

SYLLABUS

P.G.DIPLOMA IN DEVELOPMENTAL NEUROLOGY

Paper I: EARLY CHILD DEVELOPMENT

Part-A: Developmental Neuro-psychology

Unit -1: Principles, Stages and theories of Development

Need & importance of the study of child development, Freud-psycho-sexual stages, Erickson-psychosocial theory, Piaget - cognitive theory, Skinner - operant conditioning.

Unit-2: Growth & Development - Factors affecting

Physical growth, pre-natal development, patterns, intra uterine growth, growth charts and growth retardation, developmental maturation. Heredity, genetic factors, metabolic factors, intra uterine infections, low birth weight & other biological factors, environmental factors, environmental health hazards, teratology of drugs, intra cranial infections, perinatal trauma, hypoxic ischemic encephalopathy, Intra cranial haemorrhage, metabolic encephalopathy - hypoglycemia, hyperbilirubinaemia, metabolic acidosis.

Unit-3: Brain Development & Developmental Disorders

Embryology, Genes associated with brain development, Brain anomalies-Neural tube defects, cerebral malformations, craniosynostosis, craniovertebral anomalies, hydrocephalus, migrational disorders, porencephaly, congenital and acquired hydrocephalus.

Part.B: Cognitive Development & Development of Special Senses.

Unit.1: Development

Development of vision, milestones of visual development, visual acuity during first five years, developmental abnormalities of the eyes, Development of hearing, Localisation of sound during infancy, common congenital malformations of the ear, Learning and memory, physiological psychology of learning and memory.

Unit.2: Personality & Social development

Development of personality pattern, personality traits, self-concept, important personality determinants, influence of school on personality, hazards in personality development, Social development - Essentials of socialisation, influence of social group, patterns of social development, common forms of social behaviour, hazards in social development and social adjustment

Unit.3: Emotional development & development of play.

Patterns of emotional development, conditions responsible for emotional development, characteristics of children's emotions, common emotional patterns and hazards in emotional development, Characteristics of child's play, common play activities of childhood and hazards in play development.

Part.C: Pre-school Education

Unit-1: Theoretical basis of pre-school education

Introduction, current scenario, Developmental oriented pre-school education, principles and practice guidelines, concept development, play and play therapy, age appropriate toys, guidelines for crèche management, Preschool clinic concept - Introduction, need, components - skill assessment, guidelines for preschool management.

Unit.2: Special education.

Theoretical concepts in special education, Theories of learning, introduction, classical conditioning, unconditioned stimulus, & response, conditioned response, conditioning principles, operant conditioning, principles, reinforcing stimulus, operant response, discriminative stimulus learning complex responses, concept of chaining, two factor theory, social learning theory, cognitive psychology of learning, implication for human development.

Unit.3: Factors affecting learning

Family and school environment, intelligence, motivation , perception, attention, memory, organising preschool for children needing special care, principles and practice Montessori method -introduction , feasibility in preschool and special education.

Paper.II : DEVELOPMENTAL CLINICAL NEUROLOGY

Part. A: Disability and Cerebral Palsy

Unit.1: Young children with special needs.

Introduction, antecedents, prevalence, type of disability, physical, mental, visual, hearing, language disorders, learning disability, hyperactivity, Psychomotor retardation, early onset neurodegenerative disorders & regression, progressive encephalopathy - onset before two years, progressive movement disorders,(dystonia).

Unit.2: Cerebral palsy & Assessment

Cerebral Palsy- definition, aetiology, types, associated problems, principles and organisation of treatment, co-morbid conditions, and complications, chest physiotherapy, essentials of rehabilitation, activities of daily living, community based rehabilitation. Assessment- Goals, Medical history, range of motion & deformities, functional assessment, developmental level, neuromuscular tone, synergies & asymmetries, balance, co-ordination, respiratory, hand function, gait.

Unit-3: Neuro developmental therapy (NDT)

Principles, range of motion, strength, musculoskeletal alignment, postural control and reactions, tone, sensory system function (visual, auditory, tactile, proprioceptive), normal & abnormal development, muscle physiology, neurodevelopmental patterning, gait, abnormal gait in cerebral palsy, habilitation of neurological problems in children, occupational therapy for activities of daily living, gait training, bracing.

Part.B: Developmental Delay - Associated Conditions

Unit.1: Seizure and associated disorders

Neonatal seizures, myoclonus and myoclonic seizures, anticonvulsant therapy. Intracranial infections, haemorrhage, trauma- HIE, outcome.

Hydrocephalus, Microcephaly congenital hemiplegia, Downs' syndrome, hypothyroidism, common inborn errors of metabolism

Unit.2: ADHD & Pervasive developmental disorders

Attention Deficit Hyperactive Disorders (ADHD) – Diagnosis & management, Pervasive developmental disorder - childhood autism syndrome - Childhood autism, Rett's disorder, Childhood disintegrative disorder, Asperger's Syndrome, PDD not otherwise specified.

Unit.3: Chronic neurological disorders

Common childhood motor neurone disease, progressive ataxia, early onset neuromuscular disorders, neurocutaneous syndromes, Progressive movement disorders and chronic neuromuscular disorders with developmental delay, common neurodegenerative disorders of early childhood and developmental regression, Introduction to Disability Nursing, Role of other systems of medicine.

Part.C: Special senses and Speech

Unit.1: Blindness & deafness

Blindness, terminology, prevalence and causes

Deafness, terminology, prevalence congenital causes and perinatally acquired causes of deafness.

Unit-2: Assessment of speech, language and speech therapy

Pre-requisites for speech development, communications & modes of communications, speech & language –definitions, theories of speech & language development, course of language acquisition, speech sound acquisition, speech milestones, speech characteristics – phonology, semantics, syntax & pragmatics, phonology-place of articulation, manner of articulation, consonants and vowels, voice, nasality, assessment of speech, language assessment – Receptive Expressive Emergent Language Scale (REELS), language stimulation & speech therapy.

Unit.3: Speech Disorders

Developmental disorders of speech & language. Dysrhythmias, phonological delay disorder (dyslalia), dyspraxia, congenital dysphasia, auditory verbal agnosia, and word deafness, semantic-pragmatic disorder, congenital aphasia, acquired aphasia, speech disorders-articulation disorders, voice disorders & fluency disorders.

Paper. III: ASSESSMENT AND INTERVENTION IN DEVELOPMENTAL NEUROLOGY

Part.A: Developmental Assessment and Infant Stimulation

Unit-1: Early Detection-Need & Developmental Tools

Prevention of low birth weight-life cycle approach, antecedents of developmental delay, developmental observation card, CDC Grading for motor mile stones, Trivandrum Developmental Screening Chart, Denver Developmental Screening Test, DASII, concept of DQ. Neuro-developmental evaluation – Amiel-Tison method, Infant Motor Screen, vision & hearing assessment – STYCAR Hearing & Vision test, Retinopathy of pre-maturity.

Unit-2: Developmental Therapy

CDC model infant stimulation-vision, hearing, tactile, vestibulo-kinaesthetic, early intervention program for developmental delay – head holding, sitting, standing, efficacy of early intervention program, organizing neuro-developmental follow-up programs, Development Friendly Well Baby Clinic.

Unit.3: Research methods for neuro-developmental follow-up

Research designs - Cohort, Randomized Controlled Trial (RCT), case control studies, diagnostic test evaluation, research protocol preparation. Data collection process, Survey, sampling technique, questionnaire design, in-depth interview, focus group discussion, Ethical aspects, Statistical analysis - Descriptive statistics, statistical testing and inferences, multivariate analysis, report writing.

Part.B Pre-school Assessment**Unit 1: Assessment & Intervention**

School Readiness - Nursery Evaluation Scale Trivandrum (NEST), Home Observation for Measurement of Environment (HOME) scale, Home Screening Questionnaire (HSQ), Developmentally Appropriate program for below 3, Pre-learning Skills, reading and writing readiness, model pre-school.

Unit 2: Individualized education program

Introduction, Informal assessment, individualized education program, curriculum, task analysis, short term goals, long term goals, progress evaluation.

Unit-3: Services for children with special needs

Designing classrooms for children with special needs, developmental approach for children with special needs adapting classrooms for all children special education types, concept of special school, integration, home based intervention strategies, Montessori method and children with special needs, pre-school programme for hearing impaired. Open education and young children with special needs, promotion of pre learning skill development. anthropometric measurements, IQ assessment, Medical assessment multi-disciplinary approach, intervention, CDC model for pre-school intervention.

Part C-Counselling**Unit-I: Psychological problems of the children with special needs**

Introduction, adjusting with family, adjusting with peers, other adjustment problems, Common behavioural problems - Introduction, causes, adjustment problems of children, psychosomatic disorders, emotional disorders, conduct disorders, habit disorders, others.

Unit-2: Process & Techniques of Counselling

Introduction, definition, steps, characteristic of counsellor, counsellor-counselee relationship, different approaches, counselling process. Behaviour Modification & systematic desensitisation, Assertion training & Operant Conditioning technique, Cognitive Behaviour modification.

Unit-3: Learning Disability - counselling aspects

Introduction to learning disabilities, causes of learning disability Dyslexia, Dysgraphia, Dyscalculia, listening and oral expression disorders. Assessment of learning disability, and developing a remedial programme. Resources for learning disabled

Paper.IV: DIAGNOSTIC MODALITIES-PRINCIPLES & PRACTICE

Part-A: Pre-natal diagnosis (PND) & Therapy

Unit-1: Indications for PND

Bad obstetric history, Low birth weight/IUGR, Micro-cephaly, Congenital Cataract, Neonatal Seizures, Chromosomal abnormalities-Down's syndrome, hypothyroidism, metabolic disorders & intra uterine infections.

Unit-2: Techniques

Maternal serum screening for birth defects, Aminocentesis, Cordocentesis, chorionic villus sampling, foetal blood sampling, thyroid function tests, metabolic screening, Urine aminogram, screening for PKU, HIV-testing TORCH Screening.

Unit-3: Cyto genetics

Karyotyping, DNA technology, ethical principles and values, consumer perspectives, prenatal genetic counselling, treatment of Intrauterine infections, treatment of metabolic diseases.

Part-B: Radio Diagnosis & Therapy

Unit-1: Sonology & Radio Imaging: Foetal sonography & Doppler velocimetry - indications, principles, techniques, limitations, complications, CT SCAN, MRI, PET, SPECT SCAN

Unit-2: Foetal Therapy: Indications, principles, techniques, limitations, complications and outcome.

Unit-3: Disorders & Outcome: Foetal hypoxia, intra ventricular haemorrhage, Sub-Arachnoid Haemorrhage, IUGR Structural malformations of the brain & spinal cord, Intracranial calcifications, hydrocephalus, Meningitis viral (Herpes) & pyogenic, Neurodegeneration Diseases(grey & white), metabolic disorders, Neural migrational disorders.

Part-C: Neuro-Diagnosis & Therapy

Unit-1: Common neurological disorders

Neonatal seizures, Seizures in early infancy & childhood , myoclonic seizure-different types, Epileptic encephalopathy, Metabolic encephalopathy (werdnig hofmann),floppy infant, spinal muscular atrophy, congenital myopathies, congenital muscular dystrophies, congenital, myotonias, hemiplegia, diplegia.

Unit-2: Electro physiological & biochemical studies

Electroencephalogram in the diagnosis of Seizures, EMG in the study of myopathies, SCPK levels, LDH levels, Chromosomal & genetic studies to find the gene locus for these abnormalities, EEG, EMG, CPK, Oto Acoustic Emission Test BERA, VEP, Nerve Conduction, Muscle biopsy, Chromosomal & Genetic studies.

Unit-3: Recent advances in therapy

Inborn errors of metabolism, ADHD, Autism, Epilepsies, Myopathies, Chromosomal & genetic abnormalities.

Paper.V: Project Work

References:

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2. Kelvin, Seifert L, Robert JH, et.al. Life Span Development, 2nd Edition. Published by Houghton Mifflin Company, Newyork, 2000.
3. Behroman, Kliegman J. Nelson Test Book of Pediatrics, 17th Edition. Saunders, 2004.
4. Forfar, Arneils. Text Book of Pediatrics, 6th Edition. Published by Churchill Livingstone, 2003.
5. Banga AK, Banga Usha. Child Development & Developmental Diagnosis, 1st Edition. Published by Jaypee Brothers, NewDelhi, 1991.
6. Wagner K, Silber K. Physiological Psychology, 1st Edition. Published by Bioscientific publishers, London & Newyork, 2004.
7. Parthasarathy A, Nair MKC, PSN Menon (Eds). IAP Textbook of Pediatrics, 3rd Edition. Published by Jaypee Brothers, News Delhi, 2005
8. Nair MKC. Child Development 2000 and beyond, 1st Edition. Published by Prism Books Private Limited, Bangalore, 2000.