European Academy of Paediatric Dentistry. A framework for undergraduate education in Paediatric Dentistry

Main goals

A. The overall goals of undergraduate dental education in Paediatric Dentistry should be:

1. To train dental students in Paediatric Dentistry who are competent and confident in most common areas of Paediatric Dentistry for the growing and developing child.
2. To produce general practitioners confident to meet the most common oral health need of infants, children, adolescents and patients with special care needs, and who will continue to seek additional knowledge and skills throughout their careers.
3. To produce general practitionars able to collaborate in multidisciplinary teams concerned with the welfare of children.

B. The main goals of the pediatric dentistry undergraduate education are for the new dentist to:

1. Be competent to diagnose normal from abnormal growth and development and common oral health problems from birth to adolescence for both healthy children and children with special care needs.
2. Be competent to plan and apply individualized appropriate preventive dental care from birth to adolescence to healthy children and children with special care needs.
3. Be competent to practice evidence based comprehensive dental treatment for uncomplicated cases in cooperative children and adolescents, maintaining their cooperation throughout treatment.
4. Be able to collaborate in multidisciplinary teams concerned with the welfare of children; to this end the new dentists should have good communicative skills and seek additional knowledge and skills throughout their careers.

Objectives of obligatory courses for undergraduate education in Paediatric Dentistry

The following subjects are to be covered :

I. Basic Sciences
II. Aspect of management, administration and ethics
III. Diagnosis and treatment planning
IV. Behavioural sciences and patient management
V. Prevention
VI. Restorative dentistry
VII. Orthodontics
VIII. Dental Traumatology
IX. Oralsurgery/Oralmedicine/Oral pathology/Maxillo-facial surgery
X. Children with special needs/Medically compromised.

In the description of the goals of undergraduate education in paediatric dentistry the following levels of competence will be adopted:

Competent to
At this level students should have a sound theoretical knowledge and understanding of the subject together with an adequate clinical experience in order to be able to solve clinical problems encountered, independently, or without assistance.

Knowledge of
The students should have a sound theoretical knowledge of the subject, but need to have no or only a limited clinical experience.

Familiar with
Students should have a basic understanding of the subject, but need not have direct clinical experience or be expected to be able to carry out clinical procedures independently.

I. Basic Sciences

1. **Growth and development of the child and adolescent**

   Knowledge of
   - growth and development of the human body
   - psychological growth and development

   Familiar with
   - principles of classification of syndromes in relation to aetiology,

prognosis and response to treatment
- epidemiology, pathogenesis and management of diseases in children and adolescents
- concept of biological age and determination of skeletal age,and stages of sexual development

2. Growth and development of the craniofacial skeleton

Familiar with
- growth and development of the craniofacial complex
- development of skeletal deformities
- dentofacial orthopedics
- orthognathic surgical correction of facial dysmorphology and malocclusion

3. Development of the dentition (normal and abnormal)

Competent to
- recognize and identify
  - normal or abnormal dental development of the primary, mixed and permanent dentition
  - developmental stages of primary and permanent teeth and disturbances in their development and eruption

Familiar with
- disturbances of occlusal development and function
- preventive and interceptive orthodontic treatment

4 Epidemiology

Familiar with
- principles of epidemiologic surveys
- research design
- sample composition and requirements for control groups
- data analysis and critical interpretation of findings

5 Dental Materials

Knowledge of
- property and composition of materials used in paediatric dentistry
- parameters for selection of correct materials for various procedures
- proper handling and application of the materials.

II. Aspects of management, administration and ethics

1. **Office management.**
   Knowledge of
   - designing a general practice which will also accept children in private as well as in a municipal or hospital setting
   - equipment and instruments needed in such a practice
   - administrative and financial management of a general practice accepting children
2. **Legislation**
   Knowledge of
   - rules and laws that apply to paediatric dentistry in a general practice
   - responsibilities of the dentist during treatment of children and adolescents

III. Diagnosis and treatment planning

1. **The infant and toddler (0-3 years old)**
   Competent to
   - examine the infant and toddler in a non-intruding way
   - diagnose oral and dental disease

   Knowledge of
   - assessment of the child's mental and physical developmental level
   - diagnosis of caries risk and undertaking of adequate preventive measures
   - treatment of dental caries
   - diagnosis and treatment of dental emergencies (trauma or infection)
   - management of dental emergencies

2 **The 3-6 years old**
   In addition to the guidelines for the 0-3 years old, the student needs to be-
   Competent to
   - undertake an extraoral and intraoral examination
   - evaluate the child' behaviour
   - assess oral hygiene and caries-risk
   - apply preventive measures according to each patient's needs including oral hygiene instructions, application of sealants and topical fluoride, nutrition and fluoride advice
   - diagnose oral motor function problems

Knowledge of

- normal occlusal development
- evaluation of occlusal development and early signs of malocclusion
- diagnosis of pulpal pathology

3. The 6-12 years old

In addition to the guidelines for the 3-6 years old, the student needs to be Competent to

- diagnose the need for preventive measures related to oral hygiene, sealants, nutrition and fluoride intake for this age group
- evaluate normal and abnormal occlusal development
- manage dental trauma and provide preventive measures

Familiar with

- developmental disturbances (MIH, amelogenesis, etc.)

4 The over 12 years old and adolescence

In addition to previous guidelines for younger children, the student needs to be

Competent to

- evaluate growth and development of the dentition (Basic Sciences 3)
- diagnose and treat gingivitis
- diagnose early signs of periodontitis

Familiar with

- temporomandibular joint disorders
- sexual abuse
- illicit drug use
- eating disorders

IV. Behavioural science, patient management sedation, and general anaesthesia

1. Patient management

Competent to

- apply non pharmacological behavior management techniques

for the cooperative child
- obtain informed consent

Knowledge of
- assessment of behaviour management problems
- how to approach multi-cultural ethically related problems
- causes of behaviour management problems, the role of conditioning, pain involvement, dental history.

2. Pain control – Sedation

Pain control (painless dentistry)

Competent to:
- apply non pharmacological behaviour management tecniques for the cooperative child
- administration of topical and local anaesthetics to children (mandibular block, infiltration)
- recognise and treat local and general complications during and after administration of local anaesthetics
- diagnose and treat allergic reactions to local anaesthetics

Conscious sedation[1]

Knowledge of
- informed consent
- instructions to parents or responsible individual(s)
- medical history and physical examination relevant to administration of conscious sedation
- medical appraisal and risk assessment (ASA)
- consultation with appropriate medical staff members as indicated by the patient's condition
- performance of inhalation sedation and sedation by means of pharmacological approach
- management of any reasonable foreseeable complications
- supportive and resuscitation measures

V. Prevention

1. Management of Dental Caries Prevention

Epidemiological and aetiological aspects and clinical characteristics of caries

Knowledge of
- the disease process in the primary dentition and in permanent

dentition
- the role of bacteria
- the role of sucrose
- the role of host-specific defense mechanims
- biochemical events in dental plaque

- predilection sites
- the acute and chronic lesion
- psycho-social aspects and risk assessment

Scientific basis of caries prevention

Competent to

- perform professional preventive care
- possibilities for caries control by modification of diet
- evidence for the influence of the diet on caries
- relative cariogenicity of carbohydrates
- possible modifications of the diet to reduce caries
- limitation of sucrose consumption to mealtimes
- possible replacement of sucrose by other sweeteners in food
- prevention of caries by increasing the resistance of the tooth
  -fluorides
  -mechanisms by which fluoride reduces caries
  -water fluoridation
  -home care
  -professional care
  -fissure sealants
  -remineralisation phenomena
- preventive aspects in restorative dentistry
- prevention of caries by mechanical plaque control
- prevention of caries by antimicrobial plaque control (chlorhexidine and other antiseptics)

2. Management of prevention of periodontal disease.

Insight into the types of periodontal disease.

Competent to

- make diagnosis upon a relevant patient history and clinical examination
- treat gingivitis and early periodontitis

Epidemiology, aetiology and microbiology of periodontal diseases

Knowledge of

- microbial plaque and its significance

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1 As it applies to the legislation of the various countries

- the development of plaque and calculus
- plaque ecology and structure of plaque
- host defences against microbial plaque
- factors influencing plaque formation
- factors modifying the defence system

Prevention of gingivitis/periodontitis

Competent to

- give dental health education to the child and the parents
- provide preventive care for children and adolescents
- perform mechanical and antimicrobial plaque control

Treatment of gingivitis and periodontitis

Knowledge of

- the principles of periodontal treatment

VI. Restorative dentistry

1. Primary teeth

Competent to

- prevent or treat pit and fissure caries using sealants and/or preventive restorations
- prepare cavities in relation to tooth anatomy, caries extend and the characteristics of the restorative material used
- analyse failures to minimize future complications
- choose treatment and restorative material in relation to the child's disease activity, age and cooperation
- diagnose pulp pathology
- perform conservative as well as radical pulp treatments (pulp capping, partial pulpotomy, pulpotomy, pulpectomy)

Knowledge of

- full coverage techniques of primary teeth

Familiar with

- prosthetic replacement of primary anterior teeth
- methods to assess quality of restorations

2. Mixed dentition

In addition to the guidelines for the primary teeth the student should be

Competent to

- prevent or treat pit and fissure caries using sealants and/or preventive restorations

- perform clinical pulpal diagnosis and perform pulp treatment in immature as well as mature teeth

3. Permanent teeth

In addition to former guidelines, the student should be

Competent to

- perform esthetic restorations using adhesive systems
- perform adequate endodontic treatment in the permanent dentition

VII. Orthodontics

1. Aetiology and treatment.

Familiar with

- genetic and environmental factors that influence post-natal development of the dentition and facial growth
- unfavorable influence of environmental factors and their interception
- different modes of breathing
- normal and abnormal speech
- various ways of swallowing and the process of mastication

2. Diagnosis

Competent to

- recognize malocclusions
- recognize indications for orthodontic referral

Familiar with

- all principles of cephalometric analysis

3. Orthodontic treatment

Knowledge of

- Preventive and interceptive orthodontics including the design and use of appliances for space maintainance, correction of dental crossbite and single tooth movement.

Familiar with

- basic principles of static equilibrum and mechanics of materials (wires and springs)
- estimatation of forces produced by specific orthodontic appliances used for preventive and interceptive purposes

VIII. Dental traumatology

Competent to

- Understand the principles of prevention of injuries
- Prescribe and fit a mouth guard
- Examine and assess patients with oral and dental injuries
- Provide emergency treatment of acute oral and dental injuries and recognise indications for referral

Knowledge of

- Diagnose and treat injuries of the hard dental tissues and of the periodontal tissues
- Management of complications of oral and dental injuries

Familiar with:

- The signs of non-accidental injury and how to refer to appropriate child care services

IX. Oral surgery, oral medicine and oral pathology

Competent to

- Recognise the presence of pathological conditions and developmental anomalies of the oral and dental tissues
- Extract primary and permanent teeth
- Provide emergency management of acute oral infection and haemorrhage

Knowledge of:

- Aetiology and treatment of pathological conditions and developmental anomalies of the oral and dental tissues

X. Children with special needs, medically compromised children

Competent to

- Recognise if special requirements are needed for dental management of medically compromised children and those with special needs

Knowledge of :

- Preventive strategies for management of these groups of

children
- Infective endocarditis
- Infections in immunocompromised children

Familiar with:
- comprehensive dental care for severely medically, physically, mentally or socially compromised children and adolescents

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