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Delivering the evidence – skill mix and education for elder care

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Delivering the evidence – skill mix and education for elder care

Objectives: To review the current status of dental curricula on elder care, and the current curricula regarding elder care, and it's effect on altering practitioner behaviors while addressing the needs of a growing North American elder population.

Background: An impending crisis is looming over the oral healthcare of our aging population. At the same moment that life expectancy is being extended through increasingly complex healthcare improvements, the numbers of trained dental providers capable and interested in delivering the needed care is failing to grow at an adequate rate.

Discussion: The skills necessary to manage these increasingly complex patients require an interprofessional approach capable of delivering care to sicker patients, in a variety of living accommodations, while managing a variety of care givers. The dental skills necessary to treat these elderly are modifications of skills students routinely learn in dental school. As a matter of fact, the skills students acquire to treat an adult patient population may be contrary to the basic skills necessary to manage the elderly dependent adult patient. Teaching students the nuance differences needed to properly diagnose and care for this population is a difficult task that must be taught in a contextual environment.

Conclusion: Significant changes in the teaching of dental management of the elderly are critical within much of the education community. Just as teaching students to care for the pediatric population as general dentists, the clinical education must involve a sufficient number of quality experiences to address issues of both competency, that of the graduate to perform care independently, and attitudes, the actually willingness to treat the elderly.

Keywords: gerodontology, eldercare, ageing, geriatric dentistry, access to care, dentistry for the underserved, dental education, dental caries, demographic changes, nursing homes.

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Introduction

This article was initially presented as part of Developing Pathways for Oral Care in Elders conference and workshop held in Seattle, Washington, 24–26 March 2013, sponsored by the International Association of Dental Research Geriatric Oral Research Group. The subject, *Skill Mix and Education For Elder Care*, was framed to discuss both what are the skills mix needed to be included in the predoctoral dental education curriculum necessary to develop a competent general practitioner who is comfortable and eager to treat a variety of oral elder care needs and the rationale for why general dental curricula must be universally expanded to meet this need. The presentation discussed the changes in population demographics and how they drive the need to change both how and what the dental curriculum teaches if we are to meet the upcoming needs of the elder population, particularly those with increasing dependency. This article will present a brief discussion of the salient portions of the population changes as they pertain to dependency, locations of domicile and types of patient care that must be incorporated into the dental curriculum. The study also briefly discusses the current status of dental curricula on elder care and what is known/not known about the success of the current curricula in altering practitioner behaviours and addressing the needs of the growing elder population. Recommendations for development of

an interprofessional team led by the oral healthcare provider are made.

Population and demographic changes in North America

The general population is living longer. In the United States, for example, currently one in eight Americans (40 million in 2011) are over 65 years of age; 1.5% of all Americans are older than 85 years of age[1]. By the year 2050, it is projected that one in five Americans will be over 65 years of age and nearly 5% of all Americans will be older than 85 years of age[2]. In Canada, for example, in 2011, there were nearly 5 million people over the age of 65. Nearly 4.5% of them lived in nursing homes, chronic care and long-term care hospitals[3]. A similar percentage of American elders over 65 years of age live in long-term care environments totaling nearly 2 million elders. The shear number of elders requiring the most extensive health care places a staggering toll on the current dental care resources. Although on the surface this may appear as the most challenging population, the number of elders with increasing dependency requiring personal assistance with everyday activities is even more staggering. Of Americans 85 years and older, more than half require some form of assistance. Of those between 75 and 79, 20% require some form of assistance and approximately 10% of those between the ages of 65 and 75 also require some form of assistance. This means that the number of elderly patients with dependence requiring varied levels of assistance is in the tens of millions.[2]

Dental caries is one of the most prevalent diseases in the world, and presently, the demographics of caries is changing. The global trend of a decrease in childhood caries rates is being accompanied by a trend of an increase in both the numbers of teeth present in ageing and the burden of new caries and restored teeth. Total edentulism is also decreasing as a percentage of the population. The trend of decreased edentulism in ageing populations in developed countries is resulting in an aged population with increased numbers of both decayed and restored teeth[4]. The restorative dentistry of this ageing population is typically more complex, with increasing numbers of partial removable and fixed prosthodontic restorations present. At the same time, the ageing population may not be receiving the periodic care they should be seeking, increasing the risk of caries as well as the failure of these complex restorations[5]. The reasons for decreased utilisation of dental care in the elderly patient population are complex, but financial issues must be considered amongst the reasons[6,7]. Additional reasons include the costs associated with bringing dental care to the extended care facility and/or homebound elderly persons. Within countries such as the United States, fixed financial resources that do not include oral healthcare costs negatively impact the utilisation of dental services by the elderly people. In addition, concerns associated with elder patient mobility, independence and mere difficulties in the elder's ability to 'get to' the dental care must be seen as barriers in access to care[6]. Once again utilising the American example, approximately 5% of the elder population is in nursing homes (long-term care facilities). *Healthy People* is a set of goals and objectives with 10-year targets designed to guide national health promotion and disease prevention efforts to improve the health of all people in the United States. Released by the U.S. Department of Health and Human Services each decade, *Healthy People* reflects the idea that setting objectives and providing science-based benchmarks to track and monitor progress can motivate and focus action. *Healthy People 2010* objective 21–11 was set 'to increase the proportion of long-term care residents who use the oral healthcare system each year' to 25%[8], and this would represent an improvement from the 1997 National Nursing Home Survey of 19%. This increase in the 'use' of the oral healthcare system, however, does not necessarily mean a true improvement in the oral health outcomes for the dependent elderly person. There are acute shortages of both facilities and dentists willing to service a nursing home population of dependent elders in many regions[9]. The ageing population has diverse living environments beyond the nursing home. In Canada, in 2011, for example, 92.1% of the population over the age of 65 live in private dwellings and 3% live in residences for senior citizens that provide assisted living. By age 90, over 56.5% still live in private dwellings with almost one-third still living alone[3]. Within the United States and much of the world, there is now a new phenomenon in living accommodations. 'Naturally Occurring Retirement Communities' (NORC) or non-age segregated buildings, are neighborhoods or communities with high concentrations of older adults, many of whom moved into their homes at a much younger age. Neither their families, their neighbors, nor their communities have sufficiently planned for the needs of those who desire to stay in their homes as they age in place'[10]. These communities represent a significant challenge for the

delivery of oral health care when elder mobility starts to decrease, but they also may present opportunities for well-trained community-based dentists to deliver care and oral health education. An environment that brings assistance to those in need of basic help with activities of daily living (ADL), but no major health needs, are intermediate facilities termed assisted living facilities[11]. In these assisted living facilities, there are some social services, assistance with ADL and an opportunity for dentists, dental hygienists and home health aids to make a concentrated difference in the oral health of elders.

The ageing demographics clearly indicates that there are more elders, growing older, with more teeth, accompanied with greater dental complexity than the dentures of prior generations (e.g. extensive implant-borne prosthetics). These elders have varied degrees of dependency and medical complications. They live a variety of living arrangements ranging from their original home through the possibility of skilled nursing facilities. Preparing the graduating general dentist to be comfortable with caring for patients in these varied environments and conditions is a challenge.

Current education and what is known about the educational needs

The guidelines and accreditation standards for care of the elderly population are varied throughout the world. In the United States and developed countries, the accreditation standards for dental schools have two relatively broad and ill-defined references to the ageing population. Standard 2–22: *Graduates must be competent in providing oral health care within the scope of general dentistry to patients in all stages of life* and Standard 2–24: *Graduates must be competent in assessing the treatment needs of patients with special needs.*

Intent: An appropriate patient pool should be available to provide experiences that may include, but are not limited to, people with developmental disabilities, cognitive impairment, complex medical problems, significant physical limitations and the vulnerable elderly[12]. A comparison of American geriatric competencies across multiple healthcare professions (dentistry, medicine, graduate nursing, pharmacy and social work) found an alignment of the core competencies[13]. The dental competencies are defined by the individual institution. The Association of Dental Education in Europe (ADEE) and European College of Gerodontology have similar guidelines for education and make direct recommendation as to clinical training in various community settings including 'nursing homes, private homes and geriatric hospitals'[14]. The guidelines are extensive, and the actual competency recommendations should produce a general practice graduate capable of treating most geriatric patients. Worldwide, the curricula developed at dental schools are extremely varied, and all include lecture components regarding treating the elderly person, but the clinical components range from significant immersion in multiple treatment environments to limited observation in long-term care facilities or even no dedicated clinical experience[15–17].

Evidence cited by Ettinger supports the view that programmes to educate budding oral healthcare providers during dental school must be of adequate depth and longevity to change the attitudes of the students. Failure to immerse the student in the education results in new providers who not only lack the competence, but in fact may develop providers who have negative attitudes towards the delivery of care for the elderly person. Superficial exposures may do more damage to a student's interest in caring for the elderly patient[7,18]. Significant time spent in experiential learning of the clinical skills, ranging from communication with patients and caregivers to restorative skills development, has been demonstrated to improve interprofessional interactions and new graduate comfort in treatment of dependent and non-dependent elders in any environment[19–21]. There are apparent detractors from those who support this drive to increase exposure of the student to community-based experiential learning. Although most administrators and staff in long-term care facilities acknowledge the importance of oral care, they face many barriers when and if they do attempt to provide adequate oral care for residents. Many facilities offer residents little more than emergency care with infrequent clinical examinations, poor oral hygiene provided by caregivers and little or no comprehensive dentistry[22–24]. Several studies have pointed out that predisposed interest in finances and the entrepreneurial aspects of practice among dental students and dentists may be negatively correlated with an interest in treating the frail elderly persons. Even positive geriatric educational experiences may not be able to overcome these effects. Students with social consciousness appear to have greater willingness to treat the elderly person[25,26]. This may influence the actual admission process of prospective dental students. Expanding the new graduates' interest in providing dental care for a range of elderly persons' needs is clearly a difficult task, but one that requires additional attention.

What are the 'special' skills required to treat the elderly person?

The dental skills necessary for treating the elderly population are extremely varied. We stipulate that current dental education curricula, throughout most of the world, train the general practitioner adequately in the delivery of restorative dental care for the healthy elder patient and that the general practitioners are adequately educated as to when referral to specialty care is necessary when the complexity of the patient, for medical or dental reasons, exceeds the competency of a general practitioner. As a percentage of the population, the frequency of patients requiring referral is small and varies by national dental practices. It is in the elder population with increasing dependency that the current education of the general practitioner may fall short. It is not only in the proper restorative dental skills that dental education may not be providing adequate training and competence. It is in the areas of communication, interprofessional team building, new/varied restorative treatments, risk assessment and preventive therapy that the education of the general practitioner frequently falls short as well as recognised by Kress and Vidmar nearly 30 years ago[27]. In fact, management of the most dependent elderly people may require a complete rethinking of how dentists apply the skills they have already learned, moving from restoring function in the most natural format to preventing disease progression and short/long-term risk reduction. For example, the simple concept of treatment planning the fractured premolar in an elderly dependent gentlemen with Alzheimer's disease in a nursing home (Figure 1) moves from the traditional 'how to best restore the function of the tooth, (*Implant/Crown? Endodontic therapy/Crown?*)' to 'can we maintain the current tooth untreated'. Students must learn the complex concept of determining whether the loss of this tooth from occlusion negatively affects the patient's ability to function. In fact, this elder patient continues to maintain adequate occlusion to masticate, maintains aesthetics when smiling (which he rarely does) and the space created by the loss of tooth structure actually makes the area easier for caregivers to keep clean. The ideal treatment plan may be to monitor the patient, a change from the traditional 'treat everything' philosophy. The dental student must be trained in treating the patient with complete dentures where the ridge may be atrophic leaving limited retention. These dentures may often need to be duplicated to provide for quick replacement if lost in nursing homes or hospital facilities. These examples go further to demonstrate the skills required by the competent newly graduated general practitioner. Does the graduate have the training and understanding to communicate with the caregivers to adequately maintain the existing teeth, to assure that the diet does not transform to a high fermentable carbohydrate diet because the patient 'likes' them, and is the diet being consumed properly to prevent aspiration? In the nursing home, this may take the form of interprofessional communication with primary healthcare providers, nurses, dieticians and nursing home staff. If this patient comes from the home, the competent dentist needs to navigate the caregiver web that may include family members, social workers, visiting nurses and aids as well as patient transporters. Most frequently, the burden of family-based caregiving falls disproportionately on women, but men also must be considered part of the caregiving mix[28]. Dentists are rarely trained in how to identify the appropriate caregivers and even more poorly trained in how to educate adult caregivers in delivery of care to the dependent elderly adult. Simply suggesting or providing written instructions stating, 'brush teeth twice daily' will not achieve the required outcome. Unlike parents being instructed to help support the child in their needs, it is less likely that a dental graduate will think to ask about the effect of stressors on the caregiver that may result in their failing to successfully achieve the desired outcome when dealing with an adult. Personal work obligations, issues associated with Alzheimer's disease, fear and fatigue are all stressors, to mention a few, but they clearly affect the outcome of homecare recommendations, and the dentist must be capable of recognising their influence on the final oral health outcome desired[29].

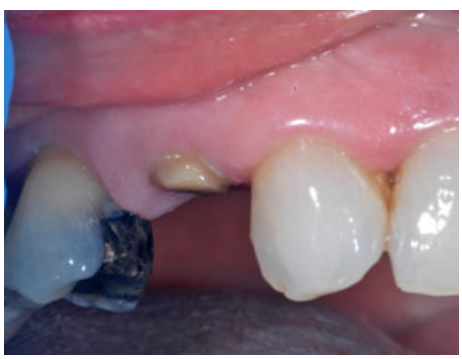

Figure 1 Fractured premolar in an elderly dependent gentleman with Alzheimer's disease under care in a nursing home. 114 x 86 mm, 300 DPI.

Identification of elders at risk of developing oral disease, particularly caries, is best performed with risk assessment instruments. For dental caries, the instrument selected almost does not matter. Hyposalivation secondarily due to polypharmacy or systemic autoimmune diseases such as Sjogren's syndrome or rheumatoid arthritis, for example, places elders at increased risk. Increased dependency in the elderly patient, especially with respect to oral health maintenance, places them at elevated risk. Active caries, especially root caries, places elders at the highest risk. Caries management by risk assessment mandates aggressive prevention for patients of the highest risk[30–34]. Dental students not only learn but actively apply the most current evidence-based prevention strategies for children, fluoride. Within academia, emphasis on developing oral healthcare plans that include office and at-home applied supplemental fluoride rarely occurs for elder patients. It is even rarer to find fluoride being prescribed for the highest-risk patients in nursing homes. Fluoride varnish has been demonstrated to be effective in children[35], and there is no reason to believe that it is not effective in adults. In fact, Griffin (2007) in a systematic review found evidence for office-applied and home-applied fluoride treatments in adults[36]. Dental practitioners and caregivers must understand the importance of and be comfortable with providing routine fluoride applications in the prevention of caries for elders[37–39].

Within the restorative domains, students must understand how to apply the principle of restoration repair and selection of the correct materials. When faced with damaged ageing restorations, the total replacement may be unnecessary and repair may be most appropriate. Students must also be trained and competent in utilising techniques such as atraumatic restorative therapy (ART). This technique, initially developed for utilisation in underserved low dentist availability regions, has been applied successfully in other public health applications as well[40–42]. This therapy makes every effort to avoid the use of local anaesthetics, utilises hand instruments, avoids pulp exposure and restores the tooth utilising glass ionomer restorative materials, a self-bonding/fluoride-containing material. The 5-year outcomes of this therapy are frequently equal to traditional amalgam restorations[43]. Arresting dental caries is also clearly a viable treatment methodology. Silver diamine fluoride has long been utilised to arrest caries in adults and children in certain countries. It has been demonstrated to arrest caries in the permanent dentition in as few as a single application[44]. This non-surgical technique can stabilise the dentition quickly and may prevent the need for any future surgical intervention (Figs 2a, b).

Dental education must develop general practitioner competency in managing both complex and simple treatment plans in the full spectrum of dependence in elderly patient. Education must be concentrated on the communication skills required to manage the elderly person and the caregiver. The general dentist must become comfortable in leading an interprofessional team that includes primary healthcare providers, nurses, nurses aids, home health aids, social workers, dieticians, speech pathologists and family caregivers in the optimisation of oral health outcomes in an ever-growing complex elder population. Students must be competent in utilising risk assessment and a wide range of preventive, minimally invasive surgical and non-surgical technologies to manage the restorative needs of the elder patient. The graduate must be competent in knowing when to make referral to an advanced trained individual when warranted by the complexity of elder patient care needs and

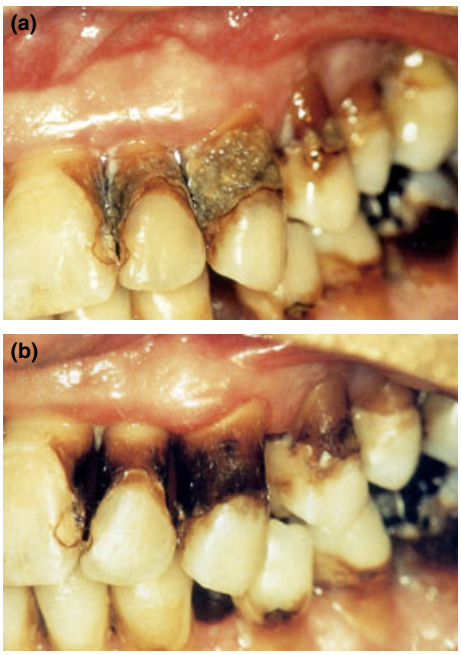

Figure 2 (a) Elderly patient with multiple soft caries lesions prior to treatment with fluoride. 241 × 166 mm, 300 × 300 DPI. (Courtesy Miriam Robbins, 2012.) (b) Elderly patient with arrested caries after 4 months treated every 2 months with fluoride varnish and daily with 1.1% sodium fluoride rinse. 234 × 163 mm, 300 × 300 DPI. (Courtesy Miriam Robbins, 2012.)

not abandon the patient when there is a scarcity of those resources. All dental students must receive both the training in these skills and the necessary number of clinical experiences, so that the new clinician becomes comfortable in the management of the growing elder population. Only if the training and experiences are adequate can we expect general dentistry to best serve oral healthcare needs of the elder population.

Conclusion

The wonderful problem of a global explosion in the number of elderly persons living longer and living with more natural and heavily restored teeth has created a new problem for dentistry. The problem exists as to what the ideal care pathways should be for this ageing population and what are the appropriate indicators for the application of those pathways. These pathways have been addressed elsewhere in this special edition. The other problem confronting dentistry is how do we educate sufficient numbers of properly trained general dentists to apply the appropriate pathways. There are many who advocate for the education of a larger number of dentists trained specifically in geriatric dentistry or 'gerodontology'[7]. Although these 'specialists' (not actually a recognised specialty in much of the world) are clearly needed in greater numbers to manage the most complex geriatric care, the exponential growth of the elderly patient population, and specifically the dependent elderly person, clearly mandates that every new general dentistry graduate must be competent and comfortable in the management of all, but the most complicated elderly cases[45]. Equally important is the need for an extensive continuing education curriculum be developed to help the current general dentist in their management of the elderly person. The new treatment pathways must be merged with expanded management competencies in elder care for both the new and current general dental practitioner. Dental education rightfully dedicates significant resources and curriculum time to the education of students in paediatrics for the general dentist. The same commitment must be made for the care of the elderly person. Even with improvements in the scope of dental education to make all graduates competent in the management of the elderly patient, the population demographics indicates that for many nations and regions, an expansion in the scope of practice for the non-dentist personnel caring for the elderly patient (under the leadership of the dentist if needed) and the increase in interprofessional practice in the delivery of the oral healthcare for the elder population are necessary if we are to deliver the health care our elderly population deserves.

Conflicts of interest

None declared.

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