

MDS COURSE DISCRIPTION
&
CURRICULUM

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Objectives

At the end of 3 years of training the candidate should be able to

1. Create not only a good oral health in the child but also a good citizen tomorrow.
2. Instill a positive attitude and behavior in children
3. Understand the principles of prevention and preventive dentistry right from birth to adolescence.
4. Guide and counsel the parents in regards to various treatment modalities including different facets of preventive dentistry.
5. Prevent and intercept developing malocclusion

Skills

1. Obtain proper clinical history, methodological examination of the child patient, perform essential diagnostic procedures and interpret them, and arrive at a reasonable diagnosis and treat appropriately.
2. Be competent to treat dental diseases which are occurring in child patient.
3. Manage to repair and restore the lost tooth structure to maintain harmony between both hard and soft tissues of the oral cavity.
4. Manage the disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.

Attitudes

1. Develop an attitude to adopt ethical principles in all aspects of Pedodontic practice.
2. Professional honesty and integrity are to be fostered.
3. Treatment care is to be delivered irrespective of the social status, cast, creed, and religion of the patients.
4. Willingness to share the knowledge and clinical experience with professional colleagues.

5. Willingness to adopt, after a critical assessment, new methods and techniques of Pedodontics management developed from time to time, based on scientific researches, which are in the best interest of the child patient.
6. Respect child patient's rights and privileges, including child patient's right to information and right to seek a second opinion.
7. Develop an attitude to seek opinion from allied medical and dental specialties, as and when required.

CURRRICULUM:

Applied Anatomy & genetics:

Anatomy of the scalp, temple and face • Anatomy of the triangles of neck and deep structures of the neck • Cranial and facial bones and its surrounding soft tissues with its applied aspects • Muscles of head and neck • Arterial supply, venous drainage and lymphatics of head and neck • Congenital abnormalities of the head and neck • Anatomy of the cranial nerves 130 130 • Anatomy of the tongue and its applied aspects • Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea, esophagus • Autonomous nervous system of head and neck • Functional anatomy of mastication, deglutition, speech, respiration and circulation • TMJ: anatomy and function .

Applied Physiology

Introduction, Mastication, deglutition, digestion and assimilation, Homeostasis, fluid and electrolyte balance. Blood composition, volume, function, blood groups and hemorrhage, Blood transfusion, circulation, Heart, Pulse, Blood pressure, Normal ECG, capillary and lymphatic circulation, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration. Endocrine glands in particular reference to pituitary, parathyroid and thyroid glands and sex

hormones. Role of calcium and Vit D in growth and development of teeth, bone and jaws. Role of Vit.A, C and B complex in oral mucosal and periodontal health. Physiology and function of the masticatory system. Speech mechanism, swallowing and deglutition mechanism, salivary glands and Saliva

Applied Pathology

Inflammation and chemical mediators, Thrombosis, Embolism, Necrosis, Repair, Degeneration , Shock, Hemorrhage , Blood dyscrasias, Pathogenesis of Dental Caries, Periodontal diseases, tumors, oral mucosal lesions etc. in children.

Applied Microbiology:

Microbiology & Immunology as related to Oral Diseases in Children: Basic concepts, immune system in human body, Auto Immune diseases and Immunology of Dental caries.

Nutrition and Diet

General principles, balanced diet, effect of dietary deficiencies and starvation, protein energy, malnutrition, Kwashiorkor, Marasmus. • Fluid and Electrolytic balance in maintaining hemostasis • Diet, digestion, absorption, transportation and utilization.

Genetics:

Introduction to genetics • Cell structure, DNA, RNA, protein synthesis, cell division • Modes of inheritance • Chromosomal anomalies of oral tissues & single gene disorders

Growth & Development:

Prenatal and postnatal development of cranium, face, jaws, teeth and supporting structures. Chronology of dental development and development of occlusion. Dimensional changes in dental arches. Cephalometric evaluation of growth.

Pediatric Dentistry:

Child Psychology: Development & Classification of behavior, personality, intelligence in children, theories of child psychology, stages of psychological child development, fear anxiety, apprehension its management.

Behavior Management: Non- pharmacological methods.

Child Abuse & Dental Neglect

Conscious Sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry: (Including Other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children

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. Diets & Nutrition as related to dental caries. Diet Counseling.

Dental Plaque: Definition, Initiation, Pathogenesis, Biochemistry, and Morphology' & Metabolism.

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.

Gingivitis Periodontal diseases in Children:

- Normal Gingiva & Periodontium in children.
- Gingival & Periodontal diseases - Etiology, Pathogenesis, Prevention & Management.

Pediatric Operative Dentistry

- Principle 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 material like Glass Ionomer, Composites, Silver, Amalgam & latest material (gallium)
- Stainless steel, Polycarbonate & Resin Crowns / Veneers & fibre post systems.

Pediatric Endodontics:

- a. Primary Dentition: - Diagnosis of pulpal diseases and their management - Pulp capping, Pulpotomy, Pulpectomy (Materials & Methods), Controversies & recent concepts.
- b. Young permanent teeth and permanent teeth, Pulp capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used for different procedures.
- c. Recent advances in Pediatric diagnosis and Endodontics.

Prosthetic consideration in-Paediatric Dentistry.

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.

Interceptive Orthodontics:

- a. 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

- b. Recognition and management of normal and abnormal developmental occlusions in primary, mixed and permanent dentitions in children (Occlusal Guidance).
- c. 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.
- d. Myofunctional appliances: Basic principles, contemporary appliances: Design & Fabrication.
- e. Removable appliances: Basic principles, contemporary' appliances: Design & Fabrication.
- f. Case selection & diagnosis in interceptive Orthodontics (Cephalometric, Image processing, Tracing, Radiation hygiene, Video imaging & advance Cephalometric techniques).
- g. Space Management: Etiology, Diagnosis of space problems, analysis, Biomechanics, Planned extraction in interception orthodontics.

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

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

Oral manifestations of Systemic Conditions in Children & their Management

Management of Minor Oral Surgical Procedures in Children

Dental Radiology as related to Pediatric Dentistry

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.

Pediatric Oral Medicine and Clinical Pathology: Recognitions, Management of developmental dental anomalies, teething disorders, stomatological conditions, mucosal lesions, viral infections etc.

Congenital Abnormalities in Children: Definition, Classification, Clinical features of Management.

Dental Emergencies in Children and their Management.

Dental Materials used in Pediatric Dentistry.

Preventive Dentistry:

- Definition
- Principles
- Scope

Types of prevention

Different preventive measures used in Pediatric Dentistry including fissure sealants and caries vaccine.

Dental Health Education and School Dental Health Programmes.

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

Fluorides:

- Historical background
- Systemic & Topical fluorides
- Mechanism of action
- Toxicity & Management.
- Defluoridation techniques.

Medicological aspects in Pediatric Dentistry with emphasis on informed concept.

Counseling in Pediatric Dentistry

Case History Recording, Outline of principles of examination, diagnosis & treatment planning.

Epidemiology: Concepts, Methods of recording & evaluation of various oral diseases. Various national & global trends of epidemiology of oral diseases.

Comprehensive Infant Oral Health Care.

Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography.

Comprehensive cleft care management with emphasis on counseling, feeding, and nasopalveolar bone remodeling, speech rehabilitation.

Setting up of Pedodontic & Preventive Dentistry Clinic.

Emerging concept in Pediatric Dentistry of scope of laser/minimum invasive procedures .

1ST YEAR Preclinical Work

(Duration - first 6 Months of First Year MDS)

1. Carving of all deciduous teeth
1. Basic wire bending exercises
2. Fabrication of
 - a. Maxillary bite plate / Hawley's'
 - b. Maxillary expansion screw appliance
 - c. Canine retractor appliance
 - d. All habit breaking appliances
 - e. Two Myofunctional appliance
 - i. Removable type
 - ii. Fixed type
 - iii. Partially fixed and removable
 - f. Making of inclined plane appliance
 - g. Feeding appliances
4. Basic soldering exercise I - making of a lamppost of stainless steel wire pieces of different gauges soldered on either side of heavy gauge main post.
5. Fabrication of space maintainers
 - a. Removable type-
 - Unilateral Non - functional space maintainer
 - Bilateral Non-Functional space maintainer
 - Unilateral functional space maintainer
 - Bilateral functional space maintainer
 - b. Space Regainers -
 - Hawley's appliances with Helical space regainer
 - Removable appliance with Slingshot space regainer
 - Removable appliance with Dumbbell space regainer
 - c. Fixed Space maintainers
 - Band & long loop space maintainer
 - Band & short loop space maintainer
 - Mayne's space maintainer

- Transpalatal arch space maintainer
 - Nance Palatal holding arch
 - Nance Palatal holding arch with canine stoppers
 - Gerbier space regainer
 - Distal shoe appliance
- a. Active space maintainers
 - b. For guiding the eruption of first permanent molar - rags
 - c. Arch holding device
 - d. Functional space maintainer
6. Basics for spot welding exercise
 7. Collection of extracted deciduous and permanent teeth
 - a. Sectioning of the teeth at various levels and planes
 - b. Drawing of section and shapes of pulp
 - c. Phantom Head Exercise: Performing ideal cavity preparation for various restorative materials for both Deciduous and permanent teeth.
 - d. Performing pulpotomy, root canal treatment and Apexification procedure.
 - i. Tooth preparation and fabrication of various temporary and permanent restorations on fractured anterior teeth.
 - ii. Preparation of teeth for various types of crowns
 - iii. Laminates/veneers
 - iv. Bonding & banding exercise
 1. Performing of behavioral rating and IQ tests for children.
 2. Computation of: - Caries index and performing various carrier activity test. Oral Hygiene Index
Periodontal Index
Fluorosis Index
 10. Surgical Exercises:
 - a. Fabrication of splints.
 - b. Type of Wiring
 - c. Suturing.

Taking of periapical, occlusal, bitewing radiographs of children, Developing and processing of films, thus obtained Tracing of soaks as observed on Cephalometric radiographs and drawing of various planes and angles, further interpretation of Cephalometric radiographs is analysis.

11. Mixed dentition cast analysis

12. Library assignment

13. Synopsis

PRE-CLINICAL PROGRAM AM SCHEDULE

(Duration - first 6 Months of First Year MDS)

SL No.	EXERCISE	SCHEDULE
1.	Carving of all deciduous teeth	1 Week
2.	Basic wire bending exercises	1 Week
3.	Construction of passive components	1 Week
4.	Construction of active components	1 Week
5.	Construction of labial bows	3 days
6.	Fabrication of appliances for minor tooth movement	3 Weeks
7.	Myofunctional appliances	2 Weeks
8.	Removable habit breaking appliances	2 Weeks

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9.	Removable space maintainer	2 Weeks
10.	Removable space regainers	2 Weeks
11.	Fabrication of (Obturator, Bite guard ,Acrylic splint)	3 Days
12.	Band pinching, soldering and spot-welding exercises	2 days
13.	Fabrication of fixed space maintainer	2 Weeks
14.	Fixed habit breaking appliances	3 days
15.	Fixed space regainer	3 days
16.	Sectioning of teeth at various levels and planes	2 days
17.	Phantom head exercises	1 week
18.	Endodontic exercises	3 week
19.	Practice of incisions and suturing exercise	1 day
20.	Types of wiring	1 day
21.	Performing of behavioral rating and IQ tests for children	1 day
22.	Computation of index	1 day
23.	Mixed dentition model analysis	1 day
24.	Radiography – Periapical, Occlusal, Bitewing radiograph in children & Developing and processing of films	1 day
25.	Cephalometric tracing	1 day

ACTIVITY	MINIMUM REQUIREMENTS
Seminar	5 Presentations per academic year
Journal Review	5 Presentations per academic year
Case Presentations	5 Presentations per academic year
Article Publication	1 during the course

Paper Presentation	2 during the course
Poster presentation	1 during the course
Pedagogy	5 hours during the course
Library Dissertation	1 during the course
Thesis	1 during the course
Short Study	1 during the course

Clinical work Requirements from 7 to 36 months

The following is the minimum requirement to be completed before the candidate can be considered eligible to appear in the final M.D.S Examinations:-

No,	Clinical Work	Total	7 To 12 Months	13 To 24	25 To 36 Months
1	Behavior Management of different age groups children with complete records.	17	2	10	5
2	Detailed Case evaluation with complete records, treatment planning and presentation of cases with chair side and discussion	17	2	10	5
3	Step-by-step chair side preventive dentistry scheduled for high risk children with gingival and periodontal diseases & Dental Caries	11	1	5	5
4	Practical application of Preventive dentistry concepts in a class of 35-50 children & Dental	7	1	4	2
5	Pediatric Operative Dentistry with	50	30	10	10

	application of recent concepts. (a). Management of Dental Caries (1)				
	Class I (I) Class II	100	40	50	10
	(II) Other Restorations 100	20	50	30	
	(b) Management of traumatized	15	04	06	05

	anterior teeth				
	(c) Aesthetic Restorations	25	05	10	10
	(d) Pediatric Endodontic				
	Procedures -				
	Deciduous teeth				
	Pulpotomy / Pulpectomy	150	30	50	70
	Permanent Molars	20	3	7	10
	Permanent incisor	15	2	3	10
	Apexification &	20	02	08	10
	Apexogenesis				
6	Stainless Steel Crowns	50	10	20	20
7	Other Crowns	05	01	02	02
8	Fixed Space Maintainers	30	08	12	10

9	Removable Space Maintainers	20	05	07	08
10	Functional Maintainers	05	01	02	02
11	Preventive measures like fluoride applications & Pit & Fissure Sealants applications with complete follow – up and diet	20	08	08	04
12	Special Assignments (i) School Dental Health Programmes.	03	01	01	01
	(ii) Camps etc.,	02	01	01	

13. Library usage

14. Laboratory usage

15. Continuing Dental Health Program

16. (The figures given against SI. No. 4 to 12 are the minimum number of recommended procedures to be performed)

Monitoring Learning Progress

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment shall be done using checklists that assess various aspects. Checklists are given Section IV.

UNIVERSITY SCHEME OF EXAMINATION

M.D.S. Degree examinations in any branch of study shall consist of dissertation, written paper (Theory) Part I at the end of 1st year and Part II at the end of 3 years Practical/Clinical and Viva voce.

Theory: Part-I: Basic Sciences Paper - 100 Marks

Part-II: Paper-I, Paper-II & Paper-III - 300 Marks (100 Marks for each Paper)

Written examination shall consist of Basic Sciences (Part-I) of three hours duration shall be conducted at the end of First year of MDS course. Part-II Examination shall be conducted at the end of Third year of MDS course.

Part-I : Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics, Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II Examination shall consist of Paper-I, Paper-II and Paper-III, each of three hours duration.

Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each.

Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows:

DISTRIBUTION OF MARKS:

Theory:

1) Part I University Examination (100 Marks):-

There shall be 10 questions of 10 marks each (Total of 100 Marks)

2) Part II (3 papers of 100 Marks):-

- i. Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)
- ii. Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)
- iii. Paper III: 2 out of 3 essay questions (50 x 2 = 100 Marks)

Practical and Clinical Examination: 200 Marks

Viva-voce and Pedagogy: 100 Marks

A. Practical Examination 200 Marks

First Day:

Case Discussion, Pulp Therapy i.e. Pulpectomy on a Primary Molar.

Case Discussion	20 marks
Rubber Dam application	10 marks
Working length X-ray	20 marks
Obturation	20 marks
Total	70 marks

Case Discussion, Crown preparation on a Primary Molar for Stainless steel crown and cementation of the same.

Case discussion	10 marks
Crown Preparation	20 marks
Crown selection and Cementation	20 marks
Total	50 marks

Case discussion, band adaptation for fixed type of space maintainer and-impression making.

Case discussion	20 marks
Band adaptation	20 marks
Impression	20 marks
Total	60 marks

Second Day:

1. Evaluation of Fixed Space Maintainer and Cementation : 20 marks

B. Viva Voce: 100 Marks

i. Viva-Voce examination : 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic is given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.