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Original Article

Status of geriatric education and meeting the standards of facilities in dental schools

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Abstract:

CONTEXT: Information, specific tendencies, and skills are needed to provide oral care for the elderly population, and these skills should be learned in dental schools.

AIMS: The aim of the study was to assess the status of geriatric dentistry education and meeting the standards of facilities in dental schools in Iran.

SETTINGS AND DESIGN: In this cross-sectional study, sampling was done by census method, and all the 18 dental schools with a history of ≥6 years of establishment were selected.

MATERIALS AND METHODS: A checklist was prepared in two sections, including geriatric dentistry education (existence of specific education module, considered time, specific department, specific faculty members, continuing courses for dentists, relationship with geriatric nursing houses, referral system, and specific clinics) and facilities and was distributed among dental schools. The collected data were input into SPSS (Version 20.0. Armonk, NY: IBM Corp) and analyzed descriptively.

RESULTS: After a regular follow-up, 11 dental schools returned the completed checklists. Eight (72%) of them had specific geriatric dentistry education module. Only one (9%) had specific faculty member, continuing educational course, mobile clinic, and regular connection with geriatric nursing houses. None of the dental schools had specific department, specific clinic for delivering care, and a referral system from hospitals to the schools. There were no dental schools with a special transportation system for the elderly and the staff to accompany the patients without attendants.

CONCLUSION: The status of geriatric dental education in Iran seems not adequate. Furthermore, dental schools are not equipped with necessary facilities for delivering care to the elderly.

Keywords:

Dental facilities, dental schools, education, geriatric dentistry, Iran

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Introduction

According to the definition of the World Health Organization, anyone over the age of 60 years is deemed to be elder.[1] There has been a significant increase in the elderly population in the developed and developing countries.[2-8] The population of the elders in Iran in 1975 was 4.5% and is expected to reach 10.5% and 21.5% in 2025 and 2050, respectively.[9]

Oral health reflects the general health status of the elderly like a mirror.[6,7,9,10] The complex oral condition can be a risk factor for systemic diseases that occur commonly in the elders. On the other hand, aged people are more susceptible to oral diseases due to systemic diseases and functional changes associated with age.[7,8]

In these people, oral hygiene is sometimes inappropriate due to physical and mental disabilities.[7,10] Oral health examination should be considered as one of the most important parts of physical examination. As

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the age increases, many physiological changes occur in the mouth. For example, gingival recession and loss of periodontal support of the teeth, increased root decays, reduction of salivary glands function, and sometimes full sclerosis of the root canals are common problem.[10,11]

Therefore, the treatment of the elderly population is different than that of the general population[12] and information, specific tendencies, and skills are needed to provide oral care for the elderly population, and it is necessary to teach these skills in dental schools.[3,6,9-13] Essential topics for geriatric dentistry include a wide range of issues that include the aspects of statistical agedness, biological and psychological changes associated with aging, common diseases associated with age and their management, and the impact of systemic diseases on oral health.[10]

In a study by Moreira *et al*. in 2008, it was shown that dentists were not prepared to provide dental care to the elders.[12] In the study of Hatami *et al*. in 2011, among 18 dental schools in Iran, it was found that some attention had been paid to geriatric dentistry in the recent review of the Iranian dental educational curriculum. However, dental students feel barriers to the treatment of the elderly, which affect their tendency and desire to treat the elderly. Furthermore, most dental students in Iran have experienced the treatment of older people, but more than half of them prefer not to provide services to these people.[9]

Despite the fact that some patients are taught in the department of prosthetics, geriatric dentistry education in Iran is inadequate, and it seems that the dental educational curriculum in Iran does not emphasize the communication skills.[13] In the study of San *et al*. in 2011, it was shown that dental schools should pay more attention to the social aspects of aging and communication with the elderly.[3] To this end, faculties should equip themselves with the educational and clinical facilities to provide services to the elders.

Despite the importance of education and the necessary facilities for providing services to the elders in dental schools, a comprehensive study on the evaluation of dental schools in geriatric dentistry education has not been done yet. Hence, this study was conducted to evaluate the existing capabilities and educational facilities in dental schools (situation analysis) to explore the strengths and weaknesses and provide them with a dental education policymaking.

Materials and Methods

This cross-sectional study was approved by the Ethics Committee of Research Deputy of Isfahan School of Dentistry (No. 395571). Sampling was done by census method, and all 18 dental schools of the country with a history of at least 6 years of establishment were selected. The checklist of the project, based on similar studies,[7,10] was prepared in two sections as follows: the status of geriatric dentistry education and the status of equipment and facilities for providing services to the elders.

Regarding the status of education, the existence of a specific module of geriatric dentistry education, the presence of this module at the school, hours spent on teaching geriodontology education in the faculties, teaching method (practical/theoretical), existence of a specific department for geriatric dentistry, the presence of an experienced school member in geriatric dentistry, existence of retraining courses on geriatric dentistry for dentists, relationship between faculties and nursing homes, existence of a referral system from hospitals, presence of a clinic affiliated with the faculties to provide services to the elders, percentage of the elderly patients referred to the school, and types of treatment needed were considered.

With regard to the status of equipment and facilities according to the standards defined for dental modules,[14-17] the items included in the checklist comprised elders' ease of access to the service centers, reducing the risk of elders falling, facilities for reducing vision impairment due to aging, presence of a suitable elevator, presence of ramps on the paths with stairs, and presence of sufficient wheelchairs. For reliability of face and content validity, the checklist was provided to seven faculty members of Isfahan Dental School, including the dean of the faculty, the associate administrator deputy of the faculty, the educational deputy of the faculty, one of the professors of the dental public health department, two of the professors of the department of prosthetics, and one of the professors of the surgery department. They were asked to score the relevance of the questions to the goals based on the scaling guideline: high degree of relevance = 1, average degree of relevance = 2, and low or uncertain degree of relevance = 3. In addition, experts were asked to comment on any of the questions if they had any specific comments and suggestions. After reviewing the results of the survey, the questions that were scored 2 or 3 were deleted or corrected according to the expert opinion.

After the final confirmation of checklists by the experts, the checklists were sent to the faculties by fax and E-mail to be completed by the head of the faculty or the educational council on the researchers' request. Data were analyzed by descriptive analysis using SPSS, Version 20.0. Armonk, NY: IBM Corp. Tables were used to summarize the data.

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Results

After repeated follow-ups by telephone (at least 3 times for each school) and by mail, only 11 schools completed the checklists. In accordance with the geriatric dental education, eight schools (72.72%) had an elderly dental education module [Table 1]. Of them, all (100%) mentioned considering some hours of training, and only one school (12.5%) had a group seminar or occasional lectures. Among these eight schools, four (50%) had clinical education in the field of geriatric dentistry.

Details about the educational content are summarized in Table 2. In response to the question about the duration of having geriatric dentistry as an educational module, one school of dentistry (9%) reported to have it for <1 year, four faculties (36.36%) for 1–3 years, and five faculties (45.45%) for 3–6 years.

Only one school (9%) had an independent faculty member for geriatric dentistry (Zahedan School of Dentistry), special continuing education courses about geriatric dentistry for graduates (Qazvin Dental School), mobile clinic for the treatment of the elderly patients (Mashhad Dental School), and regular collaboration with the nursing homes (Qazvin Dental School). No faculties (0%) had a separate department for geriatric dentistry, a specialized clinic for the elderly, and a referral system for the elders from hospitals to faculties. Four schools (36.36%) had visits to nursing centers. Two schools (18.18%) had mobile clinics to train the elderly patients. Three schools (27.27%) had an independent supervisor for geriatric dentistry programs.

In eight schools, it was reported that (72.72%) 10%–30% of the patients referred were elders; and in one school (9%), this percentage was as high as 30%–50%. Elderly patients in 8 schools (72.72%) were candidates for diagnosis and treatment of oral lesions. In 9 schools (81.81%), they demanded dentures, and in 4 (36.36%) of them, they asked for periodontal treatments, implants, and other treatments (such as surgery and tooth extraction, or oral and dental diseases). Only 1 school (9%) had a specific budget allocated to geriatric dentistry education [Table 2].

Table 1: Presence of a geriatric dentistry module in 11 dental schools of Iran

Name of the school	Yes	No
Isfahan		**
Shahid Beheshti		**
Rasht		**
Tehran	**	
Yasuj	**	
Zahedan	**	
Rafsanjan	**	
Mashhad	**	
Yazd	**	
Ghazvin	**	
Kerman	**	

The departments that provide geriatric dentistry topics are presented in Table 3, by division. In most of the schools, topics related to old people are educated in the departments of surgery (sessions of nonclinical courses) and the department of diagnostics under the topic of neuromuscular diseases. In some of the schools, issues of aging are taught in the community department over a course with 17 h.

The results of analysis of services provided to the elders showed that four schools (36.36%) had suitable elevators, nine schools (81.81%) had ramps (sloping surface) in stairways, and two schools (18.18%) had a suitable parking place for the elders, proper flooring to reduce sliding surfaces, reminder program for the appointment of the elderly patients by telephone and large scale educational magazines and brochures for the elders' waiting rooms. Further, six schools (54.54%) had appropriate guidance boards, three schools (27.27%) had enough wheelchairs and armchairs at an appropriate height in the passageways for the elders to use. No schools (0%) had special services for the elders and staff to accompany the patients without attendants. Only one school (9%) had a budget allocated to facilities for providing services to the elders [Table 4].

Discussion

According to the results of the study, most of the faculties had a special geriatric dentistry education module. No faculties had specialized departments for geriatric dentistry, specialized clinics for the elders, and a referral system for the elders from hospitals to the faculties. Some faculties had an independent expert of geriatric dentistry education, a continuing education program about geriatric dentistry for graduates, a mobile clinic for teaching or treating the elderly patients, visit nursing care centers, independent head for the geriatric dentistry program, and regular contact with nursing homes. Some faculties had facilities for facilitating their services. There were no specialist services for the elders and staff to accompany the patients without attendants.

Based on the oral health scan in 2012 by Khoshnevisan *et al*.,[18] the DMFT (Decayed, Missed and Filled Teeth) index of permanent teeth in patients aged 65–74 years in Iran was 25.71. The share of decayed permanent teeth in this group was 11.72%, and the share of extracted teeth was 84.22%. The share of restored teeth from the country index was 4.05%. The complete edentulous index in Iran is 56.2%, and 45.9% of people aged 65–74 years are in the need of treatment. Therefore, a high percentage

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Table 2: Frequency of answers to questions about geriatric dentistry education in 11 dental schools of Iran

Questions	Shahid Beheshti	Rafsanjan	Kerman	Rasht	Ghazvin	Mashhad	Yazd	Zahedan	Yasuj	Tehran	Isfahan
1. There is a special geriatric dentistry education module	N	Y	Y	N	Y	Y	Y	Y	Y	Y	N
2. If positive, include	-	Training hours, group seminars	Training hours	-	Training hours	Training hours	Training hours	Training hours, occasional lectures	Training hours	Training hours	-
3. Does this module include clinical components?	-	Y	N	-	Y	N	Y	N	Y	N	-
4. Duration of the geriatric dental unit a less than one year, b 3-1 years, c 6-3 years, d more than 6 years	b	X	b	a	c	b	c	c	c	c	b
5. The presence of an independent school of geriatric dentistry education	N	N	X	N	N	N	N	Y	N	N	N
6. There is a continuing education program on geriatric dentistry for graduates	N	N	X	N	Y	N	N	N	N	N	N
7. There is a separate department for geriatric dentistry	N	N	N	N	N	N	N	N	N	N	N
8. Visiting the elderly care centers	N	Y	N	N	Y	Y	N	N	N	Y	N
9. There is a mobile clinic for training the elderly	N	N	N	N	Y	Y	N	N	N	N	N
10. There is a mobile clinic for treatment of the elderly	N	N	N	N	N	Y	N	N	N	N	N
11. Existence of a specialized clinic for geriatric dentistry	N	N	N	N	N	N	N	N	N	N	N
12. Presence of an independent supervisor for geriatric dental programs	N	N	N	N	Y	Y	N	N	N	Y	N
13. Regular contact with nursing homes	N	N	N	N	Y	N	N	N	N	N	N
14. There is a referral system for the elderly from the hospitals to the school	N	N	N	N	N	N	N	N	N	N	N
15. Approximate percentage of elderly patients referred to faculty a below 10%, b 30-30%, c 30-50%, and d ≥50%	30%-30%	30%-30%	30%-30%	30%-30%	X	30%-30%	30%-50%	30%-30%	30%-30%	X	30%-30%
16. What treatments do the elderly people mostly demand?	Oral lesions, prosthesis, periodontal treatments	Prosthesis, other treatments	Oral lesions, prosthesis, implants, other treatments	Oral lesions, prosthesis	X	oral lesions, prosthesis, periodontal treatments, implants, other treatments	Oral lesions, prosthesis, implants	Periodontal treatments	Oral lesions, prosthesis	Oral lesions, prosthesis, other treatments	Oral lesions, prosthesis, periodontal treatments, implants
17. Budget allotted to geriatric dentistry education in the past year (Rials)	X	X	0	0	X	X	0	0	0	0	100,000,000

X=The question has not been answered, Y=Yes, N=No

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Table 3: Frequency distribution of departments providing geriatric dental patients in 11 dental schools of the country

Department	Isfahan	Mashhad	Tehran	Shahid Beheshti	Ghazvin	Kerman	Rafsanjan	Yasuj	Yazd	Rasht	Zahedan
Prosthetics	*	*	*	X	-	-	-	-	*	-	-
Surgery	-	-	*	X	-	-	-	-	-	-	*
Periodontics	-	-	-	X	-	-	-	-	-	-	-
Endodontics	-	-	-	X	-	-	*	-	-	-	*
Radiology	-	-	-	X	-	-	-	-	-	-	-
Diagnostics	-	*	*	X	*	*	*	-	*	*	-
Community	*	*	*	X	-	-	-	*	*	-	*
Restoration	-	-	-	X	-	-	-	-	-	-	*
Pathology	*	-	-	X	-	-	-	-	-	-	-

X: The question has not been answered, *: Available

Table 4: Distribution of services for the elderly in 11 dental schools of Iran

Questions	Shahid Beheshti	Rafsanjan	Kerman	Rasht	Ghazvin	Mashhad	Yazd	Zahedan	Yasuj	Tehran	Isfahan
1. Suitable elevator	*	-	-	-	*	*	-	-	-	-	*
2. Ramp on stairways	*	*	-	*	*	*	*	-	*	*	*
3. Special services for the elderly	-	-	-	-	-	-	-	-	-	-	-
4. Suitable and sufficient car parks for the seniors	-	*	-	-	-	-	*	-	-	-	-
5. Installing proper armchairs in the passageways for the elderly	-	-	-	-	-	*	*	*	-	-	-
6. Sufficient wheelchairs for the elderly	-	-	-	-	-	-	*	-	*	-	*
7. Proper guide tableau	-	*	-	*	-	-	-	*	-	*	*
8. Suitable floors to reduce slipping	-	-	-	-	*	*	-	-	-	-	-
9. Reminder program for the elderly patient to make telephone appointment	-	*	-	-	-	-	-	-	-	*	-
10. Large scale educational magazines and brochures for the elderly waiting rooms	-	*	-	-	-	*	-	-	-	-	-
11. Appropriate brightness without glaring	*	*	*	-	-	*	*	-	-	*	-
12. Staff to accompany the patients without attendants	-	-	-	-	-	-	-	-	-	-	-
13. Budget allocated to facilities to provide services to the elderly in the past year (Rials)	X	X	0	0	X	0	0	0	0	0	500,000,000

of the elderly people in the country need dental care. Information, trends, and special skills are needed to provide oral care for the elderly population, and it is necessary to teach these issues in dental schools.[3,6,9,11-13]

In a study by San *et al*. in 2015,[3] 42% of dental schools in Spain had a geriatric dentistry module, while this percentage was 72.72% in our study. In Spain, only one school (from 19) has clinical components in geriatric dentistry, while in the present study, four schools had clinical components in geriatric dentistry. In the study conducted in Spain, it was found that no school had a specialized clinic to provide services to the elders within the faculty, a special specialist clinic for the elders and a separate department of geriatric dentistry, which is in agreement with the results of the present study. Furthermore in the study carried out in Spain, it was shown that there were no mobile clinics in the field of education or treatment of the elderly patients, while the current study showed that two faculties had mobile clinics for training the elders, and one school had a mobile clinic for treating the elders.

In a study by de Lima Saintrain *et al*.,[19] it was found that only 25 of the 64 Brazilian schools (39.66%) had a geriatric dentistry education module, which is much less

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than the same value in the present study. However, 22 schools in Brazil were planning to add this module to their curriculum.

In a study by Levy *et al*. (2013),[7] 89% of the American dental schools reported that they had geriatric dentistry education module. This amount is more than the results of our study. In the United States, only 22.6% of the schools had clinical components in geriatric dentistry education, which is less than the amount obtained in the current study.

A study by Preshaw and Mohammad (2005)[2] found that 28% of the European schools responding to similar questionnaires had independent supervisors for geriatric dentistry programs, which is approximately similar to our study. Teaching clinical components was reported in 61% of the European dental schools, which is more than the result of our study. Furthermore, 18% of the European schools had a special clinic for the elders in the faculty, while this value was zero in the present study.

In another study by Nitschke *et al*.,[20] it was found that all Swiss and 35% of German schools had a distinct department for geriatric dentistry, while no Austrian colleges had this department. The same study was repeated in 2009 to assess the progress of geriatric dentistry.[21] The results showed that all Swiss and 31% of German schools taught geriatric dentistry, but these topics were not taught in any Austrian schools. In the present study, it was found that all of the studied schools taught at least some aspects of geriatric dentistry.

A study conducted in Chile in 2014 by León *et al*.[5] indicated that 84% of Chilean dental schools presented at least some geriatric dentistry topics. However, the present showed that all dental schools taught some topics of geriatric dentistry. Only 37% of dental schools in Chile had a specific geriatric dental module and 71% of these modules had clinical components also. Moreover, in the present study, about 72% of schools had a geriatric dental module, half of which presented clinical components. Moreover, 53% of Chilean school had an independent supervisor for organizing geriatric dentistry programs, which is higher than the amount obtained in the present study.

A comprehensive study was conducted in 2010 by Kitagawa *et al*. in Japan.[4] The findings indicated 34.48% of Japanese dental schools had a separate department of geriatric dentistry, while none of the schools in the present study had such a department. The usual geriatric dental curriculum in Japan consists of 26 h of theory training and 17 h of practical training in the laboratory.

A study by Shah on dental faculties in India in 2005 demonstrated that the educational curriculum did not include any significant part about geriatric dentistry issues in spite of the fact that India has the largest number of dental schools in the world.[22] Furthermore, a study by Fu *et al*. in 2006 in China found no specific geriatric dentistry education despite the fact that the elder population of this country is very high.[23]

Conclusion

Therefore, in general, geriatric dentistry in the developed countries such as the United States, Canada, Australia, and the United Kingdom seems to be more advanced than the developing countries despite the fact that one-sixth of the world's elderly population lives in the southeast Asia.[24] Brazil was the first country to introduce the need for specialist geriatric dentistry education in 2001.[25]

The obstacles to teaching geriatric dental topics that have been known so far include three main issues: (1) the curriculum is highly intense, and it is difficult for departments to dedicate parts of their time to the geriatric dentistry education; (2) there is not enough equipment and space to teach these topics; and (3) there are not enough trained personnel to teach these topics.[6,26-28] Another point is that the salaries and benefits of active dentists in this field are less than those of the dentists working in the private sector.[27] The first step in recruiting professors and clinicians to plan for geriatric dentistry is to recognize the importance of this issue as an independent department.[6,26] Besides, it is very important to consider the exposure of students to clinical gerontology curriculum in dental schools and not just limit the education to theoretical courses.[29] In a study conducted recently in the USA dental schools, it was revealed that in only 57.1% of schools clinical teaching was a requirement.[30] Special postgraduate gerodontology courses need to be developed to generate a significant number of specialized dentists and trained academics to improve the education level in undergraduate courses.[31]

New technologies can be widely used to create new geriatric dentistry courses, including multimedia, computer-based education, virtual classes, and video conferencing.

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Conflicts of interest

There are no conflicts of interest.

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