Current Status of Predoctoral Geriatric Education in U.S. Dental Schools


Abstract: The elderly constitute the fastest growing segment of the U.S. population. Dental schools must educate dental students so that they are competent and confident in managing the treatment needs of elderly patients. Programs in geriatric dentistry have been developed in response to the changing oral health needs of growing numbers of older adults. The purpose of this online survey was to identify the current status of predoctoral geriatric dental education in U.S. dental schools. A questionnaire relating to the teaching of geriatric dentistry was posted on the World Wide Web, and fifty-four U.S. dental schools were invited to complete the form. Data from completed questionnaires were submitted to the investigators via email. Following repeated phone calls and emails to urge school administrators to respond to the electronic questionnaire, a 100 percent response rate was achieved. All schools reported teaching at least some aspects of geriatric dentistry, and 98 percent had curricula that contain required didactic material. Sixty-seven percent of schools reported having a clinical component to geriatric dental teaching. Of these schools, the clinical content was required in 77 percent and elective in the rest. Thirty percent of schools reported a specific geriatric dentistry clinic within the school, and 11 percent had a remote clinical site. Sixty-three percent of schools have a geriatric program director or a chairman of a geriatric section. Over a third of schools indicated that they plan to extend the teaching of geriatric dentistry in the future. Geriatric dental education has continued to expand over the last twenty years and has established itself in the U.S. predoctoral dental curriculum. The format of teaching the subject varies considerably among the dental schools. Although didactic teaching of geriatric dentistry has increased markedly in the last two decades, clinical experience, both intramurally and extramurally, did not keep pace.

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Key words: geriatric dentistry, dental health services, dental education, dental schools

Submitted for publication 9/16/02; accepted 2/21/03

The elderly population (sixty-five years or older) is the fastest growing segment of the U.S. population. The over-sixty-five age group now constitutes approximately 14 percent of the total U.S. population,¹ and this age group is growing at an annual rate of 2 percent compared to a 1 percent growth rate in the general population (and 3 percent in the over-eighty-fives). By 2040, the estimated date at which our currently graduating dental students will be retiring, nearly 21 percent of the population will be sixty-five years.² Since 1979, a growing number of educational initiatives have been developed in response to the changing oral health and dental treatment needs presented by growing numbers of older adults. Programs in geriatric dentistry have been developed in response to changing population demographics, the increasing percentage of those who maintain some or all of their natural teeth, increased awareness of the importance of oral health in relation to general health, the increase in numbers of medically complex elderly patients, and a greater understanding of the skills required to provide effective dental care in older adults.

Geriatric dental education has developed from the early 1970s, when faculty members with an interest in the elderly started to develop their teaching programs, to the point where all U.S. dental schools teach aspects of geriatric dentistry. This has occurred in parallel with recognition among the medical and wider scientific communities, the media, the politicians, and the public of the importance of the health of our increasingly aged population. It is also now recognized that good oral health is important in maintaining a better quality of life, in terms of food choices and nutrition, as well as contributing to good self-esteem.³

Geriatric dental education can be defined as “that portion of the predoctoral dental curriculum that deals with special knowledge, attitudes, and technical skills required in the provision of oral health...
Many of these older adults may present with one or more chronic, debilitating, physical or mental illnesses with associated medications or psychosocial problems. Various categories of elderly patients have been defined including the well elderly, the frail elderly, the functionally dependent elderly, and the severely disabled, medically complex elderly. The need for development of special clinical skills and attitudes in dental students when dealing with elderly patients within these categories has been highlighted and is clearly of importance in dental students’ education. In order to develop competence in managing geriatric patients, dental students must undergo educational experiences that result in understanding of specific issues relating to geriatric dentistry and, importantly, the development of a caring attitude towards the elderly. Geriatric dentistry differs from the traditional general practice of dentistry in six major aspects:

1. It is concerned with providing dental care to a population aged sixty-five or greater.
2. Eighty-six percent of people aged sixty-five years or more have at least one major chronic disorder such as arthritis, osteoporosis, respiratory disease, cardiovascular disease, cancer, neurological disorders, etc.
3. Many suffer from physical disabilities such as hearing loss, poor vision, and taste disorders, which may impact on their ability to comply with a dentist’s instructions.
4. Many of the elderly utilize polypharmacy (five or more medications taken concurrently), with oral side effects such as xerostomia.
5. Significant numbers also suffer from cognitive dysfunction such as dementia, which may impact compliance with oral health care.
6. The combined effects of physical, psychological, and mental disorders may conspire to make treatment planning and execution a major challenge for the dentist. Furthermore, the practice of geriatric dentistry challenges the ingenuity of the dentist in synchronizing demanding technical procedures with the normal and pathological effects of aging on the oral hard and soft tissues.

Over the last twenty years, various surveys have been conducted to gather information about the status of teaching geriatric dentistry in the predoctoral dental curricula of U.S. dental schools. During this same time interval, curriculum guidelines for the content and delivery of courses and programs in geriatric dentistry have been published. In 1976, 5 percent of U.S. dental schools were providing a specific predoctoral course in geriatric dentistry. Fifty-two percent of schools surveyed at that time indicated that they did not anticipate that a geriatric dentistry program would form part of their curriculum in the future. By 1981, 49 percent of U.S. dental schools reported a geriatric dentistry program in the curriculum, and, of the remainder, over half were planning to initiate such a program within the next few years.

By 1985, the number of dental schools reporting geriatric dentistry as part of their academic curricula had risen to 100 percent, although the actual mode of delivery of geriatric content varied considerably among schools. In 1987, the expansion in teaching of geriatric dentistry had occurred to such an extent that 14 percent of schools reported a formal department or division of geriatric dentistry within their school structure. By 1994, 83 percent of U.S. dental schools reported a specific course in geriatric dentistry that was not provided as part of any other course (e.g., prosthodontics, oral medicine), of which 88 percent had required didactic coursework and 54 percent reported a specific defined clinical rotation. Overall, in 1994, when considering all schools (not just those with a specific geriatric course), 75 percent required clinical training in geriatric dentistry as part of their predoctoral curriculum, with 55 percent reporting line-item financial support for the program within their school budget.

The content of geriatric programs in U.S. dental schools has clearly expanded since the 1970s, but variations in curricula still exist. For instance, some geriatric programs may simply consist of an elective didactic course, taught by a faculty member with an interest in geriatric dentistry. In 1996 it was recognized that neither dental students nor faculty members were being sufficiently educated to meet the needs of the elderly population and also that geriatric dentistry teaching was sometimes viewed as having a lower priority than other disciplines. A concern that has been raised was that dental students and dentists may not identify easily with older, ethnically diverse, and special patient populations. Geriatric dental education is clearly multidisciplinary, and there is evidence that a broader range of interdisciplinary topics are likely to be presented to dental students if a specific geriatric dentistry course exists.
Since the last published survey of geriatric dental education was in 1994,11 we decided to review the current status of teaching in this discipline. The objective of our study was to describe the status of predoctoral geriatric dentistry education in U.S. dental schools in 2001. Specifically, we identified the format of teaching and whether or not geriatric programs were required or elective. We also determined the topics covered and the clinical content of the programs.

Methods

In 2001, a modified questionnaire of an earlier version developed by Ettinger et al. in 19817 and used in 19858 and 199811 was constructed on a web-based (html) form and posted on a server within the Ohio State University (OSU) computing facility. An email message was then sent to the deans of all fifty-four dental schools in the United States, requesting that the email be forwarded to the faculty member with primary responsibility for the teaching of geriatric dentistry in the school. The email contained a hyperlink to the questionnaire. The questionnaire consisted primarily of check boxes selected by the respondent from structured lists. Where appropriate, open questions were answered by free text entry. Essentially, topics covered included: basic demographics of school, respondent, and geriatric program; format of geriatric program including contact hours, topics covered, and whether the program contained any clinical content; details of any geriatric clinics attended; and funding structures.

Once the questionnaire was completed by the faculty member with primary responsibility, the responses were sent back to the investigators by clicking on a submit button. To achieve maximum response rate, repeat emails were sent to the deans of nonresponding schools, and ultimately, in the case of a few schools, follow-up telephone calls were made to request questionnaire completion. Data received at OSU were cleaned and then entered into SPSS 10 statistical software, and descriptive and summary statistics were generated.

Results

Sixty-three percent of schools reported having a geriatric program director or a chairman of a geriatric section. All the schools indicated teaching at least some aspects of geriatric dentistry. Only 2 percent of schools did not have curricula that contained compulsory or required didactic material. The topics covered by lectures or seminars are shown in Figure 1. The format of the geriatric dentistry programs varied widely among schools (Figure 2). Thirty-three percent of schools had a specific program that included a course or seminar series, while 28 percent had both a didactic course and a clinical rotation in a nursing home. Another 9 percent had a didactic course, a nursing home rotation, and additional programs, while 30 percent had other combinations.

The didactic components within the programs varied widely (Figure 3). Survey responses indicated that 98 percent of schools had a required didactic course, but the method of delivery varied. Half of the schools had a specific lecture course, while 22 percent had a series of presentations that were not part of a lecture course specifically devoted to geriatrics. In 18 percent of the schools, geriatric dentistry was taught within other courses and 8 percent simply had occasional lectures or guest speakers.

Figure 1. Didactic curriculum content of geriatric dentistry in U.S. dental schools
clinical component to the course was reported by 67 percent of all schools (Figure 2). Of these, the clinical component was required in 54 percent and elective in the rest. A specific geriatric clinic was operational within 30 percent of the schools, while 11 percent reported having a remote clinical site. A few schools (9 percent) reported having both intramural and extramural clinical sites. One school reported a multifaceted program that included a mobile clinic to treat nursing home residents and underserved low-income elderly in rural areas (Appalachian region of southeast Ohio) and an intramural geriatric dental clinic for ambulatory elderly patients. Of those schools with a required clinical component, 64 percent were state-supported schools, and 36 percent were private schools. Didactic teaching was required in 96 percent of state schools and 100 percent of private schools. However, there was no correlation among class size, geographical location, and didactic or clinical teaching of geriatric dentistry.

When asked who directed the programs, 63 percent of schools identified a geriatric program director. In 45 percent of schools, the teaching was the sole responsibility of this director, while in 18 percent, a multidisciplinary team had responsibility for the program. No particular person was in charge in 37 percent of the schools. When asked about their training, 36 percent of respondents said that they had received formal training in geriatric dentistry, 48 percent were trained in prosthodontics, and 2 percent were trained in oral medicine. It was found that 58 percent had a combination of training such as formal training in geriatric dentistry in addition to prosthodontics, oral medicine, or a general practice residency.

Combinations of two departments (typically prosthodontics and primary care) were responsible for teaching geriatric dentistry in 46 percent of the schools, while community or preventive dentistry sections were responsible in 30 percent of the schools. Special patient care departments were responsible for geriatric dentistry in 4 percent of schools, family dentistry departments in 2 percent, and prosthodontics departments in 2 percent. The remaining 16 percent of schools reported that the responsibility for teaching the course was shared among multiple departments.

Funding for geriatric dentistry programs was reported as follows: 40 percent had a hard line-item support in the school budget and/or patient fees; 7 percent were funded by local government; 1 percent by the federal government; and 52 percent by a combination of the above. Finally, 37 percent of schools indicated that they planned to extend the teaching of geriatric dentistry in the future.

**Discussion**

As the population continues to age and to retain natural teeth, geriatric dentistry will become in-
creasingly important. In the thirty years from 1960 to 1989, the U.S. population increased by 38 percent, whereas the population aged sixty-five years or older increased by 86 percent.1 Elderly patients present challenges to the dentist in terms of oral disease, dental procedures, complex medical histories, and patient management issues. It is important that dental students are trained so that they feel competent and confident when treating these persons. As the proportion of elderly dentate patients increases, then utilization of the dental services will continue to increase.17 Indeed, older dentate adults utilize dental services to a similar level as do younger, employed, dentate adults. Today’s older adults are more likely to have natural teeth than previous cohorts. As the current baby boomer generation ages, it can be anticipated that the value they presently place on dental care will be maintained. Thus, dentists need to be equipped with the attitudes, knowledge, and skills necessary for the management of these aging people.

In our study, we used the Internet to gather data, something that was not possible when the last survey was undertaken in 1994. By placing the questionnaire on the web for online completion and submission, the survey process was greatly simplified and more cost-effective, allowing for rapid collection and collation of data.

When comparing our data to previous studies, we found that the teaching of geriatric dentistry continues to expand. In 1976, no schools required geriatric dentistry as part of their predoctoral curriculum although 5 percent were providing a specific course.6 Our survey found that, in 2001, 98 percent of schools had required didactic teaching in geriatric dentistry and all schools taught at least some aspect of geriatric dentistry.

Just over one-third of respondents (36 percent) had received formal training in geriatric dentistry, and over half (58 percent) had received formal training in geriatric dentistry in combination with training in other dental disciplines such as prosthodontics or oral medicine. These figures are relatively unchanged from those reported in previously published studies, which reported that approximately 60 percent of faculty responsible for geriatric dentistry teaching had received training in the specialty (either alone or in combination with other disciplines).9,11

Formal training in geriatric dentistry leads to a certificate in geriatric dentistry and requires spending twenty-four months in residence. Didactic and clinical requirements to graduate include attending and passing successfully: 1) a core curriculum course in Gerontology and Geriatric Dentistry, critical analysis of literature on geriatrics, biostatistics, and public health, and other related courses; and 2) clinical experience, both intramurally and extramurally, in diagnosis, designing treatment plans, and management of elderly patients including medically complex patients, both institutionalized and homebound. Many geriatric dentistry fellows combine their certificate training with an M.P.H. Admission requirements include a D.D.S. and prior training, such as in prosthodontics, oral medicine, or general practice residency. Many of those admitted usually are offered fellowships and are designated as fellows in geriatric dentistry.

There was a significant increase in the number of schools that developed their own geriatric clinic. In previous surveys, clinical teaching occurred primarily at extramural sites, such as nursing homes, community clinics, geriatric hospitals, and geriatric day care centers.14 In 2001, however, almost one-third of the U.S. dental schools reported operating their own geriatric clinic within the school.

Geriatric dental programs now encompass a much broader range of topics relevant to the management of elderly patients. For example, all of the schools teach students about the barriers to dental care that may be experienced by the elderly, while the psychosocial problems and socioeconomic difficulties are taught in 96 percent and 94 percent of schools, respectively (Figure 1). Therefore, it would appear that the previously reported tendency for schools to focus primarily on the pathological processes of aging has been reversed, and there is now more emphasis on social problems related to aging and how these may impact on the delivery of effective oral health care.15

It is important that dental students have clinical experiences caring for elderly patients within their dental school clinics. Preferably, this will be undertaken in a dedicated clinic where the particular needs of geriatric dental patients (for example, diagnosis and management of such oral conditions as dry mouth, root caries, and candidiasis) are given priority and where appropriately trained and experienced support staff are available. Dental students are often requested to provide dental care for nursing home residents, and indeed, it is mandated by U.S. law (as part of the Omnibus Reconciliation Act of 1987) that each nursing home have a dentist affiliated with the
facility.\textsuperscript{14} There is evidence that dentists who have had a geriatric clinical experience as part of their training are more likely to carry out regular comprehensive care in a long-term elderly care facility.\textsuperscript{18} Furthermore, dentists who have experience in managing the frail elderly during their training are more likely to undertake dental care for nursing home residents.\textsuperscript{18}

The importance of providing training in geriatric dentistry was highlighted by a recent survey of the 2001 dental graduating class in the United States.\textsuperscript{19} Graduating seniors were asked to indicate their preparedness for practice on completion of their D.D.S. degree. Almost 20 percent of respondents indicated that they were less than or not well prepared in providing care for older persons. Furthermore, nearly 25 percent felt that inadequate time in the predoctoral curriculum was devoted to geriatric dentistry. According to these graduating seniors, geriatric dentistry was fourth highest in a list of dental subjects in terms of inadequate time for instruction. These findings support the fact that while teaching of geriatric dentistry has progressively increased over the years, a significant proportion of graduating dental seniors recognize that they have been insufficiently trained in this subject and feel unprepared for practice.

**Conclusion**

This study showed that geriatric dental education has continued to develop and has established a presence in the U.S. predoctoral dental curriculum. The teaching format varied considerably among schools. Compared to previous reports, more schools have didactic courses and clinical rotations devoted to geriatrics. Over the last twenty years, there has been a shift from education limited to the pathological processes of aging toward a emphasis on understanding the specific challenges that elderly persons face functioning in their environment and the role of oral health care in that environment. Although didactic teaching and geriatric dentistry have increased markedly in the last two decades, clinical experience, both intramurally and extramurally, has not kept pace.

**Acknowledgments**

The authors wish to thank Dr. Robert Rashid and Mr. Ali Asadi, both of the Ohio State University, for their technical assistance in conducting this study.

**REFERENCES**