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What is Being Taught to Canadian Undergraduate Dental Students about the Oral Health of Long-Term Care Residents?

Sarbjeet Singh, *BDS, MPH;* **Robert J. Schroth,** *DMD, MSc, PhD;* **Shelly Tang,** *DMD, BSc(Dent);* **Mary Bertone,** *RDH, BSc(DH), MPH;* **Kathy Yerex,** *BSc, RDH;* **Khalida Hai-Santiago,** *DMD;* **Greg Finlayson,** *PhD;* **Manitoba Dental Association**

Cite this as: *J Can Dent Assoc. 2020;86:k10*

Published August 10, 2020

Abstract

Introduction: Residents of long-term care (LTC) facilities face many oral health challenges, which are often complicated by their underlying medical conditions, use of medications and limited access to oral health care.

Objective: To determine to what extent accredited university-based dental and dental hygiene programs in Canada prepare students in the areas of geriatric oral health and oral health of LTC residents.

Methods: Accredited dental and dental hygiene programs across Canada were assessed for the degree of education and training that is presented to students on the oral health of LTC residents. A survey questionnaire, emailed to programs, was used to gather descriptive statistics (frequencies, means and standard deviations), and bivariate analysis (χ^2 and *t* tests) was completed. A *p* value ≤ 0.05 was considered significant.

Results: Representatives of all 4 dental hygiene and 9 out of 10 dental schools responded. All four dental hygiene and seven dental programs (77.8%, 7/9) stated that geriatric oral health is an integral part of their curriculum. The majority (91.6% [11/12], 4 dental hygiene and 7 of 9 dental schools) reported that their program educates students about medically, physically and cognitively compromised geriatric patients. Eight programs (3 dental hygiene and 5 dental schools), stated that they provide clinical training opportunities with LTC residents. However, some programs reported certain barriers preventing them from providing such clinical training opportunities.

Conclusion: Oral health educational institutions must ensure that curricula are current and evidence-based to reflect the overall oral health needs of today's aging population.

On average, Canadians are living longer and, more often than not, retaining their teeth.[1,2] The geriatric population, particularly those in long-term care (LTC) facilities, is more susceptible to oral conditions, such as xerostomia, periodontal disease and caries. This is because of deterioration of general health, changes in diet, an increased intake of medications and increasing frailty.[2-4] Residents of LTC facilities may have or develop dexterity issues, making it difficult for them to care for their own teeth. Furthermore, mobility challenges, along with physical or mental compromise, such as dementia, can affect their ability to carry out daily mouth care.[3] More important, poor oral health can have effects on systemic conditions, including but not limited to cardiovascular and respiratory health.[5,6] Poor oral health is a risk factor for diabetes and affects quality of life, including nutrition, speaking and socializing with others.[5,7] Oral health is part of general health, and a resident's overall health can be impacted by it.

People living in LTC are a vulnerable population and may depend on staff for their mouth care, especially those with physical and cognitive impairment.[3] Oral health care standards for LTC residents are not always enforced, and their oral care does not often meet best practice standards.[8] This shortcoming can be a result of such factors as limited education of staff regarding oral health care, resistant behaviour by residents, lack of adequate supplies and time constraints; staff may also be unprepared or unqualified to provide mouth care. In addition, each LTC resident has specific needs and requires individualized mouth care.[9] Residents not receiving individualized daily preventative oral care may, consequently, require professional dental and/or dental hygiene treatment.

There is a need for comprehensive understanding of the oral health of LTC residents and the barriers and facilitators involved in providing oral care to them; such information can aid in developing and implementing effective strategies to optimize the oral health of the aging population. In addition, to instill a professional attitude toward the elderly, undergraduate dental education should facilitate the acquisition of the specialized knowledge and skills needed to treat geriatric patients.[10]

The purpose of this study was to determine to what extent accredited dental and dental hygiene programs in Canada prepare students in the areas of geriatric oral health and oral health of LTC residents.

Methods

We surveyed all 10 accredited dentistry and 4 university-based dental hygiene programs in Canada represented by their associate deans, programs directors, chairs of geriatric dentistry or curriculum directors. The Commission on Dental Accreditation of Canada (CDAC) provided the names of all eligible accredited programs. This study was approved by the University of Manitoba's Health Research Ethics Board.

In May 2016, a questionnaire was sent via Fluid Survey (Survey Monkey, USA) to an identified contact (i.e., an associate dean, programs director, chair of geriatric dentistry or curriculum director) at each institution (n = 14). Completing the online questionnaire constituted informed consent. A reminder was sent to all non-responders, along with the questionnaire link; a final reminder was sent in November 2016.

The project team developed the questionnaire to determine what type and how much clinical experience and education undergraduate dental and dental hygiene students receive on geriatric oral health and the oral health of LTC residents. A previously developed tool used to survey dental programs about teaching in the area of infant oral health informed this current work.[11] Specific questions explored methods and materials used to educate students and the number of hours dedicated to each method.

Information collected via the survey was exported to an Excel spreadsheet (Microsoft, Redmond, Wash., USA) and analyzed using Number Cruncher Statistical Software (version 13, Kaysville, Utah). Statistics included frequencies, means and standard deviations (SD). Bivariate analysis was conducted using χ^2 and t tests. A p value ≤ 0.05 was considered significant.

Results

Description of Participants

Representatives of 9 of the 10 accredited dental and all 4 university-based dental hygiene programs responded to the survey for an overall 93% response rate. For all dental hygiene schools (100%) and 7 dental schools (77.8%), respondents stated that the geriatric oral health of people living in LTC facilities is an explicit component of their curriculum (**Table 1**). Although most (84.6%) indicated that geriatric oral health is a vital part of their dental program, the remaining respondents (15.4%) indicated that their program is considering adding it to the curriculum.

Only 6 respondents (46.2%) were aware of the Canadian Dental Association's (CDA) position statement on the oral health care of LTC residents (**Table 1**), 2 dental programs (22.2%) and 4 dental hygiene programs (100%). Furthermore, only 2 dental programs (22.2%) and 2 dental hygiene schools (50%) reported using this statement as a teaching tool. Most respondents (84.6%) indicated that their program educates about medically, physically and cognitively compromised geriatric patients.

Most respondents (76.9%) stated that their program provides didactic learning opportunities on the oral health of LTC residents (**Table 1**).

Table 1: *Content on geriatric oral health and the oral health of long-term care (LTC) residents in the curricula of dentistry and dental hygiene programs.*

Survey question	Total, no. (%) *n* = 13	Dentistry, no. (%) *n* = 9	Dental hygiene, no. (%) *n* = 4
Geriatric oral health is a component in program curriculum Yes No	 11 (84.6) 2 (15.4)	 7 (77.8) 2 (22.2)	 4 (100) 0
Considering adding oral health care for LTC residents as program curriculum Yes No	 2 (66.7) 1 (7.7)	 2 (66.7) 1 (11.1)	 0 0
Have a postgraduate program in geriatric dentistry Yes No	 1 (7.7) 11 (84.6)	 1 (11.1) 7 (77.8)	 0 4 (100)
Aware of CDA's position statement on oral health of LTC residents Yes No	 6 (46.2) 5 (38.5)	 2 (22.2) 5 (55.6)	 4 (100) 0
Use CDA's position statement on oral health of LTC residents as a teaching tool Yes No	 4 (30.8) 7 (53.8)	 2 (22.2) 5 (55.6)	 2 (50) 2 (50)
Education about medically/physically/cognitively compromised geriatric patients Yes No	 11 (84.6) 1 (7.7)	 7 (77.8) 1 (11.1)	 4 (100) 0
Didactic learning opportunities on LTC residents' oral health Yes No	 10 (76.9) 2 (15.4)	 6 (66.7) 2 (22.2)	 4 (100) 0
Mean time devoted to teaching this topic, h ± SD	13.7 ± 6.0	12.5 ± 6.3	15.5 ± 5.7
Provide students with clinical training opportunities with LTC residents Yes No	 8 (61.5) 4 (30.8)	 5 (55.6) 3 (33.3)	 3 (75) 1 (25)
Clinical training opportunities with LTC residents a program requirement or an elective? They are a requirement They are an elective	 6 (46.2) 2 (15.4)	 3 (60) 2 (22.2)	 3 (75) 0
Mean time devoted to clinical training, h ± SD	18.6 ± 14.5	15.4 ± 15.8	24 ± 13.1
Provide clinical training opportunities in performing oral health assessments of LTC residents Yes No	 6 (46.2) 2 (15.4)	 3 (33.3) 2 (22.2)	 3 (75) 0
Clinical training opportunities in performing daily mouth care for LTC residents? Yes No	 5 (38.5) 3 (23.1)	 2 (22.2) 3 (33.3)	 3 (75) 0
Program teaches proper positioning techniques Yes No	 7 (53.8) 1 (7.7)	 4 (44.4) 1 (11.1)	 3 (75) 0
Proportion of students who have clinical training opportunities with LTC residents All have clinical opportunities Most have clinical opportunities Some have clinical opportunities	 5 (38.5) 1 (7.7) 2 (15.4)	 2 (22.2) 1 (11.1) 2 (22.2)	 3 (75) 0 0
Have mobile dentistry/dental hygiene program for LTC residents Yes No	 7 (53.8) 6 (46.2)	 4 (44.4) 5 (55.6)	 3(75) 1 (25)
Students participate in the mobile dentistry/dental hygiene program Yes	 7 (53.8)	 4 (44.4)	 3 (75)
Offer mouth care training for caregivers and staff working with LTC residents Yes No	 8 (61.5) 5 (38.5)	 4 (44.4) 5 (55.6)	 4 (100) 0

Note: Valid percentages have been presented in this table as the denominator may differ for each question as not all programs responded to each question. SD = standard deviation.

However, the time devoted to this topic varied, with dentistry programs allotting an average of 12.5 ± 6.3 h (mean ± SD; range 5–22 h) and dental hygiene programs allotting an average of 15.5 ± 5.7 h (range 12–24 h).

The topics included in didactic learning opportunities are shown in **Table 2**. Some respondents reported that they face barriers when providing opportunities regarding LTC residents' oral health (**Table 3**). The main barrier to didactic teaching on this topic appeared to be time constraints within the curriculum.

Table 2: *Topics related to geriatric oral health and the oral health of long-term care (LTC) residents included in didactic learning opportunities.*

Topic	Total, no. (%) *n* = 13	Dentistry, no. (%) *n* = 9	Dental hygiene, no. (%) *n* = 4
Oral health status (e.g., dry mouth, increased caries risk, root caries)	10 (76.9)	6 (66.7)	4 (100)
Oral health challenges faced by LTC residents	10 (76.9)	6 (66.7)	4 (100)
General medicine	9 (69.2)	5 (55.6)	4 (100)
Behaviour management	9 (69.2)	5 (55.6)	4 (100)
Pharmacological management	9 (69.2)	6 (66.7)	3 (75)
Recommended products and therapies	10 (76.9)	6 (66.7)	4 (100)
Proper positioning techniques	10 (76.9)	6 (66.7)	4 (100)
Providing dental care (restorative care, oral hygiene maintenance)	10 (76.9)	6 (66.7)	4 (100)

Table 3: *Barriers preventing programs from providing didactic learning opportunities on the oral health of long-term care (LTC) residents.*

Barrier	Total, no. (%) *n* = 13	Dentistry, no. (%) *n* = 9	Dental hygiene, no. (%) *n* = 4
Lack of teaching staff	1 (7.7)	1 (11.1)	0
Lack of access to LTC residents	1 (7.7)	1 (11.1)	0
Time constraints	2 (15.4)	2 (22.2)	0
Priority perception	0	0	0
Resources and educational tools	1 (7.7)	1 (11.1)	0
Insufficient funding	1 (7.7)	1 (11.1)	0
Not an accreditation requirement	0	0	0

In terms of clinical education opportunities with LTC residents, 8 programs (61.5%) provide students with clinical experiences, including 3 dental hygiene schools (75%) and 5 dental schools (55.5%). Of these opportunities, most (75%, 6/8) are requirements of the program, while the remaining 25% (2/8) are elective. Clinical opportunities and experiences for dental and dental hygiene students most commonly take place through the use of mobile dental and dental hygiene equipment at LTC facilities; at dental public health/community clinics, dental clinics within LTC facilities; and at hospitals and rehabilitation centres (**Table 4**).

Table 4: *Location of clinical training opportunities in geriatric oral health and the oral health of long-term care (LTC) residents.*

Barrier	Total, no. (%) *n* = 13	Dentistry, no. (%) *n* = 9	Dental hygiene, no. (%) *n* = 4
Students travel to LTC facilities with mobile dental equipment	6 (46.2)	3 (33.3)	3 (75)
Students work in dental clinics within LTC facilities	5 (38.5)	4 (44.4)	1 (25)
Students visit hospitals or rehabilitation centres	4 (30.8)	2 (22.2)	2 (50)

There was considerable variation in the number of hours of exposure of students to such clinical opportunities: dentistry programs: 15.4 ± 15.8 h, dental hygiene programs: 24.0 ± 13.0 h. Oral health assessments and daily mouth care of LTC residents were important components of these clinical opportunities. Most respondents (7 or 53.8%) stated that their program also taught students about proper positioning techniques when providing dental and dental hygiene care as part of the didactic and clinical educational opportunities.

Some programs reported barriers to providing clinical educational opportunities to students working with LTC residents (**Table 5**). These included lack of academic staff, lack of access to LTC residents, lack of funding for residents for dental services, time constraints in the curriculum, minimization of the importance of daily oral care, lack of resources and educational tools, insufficient funding and not listed as an accreditation requirement. In addition, less than a third of dental programs reported that all students receive clinical experiences with LTC residents. In contrast, respondents from 3 of the 4 dental hygiene schools (75%) reported that all students have clinical experience in LTC.

Table 5: *Barriers preventing programs from providing clinical training opportunities in the oral health of long-term care (LTC) residents.*

Barrier	Total, no. (%) *n* = 13	Dentistry, no. (%) *n* = 9	Dental hygiene, no. (%) *n* = 4
Lack of teaching staff	3 (23.1)	3 (33.3)	0
Lack of access to LTC residents	4 (30.8)	3 (33.3)	1 (25.0)
Lack of finances of residents	2 (15.4)	2 (22.2)	0
Time constraints	3 (23.1)	2 (22.2)	1 (25.0)
Priority perception	1 (7.7)	1 (11.1)	0
Resources and educational tools	3 (23.1)	2 (22.2)	1 (25.0)
Insufficient funding	3 (23.1)	3 (33.3)	0
Not an accreditation requirement	1 (7.7)	1 (11.1)	0

More than half of the respondents (53.8%) indicated that their program has a mobile dentistry/dental hygiene program for residents working in LTC facilities (**Table 1**). This included 4 dental schools (44.4%) and 3 dental hygiene schools (75%). In addition, all dental hygiene schools and 44.4% of dental schools reported providing mouth care training for caregivers and staff working with LTC residents.

Discussion

This is the first Canadian study in recent decades to examine university-based dental and dental hygiene curricula pertaining to geriatric dentistry and the oral health of LTC residents. It was initiated at the request of the Manitoba Dental Association (MDA) to determine what proportion and to what depth and breadth dental and dental hygiene programs offer geriatric didactic and clinical opportunities for their students. The findings will help inform MDA advocacy activities in the area of geriatric oral health and residents of LTC facilities. They also provide an insight into the types of barriers preventing dental and dental hygiene schools from offering didactic and clinical education on geriatric oral health in LTC facilities.

Despite efforts to teach students about this important topic through clinical and didactic opportunities, our study revealed considerable variation in curricula and time devoted to the topic. For instance, the mean number of hours devoted to clinical training opportunities is greater than number of hours spent in didactic learning opportunities (18.6 ± 14.5 h vs. 13.7 ± 6.0 h). Dental institutions should further evaluate how well they are preparing dental professionals to provide care in LTC facilities. However, it is encouraging to note that 77.8% of dental schools and all of the dental hygiene schools considered the oral health of LTC residents an important component of their curriculum.

According to survey respondents, only 1 dental school provides postgraduate training in geriatric dentistry, and no dental hygiene school offers such educational opportunities to students. In the United States, 1 study stated that if a specific geriatric dentistry program exists, a broader range of interdisciplinary topics is likely to be taught to dental students provided they are combined with extracurricular and intracurricular clinical experiences.[12] Postdoctoral and fellowship programs in geriatric dentistry would be beneficial, as they would increase the number of postdoctoral academic training opportunities for dental faculty. In addition, they would expand the numbers and types of alternative pathways to geriatric education for dental and dental hygiene professionals and encourage lifelong learning.[13] Regardless, representatives of all dental hygiene schools and 7 dental schools reported educating their students about medically, physically and cognitively compromised geriatric patients.

This study reports on important challenges to providing didactic learning opportunities regarding the oral health of LTC residents. In addition to the barriers revealed in this study, Chowdhry et al.[14] reported that dentists themselves feel it is time consuming to treat elderly patients. They also noted the lack of administrative and financial support for dental services as additional barriers to providing dental

care in LTC facilities. Similarly, time constrains in terms of having a busy private practice, were the main barrier preventing dentists in Manitoba from providing oral care in LTC facilities.[15]

Factors that impede the expansion of geriatric teaching in dental schools include already full dental curricula, the perception that predoctoral dental students cannot treat medically compromised patients, the assumption that the care taught in dental schools is not compatible with the kind of care elderly patients need and the impression that faculty members do not feel comfortable supervising students who are caring for elderly patients.[16]

Residents of LTC facilities face financial barriers to oral health care services. Some in society are now advocating for publicly insured dental benefits for this demographic.[17] Finances may hinder dental and dental hygiene institutions from reforming their curricula. Limited financial resources have already been identified as a barrier to the development of gerodontology curricula in Austria, Switzerland and Germany.[18] One suggested way to overcome this is by intensifying communication, cooperation and collaboration among university dental schools.[18] The guidelines of the Association for Dental Education in Europe suggest that this can be done by encouraging the exchange of faculty members and students.[19]

According to our study, 75% of dental hygiene programs and 55.6% of dental schools provide their students with clinical experiences with LTC residents. A study by Ettinger and colleagues[16] stated that schools with special care or extracurricular clinics in LTC facilities provide positive and adequate experiences that allow trainees to gain confidence in caring for functionally dependent people.

Didactic teaching, with the opportunity to provide clinical treatment to patients, is well accepted by students compared with simply carrying out diagnostic procedures and treatment planning, which frustrates students as they are not able to provide actual treatment.[18] Clinical experiences with older adults through extracurricular clinical rotations are associated with positive student attitudes toward this group and their being more likely to want to treat medically compromised patents after dental school.[20] Without such positive clinical experiences, most graduates are unlikely to care for these patients in a private practice.[15,21]

If providing clinical experiences is the academic goal of an educational institution, it is important to consider why most dental schools continue to prefer a lecture-based format for teaching geriatric dental care. Levy N and colleagues[20] found 4 major barriers to providing geriatric clinical experiences to students: not enough time, lack of adequately trained academic faculty, lack of student exposure to truly medically compromised patients and a discordance between competency assessment and treatment of patients with special needs.

The lack of adequately trained academic faculty members could be addressed by providing advanced education to all faculty members with the benefit of expanding the number of trained dentists capable of treating medically compromised older adults.[20] The British Columbia Dental Association's report on Oral Health Care Delivery in Residential Care Facilities stated that many dental professionals are not familiar with the complexities of working with the geriatric population.[3] Further training on caring for seniors with dementia, cognitive frailties and multiple chronic health conditions would help increase confidence in treating this expanding population.[3]

As most of older patients seen in program-based dental clinics are moderately healthy, students are not seeing patients who require the highest levels of care, such as those in nursing homes and LTC facilities.[20,22] Exposing students to special care clinics would help them gain more experience in this area and, hence, allow treatment of a wider range of medically compromised patients.[20]

Providing oral health care to LTC residents is quite demanding for staff, as many residents have limited mobility, impaired visual acuity, cognitive impairment and decreased manual dextrity.[1] All of these factors contribute to residents relying on LTC staff, who may be overloaded with other daily work duties, experience frequent interruptions and have little training in oral health management.[8,23,24] Two recent studies reported that nursing staff perceive time constraints, being overworked and uncooperative behaviour of residents, such as screaming and resisting care, as the top barriers to oral care delivery in LTC facilities.[25,26] Designing condensed oral health educational programs aimed at nursing home or LTC staff may be instrumental in addressing the aforementioned oral care barriers. In addition, the family of LTC residents may be pivotal in alleviating some of the staff's workload burden by providing some oral care.[25]

As LTC residents have mobility issues, it is important to ensure that dental and dental hygiene students have the knowledge and physical ability to deal with these accessibility barriers. In our study, 75% of the dental hygiene schools had a mobile dental program for LTC residents, which can aid in alleviating accessibility issues. According to Tang et al.,[15] having proper portable equipment motivates dentists to care for residents living in LTC facilities.[15] Mobile clinics can provide a wide range of services, such as fillings, extractions and dental hygiene and can reach across geographic and socioeconomic boundaries, potentially increasing access and improving clinical oral health status and outcomes.[27]

Daily mouth care should be a priority for LTC staff, as a healthy mouth contributes to the overall health and well-being of residents.[15] Inadequate mouth care results in poor oral hygiene, which is associated with caries (tooth decay), mucosal inflammation and periodontal diseases.[9,28]

Patients with periodontal diseases harbour a large number of subgingival, Gram-negative bacteria, which have been associated with lower respiratory tract infections, such as aspiration pneumonia.[29] Complications from aspiration pneumonia, including hypotension and bacteremia, can be fatal.[30]

This study is not without limitations. Although the response rate was high (92.9%), it would have been better if all 10 dental schools had participated. In addition, we surveyed only the 4 university-based dental hygiene programs rather than all accredited hygiene programs in Canada. Recall and response biases are possible, as respondents were asked to estimate the amount of time devoted to geriatric oral health in their curriculum. There is a possibility that some may have responded in a particular manner to position their program in a better way.

Conclusion

Geriatric oral health care is an important part of the curriculum of most dental and dental hygiene programs in our study. However, not all are providing students with clinical training opportunities with LTC residents. Meeting the oral health needs of this population requires urgent attention and care from dental and dental hygiene professionals. Barriers to providing didactic and clinical opportunities to students include a lack of teaching staff, lack of funding, time constraints and lack of access to geriatric populations. Oral health educational institutions must ensure that they are embedding evidence-based gerodontology in their curricula to reflect the oral and overall health needs of today's aging population. Dental and dental hygiene schools should supplement their curricula to include geriatrics for all students.

THE AUTHORS

Dr. Singh *is research assistant, department of preventive dental science, Dr. Gerald Niznick College of Dentistry, Rady faculty of health sciences, University of Manitoba, Winnipeg, Manitoba.*

Dr. Schroth *is professor and clinician scientist, department of preventive dental science, Dr. Gerald Niznick College of Dentistry and departments of pediatrics and child health and community health sciences, Max Rady College of Medicine, Rady faculty of health sciences, University of Manitoba. He is also research scientist, Children's Hospital Research Institute of Manitoba, Winnipeg, Manitoba.*

Dr. Tang *is a private practice dentist, in Airdrie, Alberta.*

Prof. Bertone *is associate professor and director, School of Dental Hygiene, Centre for Community Oral Health, Dr. Gerald Niznick College of Dentistry, Rady faculty of health sciences, University of Manitoba, Winnipeg, Manitoba.*

Ms. Yerex *is Assistant Professor, School of Dental Hygiene, Dr. Gerald Niznick College of Dentistry, Rady faculty of health sciences, University of Manitoba, Winnipeg, Manitoba.*

Dr. Hai-Santiago *is Provincial Oral Health Consultant, Manitoba Health, Seniors and Active Living, Winnipeg, Manitoba.*

Dr. Finlayson *is president at Finlayson and Associates Consulting, Inc.*

Manitoba Dental Association *Committee on Dental Care for Residents in Long-Term Care Institutions, Winnipeg, Manitoba.*

Correspondence to: *Dr. Robert J. Schroth, 507—715 McDermot Ave., Winnipeg MB R3E 3P4. Email: robert.schroth@umanitoba.ca.*

This article has been peer reviewed.

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