

PROGRAM OUTCOME MDS

GOALS AND OBJECTIVES OF THE CURRICULUM GOALS.

The goals of the post-graduate training in various specialities is to train the graduate in Dental Surgery who will,

- (i) practice respective speciality efficiently and effectively, backed by scientific knowledge and skill;
- (ii) exercise empathy and a caring attitude and maintain high ethical standards;
- (iii) continue to evince keen interest in professional education in the speciality and allied specialities whether in teaching or practice;
- (iv) willing to share the knowledge and skills with any learner, junior or a colleague; (v) to develop the faculty for critical analysis and evaluation of various concepts and views and to adopt the most rational approach.

OBJECTIVES._

The objective of the post-graduate training is to train a student so as to ensure higher competence in both general and special area of interest and prepare him or her for a career in teaching, research and speciality practice.

A student must achieve a high degree of clinical proficiency in the subject and develop competence in research and its methodology in the concerned field.

The objectives to be achieved by the candidate on completion of the course may be classified as under:–

- (a) Knowledge (Cognitive domain)
- (b) Skills (Psycho motor domain)
- (c) Human values, ethical practice and communication abilities

(a) KNOWLEDGE

- (i) demonstrate understanding of basic sciences relevant to speciality;
- (ii) describe etiology, pathophysiology, principles of diagnosis and management of common problems within the speciality in adults and children;
- (iii) identify social, economic, environmental and emotional determinants in a given case and take them into account for planned treatment;
- (iv) recognise conditions that may be outside the area of speciality or competence and to refer them to the concerned specialist;
- (v) update knowledge by self study and by attending courses, conferences and seminars pertaining to speciality;
- (vi) undertake audit, use information technology and carry out research in both basic and clinical with the aim of publishing or presenting the work at various scientific gathering;

(b) SKILLS:

- (i) take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the condition;
- (ii) acquire adequate skills and competence in performing various procedures as required in the speciality.

(c) HUMAN VALUES, ETHICAL PRACTICE AND COMMUNICATION ABILITIES.

- (i) adopt ethical principles in all aspects of practice;

- (ii) foster professional honesty and integrity;
- (iii) deliver patient care irrespective of social status, caste, creed, or religion of the patient;
- (iv) develop communication skills, to explain various options available and obtain a true informed consent from the patient;
- (v) provide leadership and get the best out of his team in a congenial working atmosphere;
- (vi) apply high moral and ethical standards while carrying out human or animal research;
- (vii) be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed;
- (viii) respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

PART-I: Applied Basic Sciences:

Applied Anatomy of Head and Neck:

- Development of face, paranasal sinuses and the associated structures and their anomalies, cranial and facial bones, TMJ anatomy and function, arterial and venous drainage of head and neck, muscles of face and neck including muscles of mastication and deglutition, brief consideration of structures and function of brain. Brief consideration of all cranial nerves and autonomic nervous system of head and neck. Salivary glands, Functional anatomy of mastication, deglutition and speech. Detailed anatomy of deciduous and permanent teeth, general consideration in physiology of permanent dentition, form, function, alignment, contact, occlusion

- . • Internal anatomy of permanent teeth and its significance.

- Applied histology – histology of skin, oral mucosa, connective tissue, bone, cartilage, blood vessels, lymphatics, nerves, muscles, tongue. Anatomy and

Development of Teeth:

- Enamel – development and composition, physical characteristics, chemical properties, structure.

- Age changes – clinical structure.

- Dentin – development, physical and chemical properties, structure type of dentin, innervations, age and functional changes and clinical considerations. •

Pulp – development, histological structures, innervations, functions, regressive changes, clinical considerations.

- Dentin and pulp complex.

- Cementum – composition, cementogenesis, structure, function, clinical considerations.

- Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.

- Periodontal ligament – development, structure, function and clinical considerations.

- Salivary glands – structure, function, clinical considerations.

Applied Physiology:

- Mastication, deglutition, digestion and assimilation, fluid and electrolyte balance.

- Blood composition, volume, function, blood groups, haemostasis, coagulation, blood transfusion, circulation, heart, pulse, blood pressure, shock, respiration-control, anoxia, hypoxia, asphyxia, artificial respiration, and endocrinology – general principles of endocrine activity and disorders relating to pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.

- Physiology of saliva – composition, function, clinical significance.

- Clinical significance of vitamins, diet and nutrition – balanced diet.

- Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, physiology of pulpal pain, Odontogenic and non Odontogenic pain, pain disorders – typical and atypical.

- Biochemistry such as osmotic pressure, electrolytic dissociation, oxidation, reduction etc. Carbohydrates, proteins, lipids and their metabolism, nucleoproteins, nucleic acid and their metabolism. Enzymes, vitamins and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood lymph and urine.

Pathology:

- Inflammation, repair, degeneration, necrosis and gangrene.

- Circulatory disturbances – ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.
 - Neoplasms – classifications of tumors, characteristics of benign and malignant tumors, spread of tumors.
 - Blood dyscrasias.
 - Developmental disturbances of oral and Para oral structures, dental caries, regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
 - Bacterial, viral, mycotic infections of the oral cavity. Microbiology:
 - Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes relevance to dentistry – strepto, staphylococci, lactobacilli, cornyebacterium, actinomycetes, clostridium, neisseria, vibrio, bacteriods, fusobacteria, spirochetes, mycobacterium, virus and fungi.
 - Cross infection, infection control, infection control procedure, sterilization and disinfection.
 - Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids.
- Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test). Pharmacology:
- Dosage and route of administration of drugs, actions and fate of drug in body, drug addiction, tolerance of hypersensitivity reactions.

- Local anesthesia – agents and chemistry, pharmacological actions, fate and metabolism of anaesthetic, ideal properties, techniques and complications.
- General anesthesia – pre medications, neuro muscular blocking agents, induction agents, inhalation anesthesia, and agents used, assessment of anesthetic problems in medically compromised patients.
- Anaesthetic emergencies
- Antihistamines, corticosteroids, chemotherapeutic and antibiotics, drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimetic drugs, vitamins and minerals (A, B, C, D, E, K IRON), anti sialogogue, immunosuppressants, drug interactions, antiseptics, disinfectants, anti viral agents, drugs acting on CNS.

Biostatistics:

- Introduction, Basic concepts, Sampling, Health information systems – collection, compilation, presentation of data. Elementary statistical methods – presentation of statistical data, Statistical averages – measures of central tendency, measures of dispersion, Normal distribution. Tests of significance – parametric and non – parametric tests (Fisher exact test, Sign test, Median test, Mann Whitney test, Kruskal Wallis one way analysis, Friedmann two way analysis, ANOVA, Regression analysis), Correlation and regression, Use of computers. Research Methodology:
 - Essential features of a protocol for research in humans
 - Experimental and non-experimental study designs
 - Ethical considerations of research

Applied Dental Materials:

- Physical and mechanical properties of dental materials, biocompatibility.
- Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding- recent developments, tarnish and corrosion, dental amalgam, direct filling gold, casting alloys, inlay wax, die materials, investments, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.
- Dental ceramics-recent advances, finishing and polishing materials.
- Dental burs – design and mechanics of cutting – other modalities of tooth preparation. Methods of testing biocompatibility of materials used.

Topics added for basic sciences

- Communication skill,
- Biomedical Waste Disposal,
- Medical Education and
- Basic life support

PART-II: Paper-I: Conservative Dentistry

1. Examination, diagnosis and treatment plan
2. Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices, used in conservative dentistry.

3. Dental caries- epidemiology, recent concept of etiological factors, pathophysiology, histopathology, diagnosis, caries activity tests, prevention of dental caries and management – recent methods.
4. Hand and rotary cutting instruments, development of rotary equipment, speed ranges, hazards.
5. Dental burs and other modalities of tooth preparation- recent developments (air abrasions, lasers etc.)
6. Infection control procedures in conservative dentistry, isolation equipments etc.
7. Direct concepts in tooth preparation for amalgam, composite, GIC and restorative techniques, failures and management.
8. Biologic response of pulp to various restorative materials and operative procedures.
9. Direct and indirect composite restorations.
10. Indirect tooth colored restorations- ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication and gingival tissue management.
11. Impression procedures used for indirect restorations.
12. Cast metal restorations, indications, contraindications, tooth preparation for class II inlay, onlay, full crown restorations. Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials and casting.
13. Direct gold restorations.
14. Recent advances in restorative materials.
15. Esthetics including smile design
16. Management of non-carious lesions.

17. Management of discolored tooth
18. Minimal intervention dentistry.
19. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth.
20. Hypersensitivity-theories, causes and management.
21. Lasers in Conservative Dentistry.
22. CAD-CAM in restorative dentistry.
23. Digital imaging and its applications in restorative dentistry.
24. Clinical Photography.

Paper-II: Endodontics

1. Rationale of endodontics.
2. Pulp and periapical pathology.
3. Pathobiology of periapex.
4. Diagnostic procedures – Orofacial dental pain emergencies: endodontic diagnosis and management, recent advances used for diagnosis.
5. Case selection and treatment planning.
6. Endodontic microbiology
7. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
8. Endodontic emergencies and management.
9. Access cavity preparation – objectives and principles
10. Endodontic instruments and instrumentation – recent developments, detailed description of hand, rotary, sonic, ultra sonic etc.

11. Working length determination, cleaning and shaping of root canal system and recent developments in techniques of canal preparation.
12. Root canal irrigants and intra canal medicaments.
13. Obturation materials, techniques and recent advances.
14. Traumatic injuries and management – endodontic treatment for young permanent teeth.
15. Endodontic surgeries, recent developments in technique and devices and wound healing.
16. Endoperio interrelationship and management.
17. Lasers in Endodontics.
18. Multidisciplinary approach to endodontic situations.
19. Radiology and CBCT in endodontic practice.
20. Procedural errors in endodontics and their management.
21. Endodontic failures and retreatment.
22. Resorptions and its management.
23. Microscopes and Microsurgery in endodontics.
24. Single visit endodontics, current concepts and controversies.
25. Regenerative Endodontics