar. They also provided opportunities for students to see patients who might never come to the university clinics or who might be classified as "non-teaching" patients in that setting.

In 2003, the didactic curriculum for patients with complex needs also changed from standard lecture and test to computer-based modules for fact-based material plus small-group, case-based, multidisciplinary teaching and learning. All of these changes were directed toward graduating practitioners who were interested and able to meet the needs of a diverse and increasingly complex population. Two studies found that students who perceived their education in the care of patients with special needs had prepared them well reported more often that they intended to see these patients in practice and that they did in fact see more patients with special needs in practice than their counterparts who felt less well prepared.^{10,11} Other studies have documented similar findings, including one that reported new dentists with positive perceptions of their clinical experiences in diverse practice settings made them more comfortable when treating diverse patient populations, including those with special needs.¹²

The purpose of our study was to determine whether Pacific alumni perceptions of their education in treating people with special or complex needs had any relationship with practice patterns for patients with developmental disabilities and complex medical histories or frail elders. We asked if there was a change in perception about the value of their education after they were in practice compared to when they were students. We evaluated if the reported number of opportunities to treat patients with complex needs in school seemed to impact the percentages of those patients alumni manage in practice. We also wanted to determine if student perceptions about their education in these areas had any relationship to their participation in postdoctoral education programs.

Methods

The project was funded jointly by the Departments of Dental Practice and Removable Prosthodontics, and Institutional Review Board approval was received. Surveys were first mailed to the 1,699 alumni who graduated from the Doctor of Dental Surgery and International Dental Studies programs between 1997 and 2007. A second survey was e-mailed to the same group of alumni to provide another opportunity to respond, via SurveyMonkey,

to those who had not previously. The e-mail clearly stated that this electronic survey was for those who had not already submitted a hard copy survey. Since we did not place any identifiers on surveys in order to maintain anonymity, we had no way of removing those who had already responded to the hard copy survey. We considered the possibility of any individual returning both surveys to be very low since there was no incentive to do so.

Alumni were asked to rate their attitudes on a Likert scale (see sample questions in Figure 1).

| | | | | | | | | | | | |
|--|---|---|---|---|-------------------|---|---|---|---|--------------|--------------|
| While you were in dental school, how valuable did you think the experiences providing these clinical services were? | | | | | | | | | | | |
| very valuable | | | | | somewhat valuable | | | | | not valuable | can't recall |
| 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| Now that you are in practice, how valuable have you found the experiences you had in dental school in providing clinical services to the patient populations listed above? | | | | | | | | | | | |
| very valuable | | | | | somewhat valuable | | | | | not valuable | don't know |
| 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| While you were in dental school did you think the Special Needs course (or Clinical Care for Patients with Complex Needs as it was renamed) would be relevant to your future practice? | | | | | | | | | | | |
| very relevant | | | | | somewhat relevant | | | | | not relevant | can't recall |
| 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| Now that you are in practice how relevant have you found the information in the Special Needs or Complex Needs course to your practice? | | | | | | | | | | | |
| very relevant | | | | | somewhat relevant | | | | | not relevant | don't know |
| 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| When you graduated from dental school, to what extent did you feel you had the basic skills and knowledge required to assess and appropriately treat or refer patients with special or complex needs, i.e., people who were medically compromised, frail elders, or those with a developmental disability? | | | | | | | | | | | |
| definitely | | | | | maybe | | | | | no | can't recall |
| 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| Now that you have had practice experience, to what extent do you think that your predoctoral education at Pacific provided you the basic skills and knowledge required to assess and appropriately treat or refer patients with special or complex needs? | | | | | | | | | | | |
| definitely | | | | | maybe | | | | | no | don't know |
| 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |

Figure 1. Sample questions in study survey

Terms in the survey were defined as follows. “Medically compromised” refers to people with a severe systemic disease(s). “Frail elders” includes adults over sixty-five years of age who have functional impairments with basic activities of daily living, such as bathing, eating, dressing, toileting, or mobility as a result of physical and/or cognitive impairments. “Developmental disability” refers to mental retardation, epilepsy, cerebral palsy, and autism.

Data were analyzed using regression analyses and analyses of variance (ANOVA). Significance was defined as $p \leq 0.05$.

Results

There was a total 31 percent response rate to the two surveys. Regression analyses showed a positive significant relationship between perceptions of the training respondents received as students and whether or not they reported treating medically compromised patients in practice currently. A positive significant relationship also emerged between positive assessments of their predoctoral training

after entering practice compared to the percentage of patients they report treating who are medically compromised. We compared question #4 (How valuable have you found the experiences in dental school in providing clinical services to the patient populations listed above?) with the estimate of percentage of patients respondents currently treat in practice who could be defined as medically compromised. The overall mean for this question was 6.83 on the Likert scale of 1 to 10, with 10 being most valuable. The mean for those who rated their clinical education less valuable (using a median split) was 4.01, and the mean for those rating it more valuable was 8.69. Analyses showed a p value < 0.034 (Figure 2). Those who reported less value in their experiences reported a patient percentage of 7.23 compared with those who reported more value and a patient percentage of 12.71 for medically compromised patients in their practices. Those who rated the relevance of the didactic coursework as more relevant after practice experience (8.88 vs. 1.59 on the Likert scale) had, respectively, 13.86 percent and 8.60 percent medically compromised patients in their practice ($p < 0.018$;

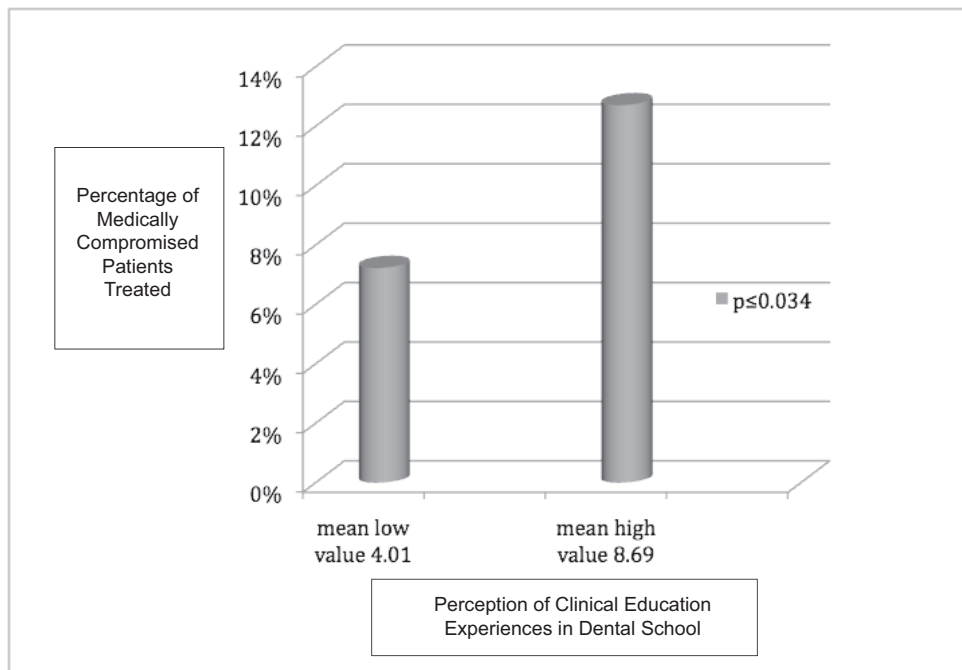


Figure 2. Comparison of respondents’ perceived value of clinical education with percentage of patients in current practice classified as medically compromised

Note: Value was recorded on a Likert scale of 1 to 10, with 10 being the most valuable.

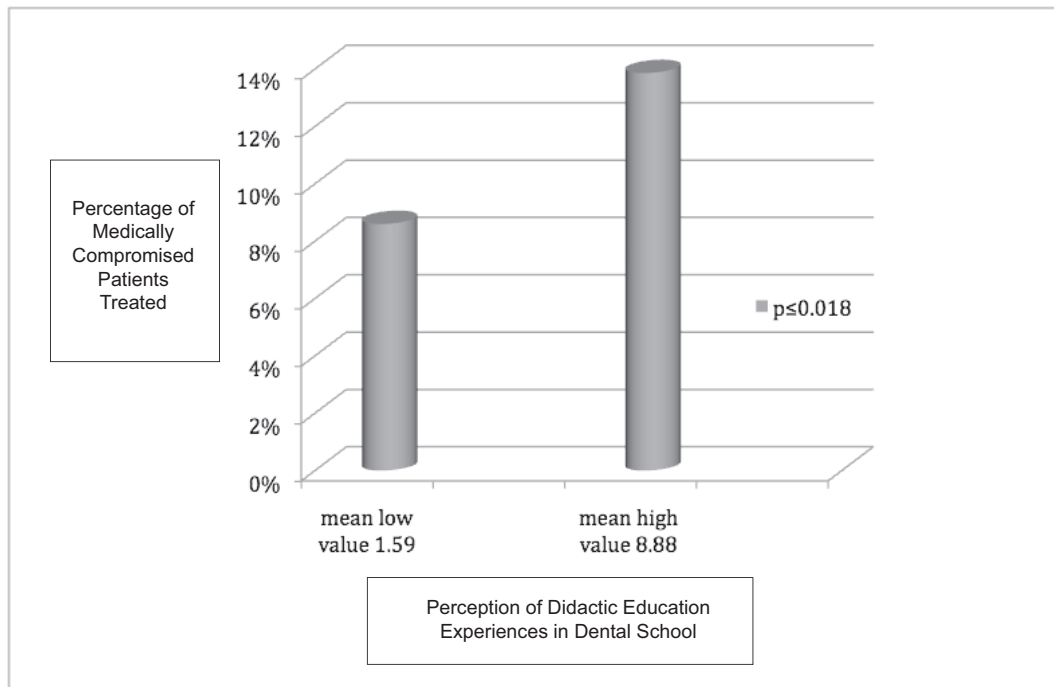


Figure 3. Comparison of respondents' perceived value, once in practice, of didactic education with percentage of patients in current practice classified as medically compromised

Note: Value was recorded on a Likert scale of 1 to 10, with 10 being the most valuable.

Figure 3). After practice experience, analyses showed the more recent graduates (2003–07) reported significantly higher value of their education (7.12) in the care of these patients compared to earlier graduates (1997–2002) (6.51; $p=0.036$).

Alumni who had completed Advanced Education in General Dentistry (AEGD) or General Practice Residency (GPR) programs perceived the opportunities to treat these patients as students as more valuable than did those who did not pursue postdoctoral general dentistry programs. The mean value for those who pursued AEGD was 6.74 on the Likert scale compared with those who did not and rated the value of their coursework at 5.87 ($p \leq 0.05$).

Those who reported they had many opportunities (8.10 mean on the Likert scale) to treat medically compromised patients in dental school reported treating significantly more medically compromised patients in their practice ($p < 0.01$) than those who reported fewer opportunities (mean 3.46). Although alumni reported fewer opportunities in school to treat frail elders compared to opportunities to treat

medically compromised patients as evidenced by a mean of 5.98, those alumni reported seeing significantly more medically compromised patients who were age sixty-five or older than those who reported seeing even fewer frail elders as students with a mean of 3.14. This was significant at $p < 0.01$. There was also a significant relationship ($p < 0.05$) between predoctoral experience managing patients with a developmental disability and future practice populations (see Figure 4).

Discussion

This study found that alumni who reported seeing more patients with complex needs as a student tend to treat more patients with complex needs as a practitioner, although it is possible that bias exists for students having had a pre-existing interest in complex patients. However, most students do not have that much control over their patient populations and the differences in reported practice composition

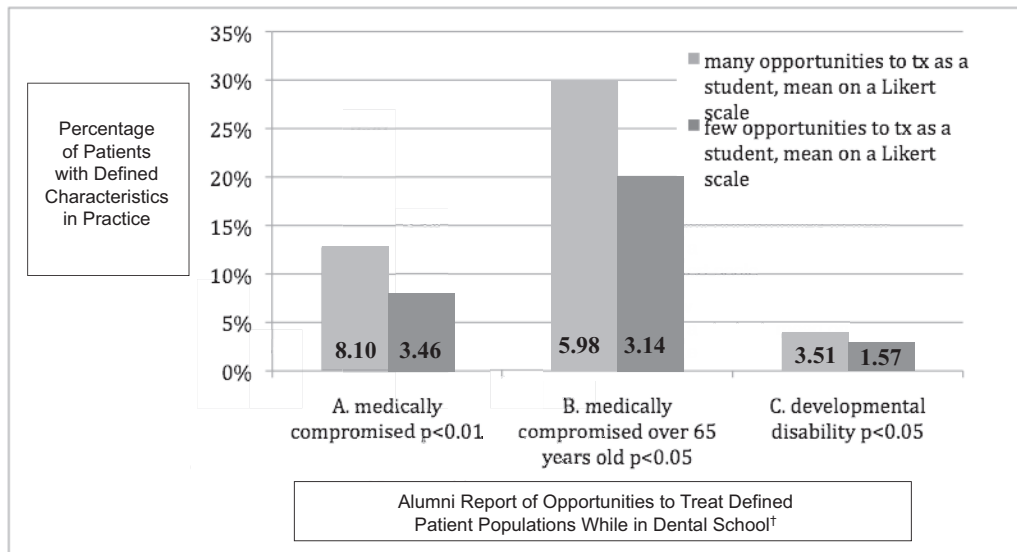


Figure 4. Opportunities to treat patients with complex needs in dental school compared to percentage of patients with defined characteristics in current practice

†As reported on a Likert scale, with 10 being the most opportunities to treat and 0 being no opportunities to treat.

Note: B is the comparison of opportunities as students to treat frail elders (as defined in the survey) compared with existing patient population as reported over sixty-five years old and medically compromised.

or percentage are large, especially with regard to medically compromised patients.

Demographic data were not collected to examine if any of the differences in perceptions of educational value or practice patterns may have had some relationship to the age, ethnicity, or gender of the alumni. We did not have the data to assess if there were pre-existing biases about the value of the coursework that lead to respondents' perceptions. There may have also been some bias among alumni who completed the survey compared with those who did not.

Perhaps those who by chance had a higher percentage of medically compromised patients in their practice and thus a greater need for the information reported a higher value of their dental education in this area. However, another possibility is that their patient demographics have some direct relationship to their perceived and/or actual ability to care for these patients as a result of their experiences in dental school. Interestingly, recent graduates (2003 to 2007) perceived their education in this area to be more valuable after they were in practice than during

school compared with those who graduated before 2003. Recent changes in the curriculum may have impacted alumni perceptions, or perhaps the impact of predoctoral education is diminished as dentists gain practice experience.

Conclusions

Pacific alumni who reported predoctoral educational experiences as more valuable treat more patients in their practices with complex needs compared to those who thought it less valuable. Alumni who thought the education to be more valuable as students may have pursued advanced training in general dentistry as a result of their positive perceptions about their predoctoral education in the area of patients with complex or special needs. Alumni who reported more opportunities to treat patients with complex needs in dental school treat significantly more of these patient populations in their practices. Student perceptions about their education may shape practice patterns, but even positive perceptions may

underestimate the value of educational experience as they will relate to future practice. Students may not recognize the value of their education in this area until after they have had some practice experience. As alumni gain practice experience, the significance of their predoctoral education may diminish or be perceived as less relevant.

With the growing population of people with complex health care needs, the increased need for care of special patient populations is underscored by the enhancement of educational opportunities at the predoctoral level, as evidenced by the Pipeline program. In this study as well as others, there are positive correlations between dental education in this area and future practice patterns. Dental education programs should consider increasing experiences in treating complex patients, particularly in alternative settings, for all students. Importantly, the content and experience must be viewed as valuable if graduates are to continue to treat underserved and complex populations after graduation, so programs must continuously evaluate the experiences of the students and the alumni.

In order to enhance the understanding of and ability to care for special patient populations, practitioners should be encouraged to build upon their predoctoral training through continuing education. Dentists who saw little value in their predoctoral education will still likely be called upon to manage these patients. There should be ample opportunity for them to engage in educational opportunities after graduation that they may find valuable to their practice and critical in providing appropriate patient care for patients with complex needs.

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