An Assessment of Oral Health Training Among Geriatric Fellowship Programs: A National Survey

Lisa Thompson, DMD, Tien Jiang, DMD, MEd,* Judith A. Savageau, MPH,† Hugh Silk, MD, MPH,† and Christine A. Riedy, PhD, MPH**

Oral health (OH) has profound effects on the overall health of elderly people. While oral disease is prevalent in the geriatric population and access to care is a major issue, it is unclear the extent of OH training among US geriatric fellowship programs. A 19-item electronic survey was sent to all 148 accredited geriatric fellowship training programs via the Association of Directors of Geriatric Medicine. Directors were asked about hours of trainings, barriers, and evaluation of trainees among other topics. Univariate and bivariate analyses were performed. Seventy-five directors completed the survey (51% response rate). Sixty-three percent (46/73) report their fellows receive 1 to 2 hours of OH instruction (ie, lectures, workshops) during their training. Almost a quarter (23%; 17/73) reported 0 hours of OH content. Only 17% (13/75) have clinical experiences in a dental setting. Barriers to more OH education include competing priorities or lack of time (57%; 43/75), lack of faculty expertise (55%; 41/75), and no clear geriatric national educational competencies (44%; 33/75). Programs with an OH champion or dental school/residency affiliation had more hours of OH instruction. Geriatric fellowships appear to need more OH training, which could be achieved by creating OH champions and connecting fellowships with dental schools/residencies. Barriers could be overcome by exposing fellowships to existing resources and creating national competencies. **J Am Geriatr Soc 67:1079–1084, 2019.**

Key words: geriatrics; oral health; curriculum

From the *Harvard School of Dental Medicine, Department of Oral Health Policy and Epidemiology, Boston, Massachusetts; and the †University of Massachusetts Medical School, Department of Family Medicine and Community Health, Worcester, Massachusetts.

Address correspondence to Christine A. Riedy, Harvard School of Dental Medicine, 188 Longwood Ave, Boston, MA 02115.
E-mail: christine_riedy@hsdm.harvard.edu

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Oral health (OH) and general health have been shown to be inextricably linked.[1,2] Oral disease can impact overall health, and systemic disease and overall health can have an effect on OH.[3] Periodontal disease and poor OH, in general, have been associated with adverse health outcomes for several chronic conditions, including diabetes, cardiovascular disease, and respiratory disease.[3,4] These chronic diseases constitute 3 of the 10 leading causes of death among adults 65 years and older.[3–5] As individuals age, the oral-systemic connection is amplified due to increased risk of chronic, systemic conditions as well as increased oral disease, decreased functional status, behavioral changes, and other situational factors.[3,5,6] The burden of chronic disease disproportionally affects older adults, specifically the vulnerable and underserved elderly population[7]; 50% of elderly people have two or more chronic conditions[5]; 37% use five or more prescription medications[8]; 64% have moderate or severe periodontal disease[9]; and one in five adults older than 65 years have untreated dental caries.[10] Over the next 30 years, the demography of adults aged 65 years and older in the United States is expected to change dramatically, more than doubling from 40.2 million to 86.7 million.[11]

The elderly population is a heterogeneous group[12]; there is wide variation in ability and willingness to access and receive routine health and OH care due to chronic health conditions, functional status, family support, financial resources, and/or perceived need for care.[6] The use of dental care services is an indicator of OH status.[13] In 2014, only 44% of older adults saw a general dentist.[14] Lack of dental insurance is one of the major barriers to accessing care in this population[3]; Medicare does not provide dental coverage, and Medicaid provides limited-to-no dental coverage for older adults (note: coverage varies state to state, with many limitations). OH remains one of the greatest unmet healthcare needs for elderly people.[15]

While the healthcare system has historically separated the education and delivery of overall health from OH,[2] geriatric medicine, as a primary care specialty, has a history of integrating healthcare to provide comprehensive, patient-centered care due to emerging patient needs. With less than 50% of older adults visiting the dentist, persons reporting

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poor health are more likely to seek care from a medical provider than a dentist.[3] In addition to the oral-systemic connection,[3] OH is vital for performing activities of daily living, such as communication, chewing, and swallowing.[16] Studies have confirmed a diminished quality of life related to limited food choices, poor nutrition, social isolation, limited mobility, disturbances in sleep, and presence of pain.[17] As leaders of interdisciplinary care teams for the growing older adult population, geriatricians are uniquely positioned to intervene in their patients' OH care to mitigate the oral complications exacerbated by chronic disease progression and lack of access to care. Prevention and early intervention initiated by a geriatrician could play a significant role in this vulnerable population's oral and general health status.

The purpose of this study was to assess the extent of OH training among US geriatric fellowship programs, including the OH topics taught and format of the curricula, evaluation methods, and the perceived barriers and influences on integrating OH into the geriatric curricula. While there is a survey of OH practices among residents and professionals, to our knowledge, no previous assessment of training programs has been performed.[18] Our study was a part of a multiprofession survey project of OH content in primary care training curricula conducted by the Center for Integration of Primary Care and Oral Health (CIPCOH), a joint endeavor of the Harvard Schools of Medicine and Dental Medicine and the University of Massachusetts Medical School's Department of Family Medicine and Community Health (https://cipcoh.hsdm.harvard.edu/about). CIPCOH, a Health Resources and Services Administration (HRSA)–funded national center, examines system-level research on OH integration in primary care training. Our research question for this survey was to understand the extent to which OH teaching is integrated into geriatric fellowship training curricula.

METHODS

Study Population

An electronic survey was distributed to directors at 148 accredited geriatric fellowship training programs via the Association of Directors of Geriatric Medicine, who agreed to e-mail the survey link to their membership. If another individual could more accurately and completely respond to the survey, recipients were requested to forward the survey link to another faculty member.

Survey Instrument and Data Collection

A 19-item survey was developed based on a 2011 medical school survey and more recent relevant published literature.[19–22] The survey included 13 questions about OH training (eg, hours and days of training, curricular topics), the presence of dental professionals in teaching curricular components, the awareness and use of educational resources (eg, *Smiles for Life* [SFL] national OH curriculum), barriers to the inclusion of OH in the curriculum, evaluation methods of learners regarding OH competence, attitudes toward the integration of OH and primary care, and satisfaction with learner's competence in OH. Survey items were formatted as multiple choice, Likert scaled (range, 1-5, denoting "strongly disagree" to "strongly agree"), and open ended. At the end of the survey, five demographic questions asked about program location, size of the community served, number of fellows trained per year, length of tenure as a geriatric training site, and current position of person who completed the survey. A final question asked respondents to self-identify whether their program was a "best practice" program in OH integration for a future qualitative study. The survey was piloted with geriatrics fellowship faculty at the University of Massachusetts Medical School and then edited for final distribution based on their feedback.

A web-based survey development and data collection software application (SurveyMonkey, Inc, Palo Alto, CA) was used for development and distribution of the survey. Survey development and distribution followed accepted online survey method strategies.[23] A cover letter describing the study's purpose, its voluntary nature, and the anonymity of respondents was e-mailed to potential respondents a week in advance of the survey's distribution. The survey was fielded between February and June 2017. A total of four follow-up reminders were sent at 3-week intervals, to improve the response rate, as recommended by Dillman's Total Design Method.[24] A flyer with information about the study was also distributed at the annual meeting of the American Geriatrics Society in May 2017. The study was approved by the University of Massachusetts Medical School and the Harvard Longwood Medical Institutional Review Boards and received exemption waivers.

Data Analysis

Univariate statistics (frequency and percentage) were used to describe all survey items (SPSS v.23; IBM Corporation, 2015). χ^2 Tests were used to examine bivariate relationships between variables. The original Likert scale responses (range, 1-5) were dichotomized for bivariate analyses (eg, "strongly agree"/"agree" vs "neutral"/"disagree"/"strongly disagree"). Bivariate analyses were used to assess which factors may have driven inclusion of OH in geriatric training curriculum, such as the presence of an OH champion within the faculty, barriers to teaching more OH topics, and the number of curricular hours of OH education. Statistical significance was set at $\alpha = 0.05$.

RESULTS

Of the 148 geriatric fellowship programs contacted, 75 completed the survey (51% response rate). Table 1 describes the characteristics of the respondents. Most respondents were fellowship directors (85%; 55/66) and evenly represented all US regions, with the exception of the West (only 11% [7/64] of respondents). The majority of program respondents (77%; 50/65) enrolled one to three fellows per year, and 67% (44/66) had trained fellows for over 15 years. Fifteen programs self-identified as best practices in integrating OH into their geriatric curriculum.

Sixty-three percent of the respondents (46/73) reported that their geriatric fellows receive between 1 and 2 hours of nonclinical instruction in geriatric OH topics (ie, lectures, workshops, online modules, cases) over the course of their training. Almost a quarter (23%; 17/73) reported 0 hours of OH content. Eighty-three percent of programs (62/75)

Table 1. Characteristics of Respondent Geriatric Fellowship Programs (N = 75)

Characteristics	No. (%)[a]
Fellowship program location by region	
Northeast	17 (27)
Midwest	20 (31)
South	20 (31)
West	7 (11)
Size of community (approximate)	
<150,000	10 (15)
150,000-500,000	19 (29)
500,001-1 million	17 (26)
>1 million	20 (30)
No. of fellows enrolled per year	
1-3	50 (77)
4-6	11 (17)
7-10	3 (5)
>10	1 (2)
No. of years program has trained fellows	
1-5	3 (5)
6-10	10 (15)
11-15	9 (14)
>15	44 (67)
Current position of respondent	
Fellowship director	55 (85)
Education director	1 (2)
Assistant/associate director	2 (3)
Program faculty	2 (3)
Division chief	5 (8)
Other	1 (1)

[a]Not all distributions may total to 75 due to sporadic missing data.

had 0 total days of education spent specifically in a dental setting with a dental professional. Additionally, almost all respondents (95%; 62/67) reported they offered no OH elective option. The majority of programs did not have routine teaching from a dental professional (66%; 44/67) or nondental OH expert (83%; 55/66). Similarly, 78% (52/67) and 90% (60/67) of programs reported not having a faculty "OH champion" or a relationship with a state or national health project or coalition, respectively. Only a quarter of the programs (17/67) reported having a formal relationship with a dental school, residency, or dental hygiene program.

Geriatric training programs were asked which specific OH topics were covered in their curricula. The topics covered by most programs were impact of medications on OH (77%; 51/66), medical conditions that impact OH (eg, diabetes) (76%; 51/67), and geriatric OH issues (71%; 47/66). The least covered topics were preventative interventions, such as fluoride risks and benefits (12%; 8/66) and disparities in oral health/social determinants of health (23%; 15/65).

Program respondents were asked to report on any barriers which prevented them from more teaching of OH topics. The most commonly reported barriers were competing priorities or lack of time in the curriculum (57%; 43/75), lack of faculty expertise in OH (55%; 41/75), and no clear geriatric fellowship national educational competencies (44%; 33/75). Only 7% (5/75) reported no barriers.

As for awareness and use of nationally recognized curricula, only 9% of respondents (6/66) were aware of the national online OH curriculum, SFL, developed for medical providers by the Society of Teachers of Family Medicine. And only two respondents reported using the Geriatric Oral Health module/course in their program. The majority of programs (52%; 39/75) reported using no educational materials to inform their OH curriculum. Twenty percent (15/75) reported using geriatric-specific resources (eg, American Geriatrics Society teaching slides, Geriatric Review syllabus, geriatric textbooks), while 12% (9/75) used resources from dental schools.

Respondents were asked to report on their awareness and use of documents/organizations to inform the OH competencies in their curriculum. The top three documents most programs reported awareness of were the HRSA Integration of Oral Health and Primary Care Practice,[25] the American Dental Association's section on Aging and Dental Health,[26] and the American Association of Medical Colleges Oral Health Competencies (17% [13/65], 16% [12/65], and 15% [11/65], respectively).[27] Few programs stated utilizing these resources to inform OH competencies, with the most common resource reported as the 2016 Qualis Health: Evidence-Based Care Supplement on Oral Health Integration (9% [n = 7]).[28]

When respondents were asked for their methods of evaluating OH competence (eg, knowledge, skills, and attitudes), the majority of programs (61%, 46/75) reported no evaluative assessment. Of those who did complete evaluations, the majority (20%, n = 16) used direct observation in a clinical setting.

Survey respondents were also asked to report on their level of agreement with several statements: the importance of geriatricians addressing OH with their patients, whether they have departmental support, and if their learners are well prepared and competent in OH (Table 2). The majority strongly agreed (55%; 36/66) or agreed (39%; 26/66) that it is important for geriatricians to address their patients' basic OH care issues. However, fewer were either neutral (32%; 21/66) or agreed (32%; 21/66) that there was departmental support for integration of OH into primary care training. Furthermore, only 3% (2/66) strongly agreed that their learners were well prepared to answer questions on OH on the geriatric certifying examination and that they (2/65) were satisfied with the current level of competence that their fellows achieve in OH. The majority of respondents either disagreed or were neutral for both statements.

Bivariate Analyses

Curriculum Hours

In terms of amount of OH curriculum hours (Table 3), results showed that programs with three or more hours were more likely to report an affiliation with a dental school, residency, or dental hygiene program (41% vs 6%; $\chi^2 = 12.36$; $P < .001$). Additionally, those programs were also five times more likely to report having an OH champion (40% vs 8%; $\chi^2 = 9.57$; $P = .002$), four to five times more likely to have routine teaching from a dental professional (30% vs 7%; $\chi^2 = 6.64$; $P = .010$), and three and a half times more likely to have a relationship with a state or national OH program or coalition (43% vs 12%; $\chi^2 = 4.80$; $P = .028$).

Competence and Preparation

Programs with three or more OH curriculum hours were four times more likely to have fellowship leaders satisfied

Table 2. Survey Respondents' (n = 75) Level of Agreement on the Importance of Geriatricians Addressing Patients' Oral Healthcare Issues, Departmental Support of Oral Health Integration, Preparation of Their Students, and Satisfaction With Level of Student Competence

Statement	No. (%)[a]				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
It is important for geriatricians to address their patients' basic oral healthcare issues (eg, caries prevention, dental referrals).	2 (3)	1 (2.0)	1 (2.0)	26 (39)	36 (55)
There is support within my department for integrating oral health into primary care training.	1 (2.0)	9 (14)	21 (32)	21 (32)	14 (21)
Upon graduation, our learners are well prepared to answer questions on oral health on the geriatric certifying examination (or DO equivalent).	7 (11)	22 (33)	22 (33)	13 (20)	2 (3)
I am satisfied with the current level of competence that our geriatric fellowship graduates achieve in oral health.	10 (15)	30 (46)	15 (23)	8 (12)	2 (3)

Abbreviation: DO, doctor of osteopathic medicine.
[a]Not all distributions may total to 75 due to sporadic missing data.

with OH competence among fellowship graduates (40% vs 11%; $\chi^2 = 5.50$; $P = .019$). Those with routine teaching from a dental professional were three times more likely to be satisfied with the level of preparedness of their graduates on OH topics on board or certifying examinations (33% vs 10%; $\chi^2 = 4.99$; $P = .025$).

Barriers

In terms of number of barriers to teaching more OH topics, programs with dental affiliations were proportionately five times more likely to report no barriers (24% vs 4%; $\chi^2 = 7.27$; $P = .026$). Furthermore, programs with an OH champion, dental affiliation, and departmental support were proportionately 10 (50% vs 5%; $\chi^2 = 18.64$; $P < .001$), 3 (46% vs 12%; $\chi^2 = 9.69$; $P = .002$), and nearly 2 (72% vs 42%; $\chi^2 = 5.81$; $P = .016$) times more likely to report no lack of faculty expertise in OH as a barrier. Programs with an OH champion (32% vs 12%; $\chi^2 = 3.95$; $P = .047$) and dental affiliation (35% vs 15%; $\chi^2 = 3.59$; $P = .058$) were two and a half and two times (respectively) more likely to report no lack of clear national educational competencies as a barrier.

DISCUSSION

This study is the first to survey geriatric fellowship programs on their inclusion of OH in their curriculum. The data show

Table 3. Hours of OH Curriculum by Program Affiliations/Opportunities

Statement	Hours of OH Curriculum by Program Affiliations/Opportunities, No. (%)[a]		
	<3	≥3	χ^2; *P* Values
Affiliation with dental school, dental residency, or dental hygiene program.			
Yes	10 (59)	7 (41)	12.36; <.001
No	47 (94)	3 (6)	
Does your program have a faculty "OH champion"?			
Yes	9 (60)	6 (40)	9.57; .002
No	48 (92)	4 (8)	
Does your program have a formalized relationship (ie, routine teaching) with a dental professional (eg, dentist, other dental professional)?			
Yes	16 (70)	7 (30)	6.64; .010
No	41 (93)	3 (7)	
Does you program have a relationship with a state or national OH program or coalition?			
Yes	4 (57)	3 (43)	4.80; .028
No	53 (88)	7 (12)	
I am satisfied with the current level of competence that our geriatric fellowship graduates achieve in OH.			
Agree	6 (60)	4 (40)	
Neutral/disagree	49 (89)	6 (11)	5.50; .019
Upon graduation, our learners are well prepared to answer questions on OH on the geriatrics certifying examination (or DO equivalent).			
Agree	10 (67)	5 (33)	4.99; .025
Neutral/disagree	49 (90)	5 (10)	

Abbreviations: DO, doctor of osteopathic medicine; OH, oral health.
[a]Not all distributions may total to 75 due to sporadic missing data.

that almost a quarter of programs have no OH training; the vast majority are providing only an hour or two of formal training. Furthermore, almost all programs do not expose their fellows to clinical dentistry. Earlier, we showed that OH has dramatic effects on overall health and that most US elderly people cannot access dental care. Universally, fellowship directors report that their graduates are not prepared to address patients' OH issues. It is concerning therefore that the health providers they can access are not well prepared to address their OH issues or focus on prevention.

Overall, the subanalyses show that the presence of a formal leader of any kind (department, dental, nondental) who supports and promotes interprofessional education in OH leads to fewer barriers as well as more instructional hours. Ultimately, having this champion results in better preparation for examinations and overall competence in OH by fellowship graduation. This would be an important place to start to address this national shortage of training. Organizations like the National Interprofessional Initiative on Oral Health[29] and funders such as the Dentaquest Foundation[30] or HRSA could be engaged to offer leadership and funding opportunities to train champions across the country.

Another important opportunity for geriatric fellowship programs is to utilize already existing national and local resources. With many programs citing lack of time in the curriculum and OH expertise, utilizing existing resources can make a big difference. Barely any programs are using SFL. This interprofessional, national curriculum has an online module on geriatric OH (as well as modules covering the oral examination, oral-systemic health, and adult OH). Fellows could complete the SFL module(s) with no on-site expert faculty required. Coupling modules with local shadowing of dentists would be even better. A quarter of programs have formed relationships with local dentists or dental departments. While many programs may not have a dental school nearby, community dentists are a great resource. Another missed opportunity are state OH coalitions with funding and skill sets to train medical learners; only 10% of programs have made this connection.

Before any of these initiatives can really begin, it appears that more buy-in is needed. Department support is low according to survey respondents. A coordinated series of articles in the right journals and presentations at geriatric education conferences may be able to influence geriatric department chairs and other faculty. Of course, getting program chairs interested in OH will only work if there are funds and core competencies in OH that programs must meet. Having geriatric fellows and geriatric dental residents training together would be the best solution; however, this may not be possible in all areas of the country. Basically, transforming geriatric education will take a series of well-orchestrated and coordinated efforts.

There were a few limitations to note with this study. While the response rate, approximately 50%, was respectable, a higher response rate would allow for a greater degree of generalizability of the findings. Additionally, since only half of the programs responded and the survey was anonymized, it is uncertain whether the programs who did not respond were significantly different from those who did. For example, it is unclear whether nonresponding programs had a lack of interest in and/or inclusion of OH in their curriculum. Furthermore, not all of the respondents (15%) were the fellowship program directors who would be more likely to know details of the curriculum, including OH topics taught and curricular hours devoted to OH. Last, the survey was self-report, with some questions asking respondents to speculate on their learners' level of preparation for the certifying examination and level of competence at graduation. Direct measures of learners' preparedness and competence, such as assessing the knowledge and skills of geriatric fellows, would provide a more accurate reflection of the effectiveness of the OH training and could be an area of future study. It would also be helpful to assess graduates and assess their behaviors about addressing the OH needs of their patients.

In summary, this study shows that geriatric fellowship programs in the United States require a greater investment when it comes to OH curriculum. While it will take great effort by multiple individuals and organizations, the impact on geriatric patients' overall health will be tremendous.

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