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# European College of Gerodontology: Undergraduate curriculum guidelines in Gerodontology

**Anastassia Kossioni<sup>1</sup>, Jackie Vanobbergen<sup>2</sup>, James Newton<sup>3</sup>, Frauke Müller<sup>4</sup>, M. Robin Heath<sup>5</sup>**

<sup>1</sup> *Department of Prosthodontics, National and Kapodistrian University of Athens Dental School, Greece*

<sup>2</sup> *Department of Community Dentistry and Oral Public Health, University of Ghent, Belgium*

<sup>3</sup> *University of Aberdeen Dental School, UK*

<sup>4</sup> *Division of Gerodontology and Removable Prosthodontics, University of Geneva, Switzerland*

<sup>5</sup> *Adult Oral Health, Barts and the London School of Medicine and Dentistry, Queen Mary, University of London, UK*

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**Correspondence:** Dr Anastassia Kossioni, Department of Prosthodontics, Dental School, National and Kapodistrian University of Athens, Greece, Thivon 2 Goudi, Athens 11527, Greece, email: akossion@dent.uoa.gr

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## **Abstract**

Effective undergraduate teaching of gerodontology to present and future dental students is important if good oral health care of older people is to be assured. A review of the undergraduate curriculum for gerodontology is presented and indicates the need for a knowledge base from which new graduates can develop a special interest in care of older patients. The aim is improved care of older patients, satisfaction for teaching staff involved and improved professional standing for Dentistry. Motivation of students could also be achieved from the positive match between rising patient awareness and ethical responsibility of the profession for those older patients. As it stands, the undergraduate curriculum should include topics on specific care for the elderly and other patient groups, which extend the competencies already agreed by the Association for Dental Education in Europe (ADEE). The logistics of teaching these topics will need co-ordination of those staff with appropriate skill and interest, preferably as a development of existing curriculum content.

## Introduction

Facing a major increase of the elderly population, the European College of Gerodontology (ECG) felt it was appropriate to review the competences necessary for dental graduates to provide the oral care to the elderly. Due to increasing life expectancy, the proportion of elderly people in the general population has risen significantly and will continue to increase during the future decades. By 2060, it is expected that 30% of Europeans (EU27) will be older than 65 years, while the number of people aged 80 years and over is projected to triple from 21.8 million in 2008 to 61.4 million in 2060 <sup>1</sup>.

Ageing can be accompanied by increased morbidity, disabilities and reduced quality of life <sup>2</sup>. Oral health is an essential factor in general health and quality of life through an individual's course of life <sup>2</sup>. Although the prevalence of edentulousness is still high in the elderly, it is progressively declining <sup>3-7</sup>. More natural teeth are being retained until later in life so that the older population will require more restorative treatment and more complex oral hygiene interventions. Oral care in older adults, particularly the medically compromised and dependent individuals, is often inadequate owing to the various existing barriers (general, medical, socio-economic, psychological, geographical and educational). Neglected oral hygiene and tooth loss may increase morbidity and even mortality in frail elderly people <sup>8</sup>.

Part of the problem is related to the limited training of undergraduate dental students in all the factors relevant to the oral care of the elderly. The extent of gerodontology in the curriculum varies among European Dental Schools <sup>9-12</sup>. Few schools provide training in domiciliary care <sup>10</sup>. Modifications are required in the dental undergraduate and postgraduate curricula to provide appropriate knowledge, attitudes and skills.

The curriculum guidelines in Gerodontology proposed here were suggested by an educational working party of the European College of Gerodontology (ECG) and circulated to all ECG members for comments before submission.

In defining the specific competences required for Gerodontology, the following definitions have been applied according to the required level of knowledge, attitudes and skills <sup>13</sup>:

- **Be competent at:** *the student should have a sound theoretical knowledge and understanding of the subject together with an adequate clinical experience to be able to resolve clinical problems encountered, independently, or without assistance.*
- **Have knowledge of:** *students should have a sound theoretical knowledge of the subject, but need only to have limited clinical/ practical experience.*
- **Be familiar with:** *students should have a basic understanding of the subject but need not have direct clinical experience or be expected to carry out procedures independently.*

Existing guidelines for a curriculum in Gerodontology are limited to “Curriculum Guidelines for Geriatric Dentistry”<sup>14</sup>, published in the USA in 1989.

The ECG acknowledges the important contribution of the publication on the “Profile and Competences for the European Dentist”<sup>15</sup> (PCD) approved during the 2004 annual meeting of the Association for Dental Education in Europe (ADEE) and suggests a revised profile by adding specific competences in Gerodontology.

### **Educational goal of Gerodontology**

The educational goal of Gerodontology is to raise awareness of barriers to care and to prepare dental students, in terms of knowledge, attitudes, ethics and skills to provide appropriate oral health care for the older adults.

This document, therefore, focuses on the potential for extending current curricula to cover those aspects of ageing and age-related factors which are relevant to dental care of older people. Frailty rather than chronological age will be of major concern when defining these factors.

#### *Structure of training and facilities*

Gerodontology undergraduate training should be mandatory. It is desirable for every Dental School to run a Gerodontology Department or Division that is responsible for this training. Where no such department is present, or when the Dental School has no departmental structure, the School should consider establishing at least a group of specialised clinical teachers to cover the course.

The curriculum in Gerodontology should be offered throughout the undergraduate studies. Besides its core competences, Gerodontology is interdisciplinary and complementary to other dental disciplines. A well-defined lecture series should emphasise this interdisciplinary character and invite specialist

staff from particular fields. General information on the biological, physiological, psychological and psycho-social aspects of ageing and the main pathologies in old age, as well as preventive oral care for the elderly and public health issues should be offered in the preclinical years. The students should be trained in treatment planning and clinical care for older people, covering functionally independent, frail and functionally dependent patients. Clinical training, particularly for the frail and dependent elderly and in remote locations, could be more appropriately offered to senior undergraduates, as they already have adequate knowledge and skills in general medicine and dentistry.

A Gerodontology Clinic within each Dental School is desirable to meet patient needs more effectively. In addition to theoretical and clinical training within the Dental School, students should also receive clinical training in various locations (community settings, nursing homes, private homes, geriatric hospitals). Examining and managing patients in their domiciliary surroundings is particularly relevant and appropriate for emergency and simple prosthetic care of those housebound, and in the initial assessment of people who get disoriented by unfamiliar venues.

#### *Teaching methodology and assessment*

Teaching methods and assessments have been comprehensively proposed in the dental literature<sup>16,17</sup>.

Various assessment techniques can be applied in Gerodontology. Among them, patient management problems, presentation of clinical cases, electronic portfolios and the use of audio-visual recordings are particularly suitable.

### **Curriculum outline**

#### *Public Health issues*

- Demographics.
- Socio-economic problems in the older adults.
- Barriers to oral care.
- Epidemiology of oral health and dental state in the elderly population.
- Organisation of community services for the elderly.

#### *Ageing*

- Biology, physiology and pathology of ageing.

- Age-changes of the orofacial system.
- Psychology of ageing.

#### *Aspects of Geriatric Medicine*

- Frequent health problems and multiple morbidity in older adults.
- Oral manifestations of common medical conditions.
- Pharmacology and polypharmacy in old age.
- Geriatric assessment.
- Nutritional problems in the ageing individual.

#### *Communication skills*

- Active, respectful and empathetic communication with elderly adults.
- Communication with persons with sensory and/or cognitive impairment.
- Communication with the professional health care team and the patient's volunteer carers.

#### *Logistic aspects*

- Interdisciplinary management of the ageing individual.
- Organisation of a safe treatment environment for older persons.
- Mobile treatment equipment for domiciliary care.
- Legal context of informed consent.

#### *Diagnosis and treatment planning*

- Recording history and risk assessment in the ageing individual.
- Patient-centred treatment planning.
- Oral mucosal diseases and disorders in the aged.
- Diagnosis of pain.
- Salivary impairment and xerostomia.
- Periodontal disease in the elderly population.
- Denture-related conditions and prosthodontic evaluation in the aged.
- Caries risk assessment, particularly root caries.
- Tooth wear assessment.
- Radiographical assessment.
- Effect of dental state on the nutritional state.

### *Therapy and prevention*

- Oral health education on an individual and community based level.
- Oral hygiene measures and instructions for patients with different levels of dependency, and their carers.
- Appropriate management of oral and dental conditions for each patient according to the individual needs and demands.
- Domiciliary care.
- Palliative care.

### **Competences**

These emphases apply when managing older patients. Where our listed competencies involve extension of the Profile and Competencies for the European Dentist (PCD) <sup>15</sup> items, the PCD numbers in Table 1 are suffixed (Table 1).

#### ***The dentist must be competent at:***

1. Displaying an appropriate and ethical caring behaviour towards older patients (1.1, 1.9).
2. Identifying the chief complaint and the needs and demands of the older patient (2.3, 4.1).
3. Obtaining a thorough general, medical, dental and social history (1.3, 4.3, 4.4).
4. Performing an intra- and extra-oral examination (4.6).
5. Communicating effectively with the aged dental patient taking into account the physical, psychological and mental status of the patient (2.5).
6. Assessing patients' comprehension and competency.
7. Communicating effectively and sharing information with all members of the health care team (physicians, nurses, dental assistants, hygienists etc.) and the carers (2.5, 2.7).
8. Taking and assessing radiographs (head and neck) in the aged patients (4.8).
9. Recognising oral mucosal disorders and referring accordingly (5.6).
10. Recognising signs of elder abuse and neglect and describing the methods of reporting it to the appropriate authorities (4.17).
11. Performing a written referral to clarify the patient's general condition (4.5).

12. Recognising the presence of the major systemic diseases in old age and how they affect the delivery of oral care (3.6, 5.2).
13. Taking the patients' vital signs (4.6).
14. Identifying the age-related changes in the oral structures.
15. Assessing oral health related quality of life in elderly patients.
16. Identifying nutritional deficiencies, performing dietary analysis and providing nutritional advice (4.2, 6.6).
17. Providing oral education and oral hygiene instructions to the older patient and particularly to patients with diminished manual dexterity (6.3, 6.7).
18. Training auxiliaries and carers in basic skills of oral hygiene for the frail and dependent aged.
19. Training auxiliaries and carers in the perception of pain and oral impairment for dental referral.
20. Suggesting strategies to overcome barriers to dental care for the elderly patients.
21. Selecting individualised patient-centred treatment options (1.12, 1.13).
22. Preventing and managing dental and medical emergencies in clinical dental practice (5.12, 6.49, 6.50, 6.52).
23. Diagnosing xerostomia, its aetiological factors and managing the condition (4.14).
24. Completing a wide range of dental procedures (e.g., simple extractions, management of root caries, secondary caries, tooth wear, periodontal treatment, endodontic therapy, fixed and removable prostheses and management of dry mouth which are common in the elderly patients).
25. Recognising and managing the special difficulties in removable prostheses in the elderly.
26. Managing denture-related conditions.
27. Providing oral health care in a multidisciplinary context.
28. Managing aged patients with compromised general health and various levels of dependency and knowing when to refer.
29. Providing adequate treatment in patients' homes and long term care settings using appropriate dental equipment.

***Have knowledge of:***

30. The principal demographic characteristics and trends in the aged population.
31. Physiological and pathological age-related changes.

32. Age-related changes in special senses (sight, hearing, smell and taste).
33. Common medical conditions in the elderly population.
34. Relevance and incidence of co-morbidity.
35. The principal socio-economic status of the elderly relevant to oral care.
36. Major neurological and psychological disturbances in the aged (memory impairment, pain perception, changes in anxiety, self-esteem and disorientation).
37. The effect of loss of status, health, family, employment, income and companions on the behaviour and attitude of the aged.
38. Appropriate laboratory diagnostic tests for the most common geriatric diseases and the interpretation of the results (4.11).
39. The oral manifestations of systemic diseases.
40. The principles of pharmaco-dynamics and pharmaco-kinetics in the elderly patient.
41. Drug interactions and relevance of polypharmacy.
42. Side effects of drugs and their impact on oral health.
43. The oral health-care management of people with cognitive impairment.
44. Procedures in managing patients with reduced ability to consent.
45. The organisation of a safe and friendly treatment environment for the older patient for easy access to dental care.

***Be familiar with:***

46. Theories of ageing.
47. The organisation of general and oral health care for the elderly in the community and in the hospitals and the organisation of domiciliary care (7.2).
48. The principles of management of geriatric medical conditions.
49. The use of geriatric assessment scales (dementia, depression, nutrition).
50. Concepts of death and dying.

**Discussion**

The well-documented demographic changes, linked with changes in the general and oral health needs, show that action is urgent. Considering the international literature, one can assume that the

need of care will increase in the future due to more dependent elderly people with more complicated medical and dental status <sup>7, 18-20</sup>. The need is more urgent if the particularly steep rise in the old elderly (over 80 years) and the lag time from establishing courses to those graduates becoming a significant proportion of the practising dental profession are taken into account.

The basis for the geriatric dental curriculum is the understanding of the physical, mental, psychological, medical and oral characteristics of the older patient. Undergraduates must develop the fundamental point that care of older patients must be patient-centred. Geriatric patients tend to minimise their already low perceived need for dental treatment. This contrasts with professionally determined 'objective' (normative) need. The profession should integrate a need into a holistic approach taking into account the balance between functional, psychosocial, perceived and normative needs.

Gerodontology is very closely related to medicine. Dental education in elderly care should therefore seek an interdisciplinary approach to better address these needs. Multiple pathology and co-morbidity, further complicated by the variability between patients, require close collaboration with other medical and social experts. This requires specific competences in dental care where ageing or age-related problems extend the skills of other dental specialties. The difficulties, particularly in communication, in assessment and in dental management in remote settings extend the coverage of traditional teaching.

Theoretical aspects are important within the undergraduate curriculum, but education in elderly care should be supplemented with practical experience in various locations using appropriate dental equipment. This will require a number of initiatives, specific for the geriatric dental training, which will help in understanding both the environmental aspects and interdisciplinary co-operation.

Prevention should be a key-element in the provision of elderly oral health care with oral hygiene as an important and indispensable factor in maintaining good oral health and related quality of life, particularly in the frail and dependent elderly <sup>2,21-25</sup>. Emphasis is placed on oral health education not only for the patients but also for the carers.

Besides the core competences of gerodontology, there are certain competences that extend the teaching in other dental disciplines, for example prosthetic, endodontic, periodontal treatment for the elderly patient. These topics are not included in the present document. Consensus should be sought,

as to whether these topics are taught within the Gerodontology curriculum or the curriculum of the other specialty concerned. This decision should be based on available competences, which should be encouraged to achieve the best training for the students. Due to the variation among Dental Schools, details on teaching methods and assessment, numbers of procedures and visits to remote locations have not been stated. Dental Schools are encouraged to define their own teaching methodology according to the existing resources and regional needs. It is however desirable that students gain at least some experience in examining patients, providing preventive care and performing emergency treatment in non-traditional settings. Community settings and nursing homes could be affiliated with Dental Schools providing educational and research opportunities <sup>14,26,27</sup>.

The major competences described in PCD <sup>15</sup> have an impact on all dental disciplines, including Gerodontology. Many of the PCD's supporting competences are particularly important when applied and specified for the older aged group and are cited in our competences section. Some other competences specific and significant for Gerodontology are not mentioned and we hope that the revised PCD document, to be approved in 2009, will include them.

Further, there are many similarities between the specific teaching objectives in the Curriculum Guidelines in Geriatric Dentistry <sup>14</sup> and the competences described in the present document, even though 20 years have passed. This is mainly due to the patient-centred and not procedure-centred orientation of Gerodontology.

Awareness, ethics and particular competences should be developed within the context of a dynamic curriculum guided by the existing health needs of the society we want to serve. The ECG wishes the dental profession to be prepared for this challenge.

## **Conclusions**

The demography of ageing in European countries is now generally well known, but the impact on dental services of the increasing numbers of older people, and particularly of the old elderly, has not yet been reflected in the dental curriculum. Few practising dentists had received any formal education on the significance of age and ageing for their patients. They are therefore poorly prepared to learn from CPD even when this becomes more widely available. The case presented here indicates the urgent need for review of Gerodontology in dental undergraduate curriculum.

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**Table 1.** Competences in “The Profile and Competences for the European Dentist”<sup>15</sup>, which was agreed by Association for Dental Education in Europe annual meeting in 2004. These competencies are extended by particular relevance for the care of older patients.

- (1.1) Be competent to display appropriate caring behaviour towards patients.
- (1.3) Have knowledge of social and psychological issues relevant to the care of patients.
- (1.9) Be competent to provide humane and compassionate care to all patients.
- (1.12) Be competent to select and prioritise treatment options that are sensitive to each patient’s individual needs, goals and values, compatible with contemporary therapy, and congruent with a comprehensive oral health care philosophy.
- (1.13) Acknowledge that the patient is the centre of care and that all interactions, including diagnosis, treatment planning and treatment, must have the patient’s best interests as the focus of that care.
- (2.3) Be competent to identify patient expectations (needs and demands) and goals for dental care.
- (2.4) Be competent to identify the psychological and social factors that initiate and/or perpetuate dental, oral and facial disease and dysfunction and diagnose, treat or refer, as appropriate.
- (2.5) Be competent to share information and professional knowledge with both the patient and other professionals, verbally and in writing, including being able to negotiate and give and receive constructive criticism.
- (2.7) Be competent to work with other members of the dental team.
- (3.6) Be familiar with the pathological features and dental relevance of common disorders of the major organ systems, and have knowledge of the oral manifestations of systemic disease.
- (3.11) Be competent to recognise his or her clinical limitations and to refer appropriately.
- (4.1) Be competent to identify the chief complaint of the patient and obtain a history of present illness as part of a comprehensive medical history.

- (4.2) Be competent to perform a dietary analysis.
- (4.3) Be competent to produce a patient record and maintain accurate patient treatment record entries.
- (4.4) Be competent to identify abnormal patient behaviour (including anxiety).
- (4.5) Be competent to initiate an appropriate written medical consultation or referral in order to clarify a question related to the patient's systemic health.
- (4.6) Be competent to perform an extra-oral and intra-oral examination appropriate for the patient, including assessment of vital signs, and the recording of those findings.
- (4.8) Be competent to take radiographs of relevance to dental practice, interpret the results and have knowledge of other forms of medical imaging that are of relevance to dentistry.
- (4.11) Have knowledge of appropriate clinical laboratory and other diagnostic procedures and tests, understand their diagnostic reliability and validity, and interpret their results.
- (4.14) Be competent to assess salivary function.
- (4.17) Be competent to recognise signs of patient abuse and neglect and know how to report as required to the appropriate legal authorities.
- (5.2) Be competent to recognise the presence of systemic disease and know how the disease and its treatment affect the delivery of dental care.
- (5.6) Be competent to recognise the clinical features of oral mucosal diseases or disorders, including oral neoplasia and identify conditions that require management.
- (5.12) Be competent to diagnose medical emergencies.
- (6.3) Be competent in oral hygiene instruction, topical fluoride therapy and fissure sealing.
- (6.4) Be competent to educate patients concerning the aetiology and prevention of oral disease and encourage them to assume responsibility for their oral health.
- (6.6) Be competent to provide dietary counselling and nutritional education relevant to oral health.
- (6.7) Be competent to develop strategies to predict, prevent and correct deficiencies in patient's oral hygiene regimens and provide patients with strategies to control adverse oral habits.
- (6.49) Be competent to develop and implement an effective strategy for preventing dental and medical emergencies in the dental surgery and establish policies for the management of such emergencies, should they occur.
- (6.50) Be competent to carry out resuscitation techniques and immediate appropriate management of cardiac arrest, anaphylactic reaction, upper respiratory obstruction, collapse, vasovagals attack, epileptic fit, haemorrhage, inhalation or ingestion of foreign bodies, hypoglycaemia and diabetic coma or other medical emergencies that may occur in the course of dental practice.
- (6.51) Be competent to identify and manage dental emergencies including those of pulpal, periodontal or traumatic origin.
- (6.52) Be competent to identify and promptly refer dental or medical emergencies, which are beyond the scope of management by a general dentist.

- (7.2) Have knowledge of the organisation and provision of health care in the community and in the hospital service.