

SYLLABUS FOR Ph.D IN PEDODONTICS & PREVENTIVE DENTISTRY

COURSE CONTENTS:

1. Applied Anatomy and Histology
 - a. Applied Anatomy in relation to:

Development of face, bronchial arches, muscles of facial expression, muscles of mastication, TMJ, Salivary gland, hard and soft palate, Infratemporal, fossa, Paranasal air sinuses, Pharynx and larynx, Cranial and spinal nerves- with emphasis on trigeminal, facial, glossopharyngeal and hypoglossal nerve.
 - b. Osteology of maxilla and mandible. Blood supply, venous and lymphatic drainage of head and neck, lymph nodes of head and neck. Structure and relations of alveolar process and edentulous mouth
 - c. Genetics-fundamentals
2. Oral Histology
 - a. Development of dentition, Innervations of dentin and pulp
 - b. Periodontium-development, histology, blood supply, nerve supply and lymphatic drainage
 - c. Oral mucous membrane
 - d. Pulp-periodontal complex
3. Applied Physiology and Biochemistry
 - a. Cell
 - b. Mastication and deglutition Food and nutrition
 - c. Metabolism of carbohydrates, proteins and fats, vitamins and minerals, fluid and electrolyte balance
 - d. Pain pathway and mechanism-types, properties

- e. Blood composition and functions, clotting mechanism and erythropoiesis, blood groups and transfusions, Pulse and blood pressure, dynamics of blood flow
 - f. Cardiovascular homeostasis-heart sounds
 - g. Respiratory system: Normal physiology and variations in health and diseases, asphyxia and artificial respiration
 - h. Endocrinology: Thyroid, parathyroid, adrenals, pituitary, sex hormones and pregnancy, endocrine regulation of blood sugar.
4. Applied Pathology
- a. Pathogenic mechanism of molecular level, cellular changes following injury inflammation and chemical mediators, oedema, thrombosis and embolism.
 - b. Hemorrhage and shock
 - c. Neoplasia and metastasis
 - d. Blood disorders
 - e. Histopathology and pathogenesis of dental caries, periodontal disease, oral mucosal, lesions and malignancies, HIV
5. Microbiology
- a. Microbial flora of oral cavity
 - b. Bacteriology of dental caries and periodontal disease
 - c. Methods of sterilization
 - d. Virology of HIV, herpes, hepatitis, parasitology
 - e. Basic immunology - basic concepts of immune system in human body, cellular and humoral immunity, antigen and antibody system, hypersensitivity and Autoimmune diseases
6. Oral Pathology
- a. Detailed description of diseases affecting the oral mucosa, teeth, supporting

tissues and jaws

7. Applied Pharmacology

- a. Definition, scope and relations to other branches of medicine, mode of action, bioassay
- b. Standardization, pharmaco-dynamics, pharmco-kinetics.
- c. Chemotherapy of bacterial infections and viral infections: sulphonamides and Antibiotics.
- d. Local anesthesia
- e. Analgesics and anti-inflammatory drugs, hypnotics, tranquilizers and antipyretics
- f. Important hormones-ACTH, cortisone, insulin and oral anti-diabetics
- g. Drug addiction and tolerance
- h. Important pharmacological agents in connection with autonomic nervous system
- i. Adrenaline, nor-adrenaline, atropine
- j. Brief mention of anti-hypertensive drugs
- k. Emergency drugs in dental practice
- l. Vitamins and haemopoietic drugs

8. Growth and Development

- a. Definitions of Growth & Development
- b. Pedologic anatomy
- c. Stages of Human Growth & Development
- d. Physiology of Growth, Theories of Growth
- e. Prenatal & postnatal development of cranium, face, jaws, teeth & supporting, structures
- f. Growth spurts, Growth trends

g. Growth assessment, Cephalometric evaluation of the growth

h. Factors affecting the physical Growth

9. Child Psychology: Development & Classification of behaviour, personality, intelligence in children, theories of child psychology, stages of psychological child development, fear anxiety, apprehension & its management.
10. Behavior Management: Non- pharmacological & Pharmacological methods
11. Child Abuse & Dental Neglect
12. Conscious Sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry: (Including Other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children)
13. Preventive Pedodontics: Concepts, chair side preventive measures for dental diseases, high-risk caries including rampant & extensive caries - Recognition, Features & Preventive Management, Pit and Fissures Sealants, Oral Hygiene measures, Correlation of brushing with dental caries and periodontal diseases. Diet & Nutrition as related to dental caries. Diet Counseling
14. Dental Plaque: Definition, Initiation, Pathogenesis, Biochemistry, and Morphology & Metabolism.
15. Microbiology & Immunology as related to Oral Diseases in Children: Basic concepts, immune system in human body, Auto Immune diseases, Histopathology, pathogenesis, Immunology of dental caries, Periodontal diseases, Tumors, Oral Mucosal lesions etc.
16. Gingival & Periodontal diseases in Children
 - Normal Gingiva & Periodontium in children.
 - Gingival & Periodontal diseases - Etiology, Pathogenesis, Prevention & Management
17. Pediatric Operative Dentistry
 - Principles of Operative Dentistry along with modifications of materials, past, current & latest including tooth colored materials.
 - Modifications required for cavity preparation in primary and young permanent teeth.
 - Various Isolation Techniques
 - Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like Glass Ionomer, Composites, Silver Amalgam & latest material (gallium)
 - Stainless steel, Polycarbonate & Resin Crowns / Veneers & fibre post systems.
18. Pediatric Endodontics
 - Primary Dentition: - Diagnosis of pulpal diseases and their management – Pulp Capping, Pulpotomy, Pulpectomy (Materials & Methods), Controversies & recent concepts.
 - Young permanent teeth and permanent teeth, Pulp capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used for different procedures.

- Recent advances in Pediatric diagnosis and Endodontics.

19. Prosthetic considerations in Pediatric Dentistry

20. Traumatic Injuries in Children

- Classifications & Importance.
- Sequelae & reaction of teeth to trauma.
- Management of Traumatized teeth with latest concepts.
- Management of jaw fracture in children

21. Interceptive Orthodontics

- Concepts of occlusion and esthetics: Structure and function of all anatomic components of occlusion, mechanics of articulations, recording of masticatory function, diagnosis of Occlusal dysfunction, relationship of TMJ anatomy and pathology and related neuromuscular physiology.
- A comprehensive review of the local and systemic factors in the causation of malocclusion.
- Recognition and management of normal and abnormal developmental occlusions in primary, mixed and permanent dentitions in children (Occlusal Guidance).
- Biology of tooth movement: A comprehensive review of the principles of teeth movement. Review of contemporary literature. Histopathology of bone and Periodontal ligament, Molecular and ultra cellular consideration in tooth movement.
- Myofunctional appliances: Basic principles, contemporary appliances: Design & Fabrication.
- Removable appliances: Basic principles, contemporary appliances: Design & Fabrication
- Case selection & diagnosis in interceptive Orthodontics (Cephalometrics, Image processing, Tracing, Radiation hygiene, Video imaging & advance Cephalometric techniques).
- Space Management: Etiology, Diagnosis of space problems, analysis, Biomechanics, Planned extraction in interception orthodontics.

22. Oral Habits in Children

- Definition, Etiology & Classification
- Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits.
- Management of oral habits in children

23. Dental care of Children with special needs

- Definition Etiology, Classification, Behavioral, Clinical features & Management of children with:
 - Physically handicapping conditions
 - Mentally compromising conditions
 - Medically compromising conditions
 - Genetic disorders

24. Oral manifestations of Systemic Conditions in Children & their Management
25. Management of Minor Oral Surgical Procedures in Children
26. Dental Radiology as related to Pediatric Dentistry
27. Cariology
 - Historical background
 - Definition, Etiology & Pathogenesis
 - Caries pattern in primary, young permanent and permanent teeth in children.
 - Rampant caries, early childhood caries and extensive caries. Definition, etiology, Pathogenesis, Clinical features, Complications & Management.
 - Role of diet and nutrition in Dental Caries
 - Dietary modifications & Diet counseling
 - Subjective & objective methods of Caries detection with emphasis on Caries activity tests, Caries prediction, Caries susceptibility & their clinical Applications
28. Pediatric Oral Medicine & Clinical Pathology: Recognition & Management of developmental dental anomalies, teething disorders, stomatological conditions, mucosal lesions, viral infections etc

29. Congenital Abnormalities in Children: Definition, Classification, Clinical features & Management
30. Dental Emergencies in Children and their Management
31. Dental Materials used in Pediatric *Dentistry*
32. Preventive Dentistry
 - Definition
 - Principles & Scope
 - Types of prevention
 - Different preventive-measures used in Pediatric *Dentistry* including fissure sealants and caries vaccine.
33. Health Education & School Dental Health Programmes
34. Dental health concepts, Effects of civilization and environment, Dental Health delivery system, Public Health measures related to children along with principles of Pediatric Preventive Dentistry
35. Fluorides
 - Historical background
 - Systemic & Topical fluorides
 - Mechanism of action
 - Toxicity & Management.
 - Defluoridation techniques
36. Medicological aspects in Pediatric Dentistry with emphasis on informed concept
37. Counseling in Pediatric Dentistry
38. Case History Recording, Outline of principles of examination, diagnosis & treatment planning

39. Epidemiology: Concepts, Methods of recording & evaluation of various oral diseases.
Various national & global trends of epidemiology of oral diseases
40. Comprehensive Infant Oral Health Care
41. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography
42. Comprehensive cleft care management with emphasis on counseling, feeding, nasoalveolar bone remodeling, speech rehabilitation.
43. Setting up of Pedodontics & Preventive Dentistry Clinic
44. Emerging concept in Pediatric Dentistry of scope of laser/minimum invasive procedures
Pediatric Dentistry.

RECOMMENDED BOOKS

1. Dentistry for the Child & Adolescent, 9th edition 2011 - McDonald
2. Textbook of Pediatric Dentistry, 3rd edition 2006, reprint 2008 - Prof. S.G. Damle
3. Textbook of Pedodontics, 2nd edition 2008, reprint 2009 - Shobha Tandon
4. Clinical Pedodontics, 4th edition, 2003 – Finn
5. Pediatric Dentistry: Infancy through Adolescence, 4th edition, 2005 – Pinkham
6. Child management in Dentistry, 1st edition, 1975 - Wright G.Z.
7. Fundamentals of Pediatric Dentistry, 3rd edition, 1995 – Mathewson
8. Pediatric Dentistry, 2nd edition, 2001 - Wellbury
9. Pediatric Operative Dentistry, 3rd edition, 1986 – Kennedy
10. Principles & Practice of Pedodontics, 3rd edition, 2012 – Aarathi Ra