UNIT 4 CHILDREN WITH LOCO MOTOR, MULTIPLE AND OTHER DISABLING CONDITIONS

4.1 INTRODUCTION

Every day we interact with our immediate environment with different people, various kinds of objects and involve ourselves in various kinds of activities. The environment, sometimes, may not be suitable to meet our requirement and may hinder our performance or participation in a task. For example, a car driver finds the road not appropriate for his smooth driving, an official using wheelchair finds his office room inaccessible and uncomfortable to work due to inappropriate size of passage in the corridors to move around, inappropriate height of table and electric switches to work with despite an accessible ramp and toilets made in his office building. Similarly, people around us have uniqueness in their appearances, personalities, thoughts, needs, occupations and interactions with others. For example, some people may have fair complexion, some have dark complexion; some may require headphones to listen to their mobile phones, some may be comfortable in using hearing aids. Among several types of activities , we may find ourselves not be fit to participate in some of the activities. For example, an individual may not know to swim hence cannot participate in swimming competition but he/she may be good at drawing and painting and can efficiently participate in painting competition. We all have various kinds of needs. We all have various kinds of skills and competencies. We all find limitations when we interact with our environment. We all try to adapt ourselves to our immediate environment to live a comfortable life. A person with a disability also, tries to adapt him/herself as per the environmental demands, while interacting with his/her environment and experiences barriers that hinder his participation in some activities. In this unit, you will learn about some of the several types of disabilities and their specific nature. You will also learn to assess the needs of these children and plan intervention programmes to prepare them for full and effective participation in school as well as society on an equal basis with others.

4.2 OBJECTIVES

After reading this unit, you will be able to:

- Identify the locomotor disabilities and assess the needs of children with locomotor disabilities.

- Plan intervention programmes for children with locomotor disabilities
- Identify children with multiple disabilities and assess the needs of children with multiple disabilities .
- Plan intervention programmes for children with multiple disabilities
- Identify the other disabiling conditions and assess their needs
- Plan intervention programmes for children with other disabiling conditions.

4.3 LOCO MOTOR DISABILITIES: NATURE, NEEDS, ASSESSMENT AND INTERVENTION

'Locomotor Disability' refers to a person's inability to execute distinctive activities associated with movement of self and manipulation of objects resulting from affliction of musculoskeletal and/or nervous system. The percentage of persons with locomotor disability is the highest among the total disabled population of India constituting a sizable portion of 20.3 percent population of total individuals with disabilities. The persons with locomotor disabilities face difficulties to use one or more of his/her extremities, or may have lack of strength to walk, grasp, or lift objects. Assistive devices like wheelchair, crutches, or a walker may be utilized to aid in their mobility. Locomotor disability could be the result of disease, injury or malformation of bones, joints, muscles, nerves, spinal cord and brain. This may be Congenital or acquired. Some of the examples of congenital locomotor disability are congenital Talipes Equinovarus (CTEV) or Club foot, congenital dislocation of hip, congenital malformation or deformities of bones and joints. Some examples of acquired locomotor disability are due to tuberculosis spine or joints, poliomyelitis and rickets. Causes are many in acquired conditions like infections, trauma, vascular, metabolic and genetic. The major types of locomotor disabilities are musculoskeletal, congenital malformation, accidents and other chronic disabilities such as polio, rickets, spinal bifida, congenital deformities of hip/s and limb/s, deformities of spine, muscular dystrophy and amputation.

Poliomyelitis, known as polio in short, is an infectious disease. It is caused by a virus and affects the spinal cord and damages the motor cells. It is transmitted by droplet infection and oral ingestion. The incubation period varies from 3-30 days. During the period 7-14 days is the most important interval between infection and clinical illness. After polio, paralysis/weakness of affected limb/s is more usual and one or two limbs get affected.

Figure: Affected lower limbs of a polio affected girl.

The lower limbs are more often affected than the upper limbs. The paralyzed muscles show atrophy i.e. become thin due to lack of nutrition. The imbalance of muscles leads to deformity and contractures. No sensory problem occurs in children affected by polio as the sensory nerves are not involved. The effect of paralysis on growing

limbs results in poor and slow growth and this leads to shortening of limbs, long standing contractures of joints resulting in the separation of joint. The effect of unsupported walking on weak joints may lead to secondary deformities and contractures.

Rickets in children is caused due to deficiency of Vitamin D. It can be seen amongst children usually between 6 months to 24 months of age and above. This deficiency leads to softening of bones of limbs resulting in deformity of lower limbs – commonly, bow legs - and upper limbs. This is a preventable disease and can be treated medically if it is detected at an early stage.

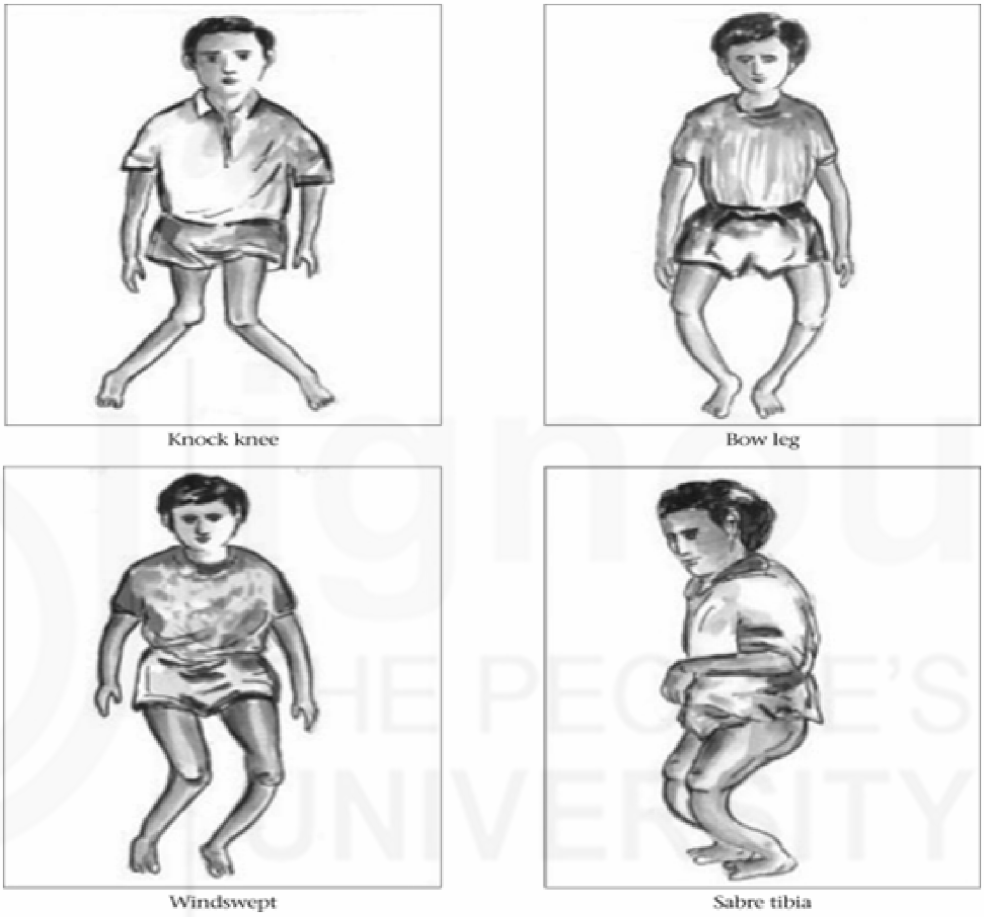

Figure: Different Conditions.

Spina Bifida is a congenital midline defect resulting from failure of the bony spinal column to close completely during fetal development. The development of the spine and spinal column in children with spina bifida is incomplete. The resulting damage to the nerves generally causes paralysis and/or lack of function or sensation below the site of the defect.

Figure: Clump of hair grown in the spinal area of child with spina bifida

Muscular Dystrophy is a group of hereditary genetic degenerative muscle disease causing a progressive weakening and wasting away of muscles tissues that move the human body. Persons with multiple dystrophy have incorrect or missing information in their genes, which prevents them from making the proteins they need for healthy muscles. It is characterized by progressive skeletal muscle weakness, defects in muscle proteins, and the death of muscle cells and tissue. The early common sign known as 'Gower's Sign' is generally seen in children with muscular dystrophy when they try to get up from the ground from sitting to a standing position by grasping and pulling on body parts from knees to hips, walk up their thighs with hands (Werner, 1987) until they are in erect position.

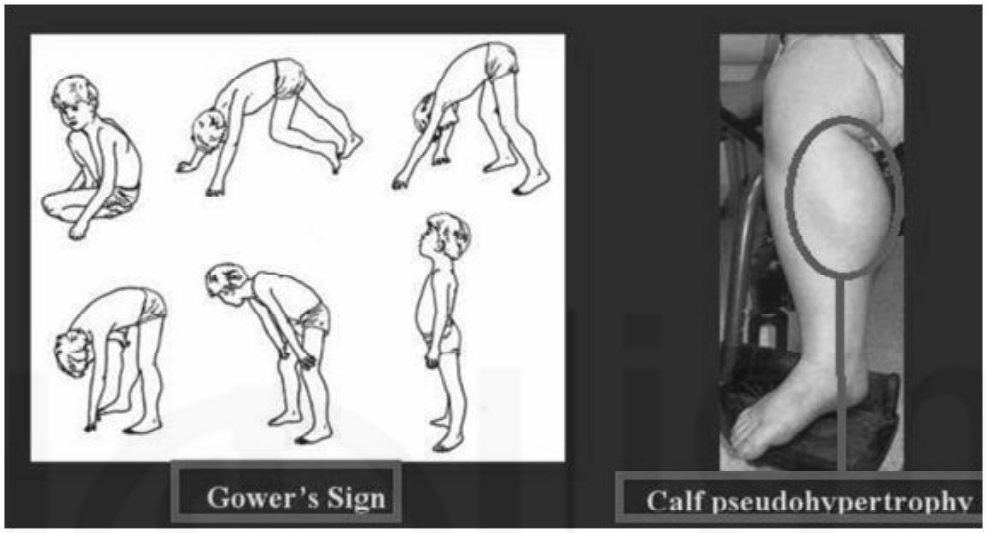

Figure: Progressive weakening and wasting away of muscles in case of muscular dystrophy.

Arthritis is a disease that causes acute inflammation around the joints, its symptoms vary from mild to profound and it can affect children as well as adults. Symptoms accompanied by pain in and around the joints, stiffness of joints, atrophy and joint deformity. The condition may be associated with respiratory and eye problems.

Figure: A child with arthritis receiving physical therapy

There are children with Congenital Talipes Equinovarus (CTEV) or Club foot, Leg-calve-perthes disease, Ostenmyelitis, Arthrogryposis and Osteogenesis imperfect, who face difficulty in moving from one place to another. In **CTEV or Club foot**,

one or both feet turned at wrong angle at the ankle. **Leg-calve-perthes** disease is flattening of the head of the femur or hip joint. Osteomyelitis is bacterial infection of the bone. In **Arthrogryposis,** muscles of the limbs are missing or smaller and weaker than normal. In **Osteogenesis imperfecta,** bones are formed improperly and break very easily. Some of them are severely affected and bedridden, but are very intelligent. If given opportunity, many can learn to do a lot of things for themselves even with their severe disability. Often, they try hard and are eager to learn.

Figure: Club foot

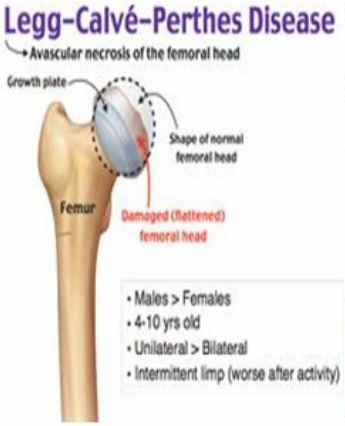

Figure : Leg-calve-perthes disease

Figure: An infant with Leg-calve-perthes disease

Congenital malformation appears in babies born with a defect or malformation of any body part/organ system like congenital dislocation of hip, extremely short/missing limbs, hands and feet directly attached to the torso.

Traffic accidents, domestic accidents, bullet injuries, explosions, sports injuries and natural catastrophes like earthquakes, floods, and landslide are the ways children and youth **acquire disabilities.** The result of these accidents may be neurological, amputation (loss of body parts/limbs) or disfigurement of the body.

Activity I

1. Collect the photographs of children with polio, rickets and muscular dystrophy and make a note on their physical characteristics.
2. Distinguish between congenital malformation and acquired amputation/ disfigurement of the body.

Nature and Needs of Children with Locomotor Disabilities

Children with locomotor disability may have following difficulties which restrict their bodily movement as the way other children do:

1. The impaired strength, speed, endurance, coordination and manual dexterity may result in need for medical and therapeutic interventions and require attention for physical accessibility to the environment around including academic tasks such as reading, writing, note taking, test taking and computing and physical participation in group project and activities.
2. Impaired range of motion and control of limbs may result in a need for continuous physical therapy and occupational therapy exercises and require planned intervention for optimum performance in academic tasks and class room activities.
3. Impaired mobility may result in use of aids such as wheelchair, walker, crutches, splints and communication devices. The use of these aids requires all environments be accessible.

Assessment of Children with Locomotor Disabilities

Assessment is a continuous process for understanding the performance of an individual, and to plan the required services for him/her. Assessment in general is a process of collection of information about an individual or a group and taking a decision for that individual or group for future course of action. Collection of Information regarding the individual includes information such as personal history, the past achievement, the environment s/he is living in, the resources available within his reach and current performance in different skills. This information could be collected by techniques such as a) taking personal history, b) administering tests, c) observation of the child, d) interview with the child, parents and caretakers. Information being collected should be analyzed by the team of professionals. Assessment reports must be documented with recommendations for the therapists, teachers and parents/ caregivers.

In case of children with locomotor disability, physical/medical assessment should be conducted by trained medical and rehabilitation professionals. They must use standardized assessment tools. The affected muscles, limbs, joints, spine and other body parts, the associated deformity and contracture and other problems, are required to be assessed thoroughly by the respective medical professionals to make the initial diagnosis of the disability and providing interventions. A neurologist may be needed for the management of the neurological conditions, whereas for problems in muscles, joints and spine orthopedics, physical medicine and rehabilitation specialist must be consulted. Therapists' like physiotherapists, occupational therapists and speech and language therapist are essential for assessment and management of physical and speech and language related problems. For a better link between the family and the professionals, role of a social worker is also essential. Initial case history taking and serving as a ' case manager' is the main work of a social worker. He/she also helps the community to know the concessions and benefits for children with locomotor disabilities and their family, given time to time by the Central as well as the State governments and takes an active part in creating awareness. For adolescents in their later years and adults, vocational instructor takes the role of case coordinator.

Intervention

Medical management and corrective surgery are required if a child has contracture and deformities. Then s/he needs corrective surgery for reducing/removing contracture and deformities.

Physical Therapy: This is meant for enhancing motor skills. It is used to strengthen underlying muscles, and teach proper or functional motor patterns. Physical management should include gentle mobilization of affected joints and restore physical abilities, mobility, sensory loss and to ensure bowel and bladder control. Some of the physiotherapeutic exercises may include passive movements of affected limbs, active movements, passive stretching of affected muscles, joints to prevent contractures.

Occupational Therapy: Occupational therapy is for developing fine motor skills and daily living activities, primarily focusing on the hands and arms. These therapists can also guide in feeding techniques and adaptations (self-feeding or otherwise) and for mobility using wheelchair too. Providing and teaching simple exercises and positioning for functional activities are the utmost important tasks of the occupational therapists.

Prosthetics and Orthotics: Prosthetics and orthotics services assist in correct fittings of calipers, shoes or splints and correct mobility aids. It also describes the method of practice of how and when to use them.

Prosthetics implies the science dealing with artificial replacement of the lost body part either congenitally or due to amputation which includes total limbs, figures, partial hand, partial foot, eyes, nose, ear, breast and so on. Whereas Orthotics implies the science dealing with mechanical correction of orthopedic deformities, realignment, redirection of lines of force action in the body, support of weak parts, prevention of unwanted movement, relieving weight borne by certain body parts, and so on.

Figure: Prosthetics and orthotics engineers making artificial limb

Speech and language therapy

Speech and language therapy is used for improving spoken and alternative communication. Some speech therapists have additional training as oral motor specialists, and these can help with more serious issues with feeding, breathing, swallowing, and oral sensitivity, breathing tasks, developing the use of rhythm to help gain greater control over problems like restricted or involuntary movements.

Access and a Barrier-Free Environment

As a mandatory requirement of barrier free school environment after implementation of Right to Education Act, 2009 and to ensure such barrier free environment for children with locomotor disability, especially for children who use a wheelchair, who use a rollator, tricycle, a walker, crutches or walking sticks, we must ensure their access for getting in and out of the school, getting on and off transportation (ramp, seat belts), moving within the school and in different class rooms, going to toilet and play ground, eating and drinking comfortably and providing furniture as per their requirement. It is also essential to create a supportive environment in the school by changing attitude of other children, teachers and other staff who are in contact with the children with locomotor disability.

Wheel Chairs

Figure: Wheelchair

Figure: Tricycle

Figure: Figure: Rollator

Figure: Kaye Walker

Figure: Walker

Figure: Different types of crutches

Figure: Ramps with handrails

Figure: Indication of the entrance of the classroom and junction point with dot-embossed tiles

The school can make a team of teachers, therapists, resource teachers, civil work personnel and the members of school management committee to ensure to make the school accessible and barrier free. The team will ensure building of ramps in the school with suitable gradients, providing suitable graded steps with convenient handrails in the corridors, clearly marked passageways to assist in continuous movement, wide doors and enough space inside the bathroom for easy access for wheelchair users, enough space in the classrooms for their mobility, suitable heights of the installed electric switches and other equipment, suitable heights of the furniture in library, laboratory, dining place and so on. There are clearly laid down guidelines for these by the office of the Chief Commissioner of Disabilities and it should be strictly followed while constructing theses support systems. It should be ensured that unobstructed flooring including slip resistant corridors and an accessible playground and other recreational areas for all children who are using assistive devices and providing appropriate furniture for individual child are made available.

Activity II

A. Match the followings:

A	B
1. Preparing assistive devices	A. Prosthetics
2. Preparing artificial limbs	B. Physical therapy
3. facilitating accessibility to children with locomotor disability	C. Occupational therapy

4. Developing and strengthening mainly the gross motor skills — D. Barrier Free Environment
5. Developing and strengthening mainly the fine motor skills and activities of daily activities — E. Orthotics

B. Make a survey of your locality to find out 2-3 children with different locomotor disabilities. Visit their school(s) and study their individual case file. Assess the present level of functioning of each child and prepare intervention plan.

4.3 MULTIPLE DISABILITIES: NATURE, NEEDS, ASSESSMENT AND INTERVENTION

Multiple Disabilities(MD) refers to more than one of the specified disabilities in the Rights of Persons with Disabilities Act, 2016 including deaf blindness. The combination of disabilities and degree of severity is different in each child. The time at which the disability occurs in the child, what is known as the 'age of onset', may also range from birth through the developmental period. Sometimes children are born with one disability but acquire the second or third disabling conditions during childhood. The characteristics and the needs of the children depend on the nature of combination of the disabilities, the age of onset and the opportunities that have been available to a child in his environment. We can say that just as every child is different, every child with MD is different.

As per the census of India, 2011 data, 7.9 percent of the total disabled population is individuals with multiple disabilities. The percentage of children having severe multiple disabilities is very low. Approximately 0.1 to 1 percent of the general school-age population and approximately 2 percent of the total population of school age children have severe and multiple disabilities.

Types of Multiple Disabilities

Multiple Disabilities vary in nature and hence the needs of such children too will vary. Children with multiple disabilities will have a combination of various disabilities that may include speech, physical mobility, intellectual, visual, hearing, brain injury and possibly others. There are many educational implications for these children. We will discuss some of the commonly found multiple disabilities among children and their educational implications.

Cerebral Palsy (CP)

Cerebral palsy is considered as one of the locomotor disabilities. However, children with cerebral palsy face a combined effect resulting in challenges in various activities such as communication, mobility, performance of day-to-day tasks, participation in academic activities. Some of the children with cerebral palsy have sensory disabilities also like visual disability and hearing disability. So, due to a combination of such problems and disabilities, although disability in mobility is the hallmark of cerebral palsy, it is being discussed here along with other multiple disabilities for better understanding.

"Cerebral" means brain. "Palsy" means a disorder of movement. **'Cerebral palsy'** refers to a group of non- progressive neurological conditions affecting body movements and muscle coordination, caused by damage to one or more specific

areas of the brain, usually occurring before, during or shortly after birth. It occurs in about 2 in 1000 live births. As mentioned earlier, children with cerebral palsy have problems in mobility. Some children may also have associated problems such as intellectual disability, hearing, visual, language and communication. The severity of disability varies from person to person.

Figure: A child with cerebral palsy in a classroom with other children and caregivers

Types of Cerebral Palsy

Cerebral Palsy can be divided into various types according to the site of the brain lesion. Spastic is due to the lesion in the motor area in cerebral cortex. This area is called the motor cortex, if it is damaged, movements tend to become stiff and often slow. This is known as spasticity. Athetoid is due to the lesion in the basal ganglia in midbrain. The area, deep in the brain is called the basal ganglia. If it is damaged, movements are jerky and uncontrolled. This is known as athetosis. Ataxia is due to the lesion in the cerebellum. If it is damaged; movements are uncoordinated and may be shaky. Mixed type is a combination of many of these.

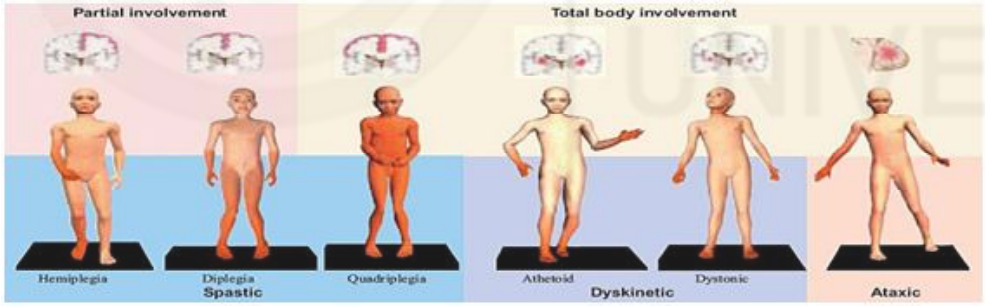

Figure: Types of cerebral Palsy

Based on involvement of limbs, CP can further be categorised as hemiplegia, if one half of the body is affected; diplegia, if involvement of the whole body but the lower half are more affected and quadriplegia, if all the four limbs and body are equally affected.

Activity III

1. Match the followings:

A	B
1. Involuntary movement in the body parts	A. Diplegia
2. Uncoordinated movement in the body parts	B. Spasticity
3. Rigid movement in the body parts	C. Hemiplegia

4.	Restricted movement in more in one half of the body	D.	Athetosis
5.	Restricted movement in more in lower half of the body	E.	Ataxia

Deaf Blindness

Deaf blindness refers to a condition in which people may have a combination of hearing and visual impairment causing severe communication, developmental, and educational problems (RPWD Act, 2016). Deaf blindness may include moderate to profound hearing and significant visual impairments; moderate to profound hearing and significant visual impairments and other significant disabilities; central processing problems of vision and hearing; and progressive sensory impairments/ significant visual impairment; and possible loss of auditory processing mechanisms (associated with severe physical disability or severe cognitive disability) and severe communication delay.

Figure: A student with deaf blindness using Brailler

Types of Deaf Blindness

Some people with deaf blindness have no sight or hearing. Other people who are Deaf blind may have varying degrees of vision and/or hearing. Congenital deaf blindness and acquired deaf blindness are the two types of deaf blindness considered based on age of onset of the disabilities. Congenital deaf blindness is a term used when people are born Deaf blind or when their combined hearing and vision impairment occurs before spoken, signed or other visual forms of language and communication have developed. Congenital deaf blindness occurs because of hereditary & genetic conditions, infection contracted by the mother during her pregnancy, or disease, infection or injury that affects a child early in their development. Some people become deaf blind later in life and this is called acquired deaf blindness. People who are born Deaf or hard of hearing and later experience deteriorating sight, can be categorized under acquired deaf blindness. Usher Syndrome for example, causes deafness or hearing impairment at birth and vision impairment later in life. Some people acquire deaf blindness, who is born vision impaired or blind and

go on to experience hearing loss at a later stage. They are born with vision and hearing that deteriorates at a later stage in their life because of accident, injury or disease and they acquire deaf blindness. The ageing process is also one of the causes of dual sensory loss or deaf blindness.

Deaf blindness affects a person's ability to access information, to communicate and socialize, leading to feelings of isolation. A person may experience low self-esteem, lacking confidence to move about independently and to carry out daily tasks. However, the impact that deaf blindness has on a person varies according to the cause, age of onset, and the skills a person has in using their residual sight and hearing. Experiences and understanding of the world around will be different depending on whether a person was born Deaf blind or acquired vision and hearing loss through deterioration of these senses later in life. The impact on a person who has a severe vision and hearing impairment can be complex.

Activity IV

1. Make a visit to your nearby district Sarva Siksha Abhiyan (SSA) office or Block Resource Centre and collect data of children with deaf blindness, autism and intellectual disability studying in school's closer to your own residence. Visit their schools and observe/interact with children and prepare a behavioural profile of such children.

Assessment of Children with Multiple Disabilities

Assessment is an on-going process to find out the abilities and progress of an individual in different areas of development. It is a systematic way of gathering information about a child's qualities, characteristics, behaviours and the environment to aid in teaching.

Clinical assessment conducted by medical professionals, are used to determine the nature, cause and potential effects of a patient's injury, illness, or wellness. This allows the professionals to compile the best possible treatment options for their patients based on numerous physical, mental and medical factors. Current neurological or medical information is very important when a child is experiencing frequent seizures or medication for such medical problems.

Functional needs assessment is an informal way of collecting information about a child regarding how he/she functions and can be done through observation, interviews or questionnaires. The various areas of functional assessment are motor (fine motor and gross motor), self-help skills (toileting, brushing, bathing, drinking, eating and grooming), communication (expressive and receptive), socialization (at home and community), cognitive (thinking, reasoning, problem solving, memory, functional literacy), orientation and mobility (indoor and outdoor), sensory (vision, hearing, touch, taste, smell), pre-vocational / vocational areas. Medical and Educational records including the results of previous assessment, need to be reviewed.

Intervention

After assessment of children with MD, multidisciplinary services are required based on the needs. Children with MD may require audiology services for evaluation of hearing ability, hearing aids fitting and auditory and speech training. He/she need counselling services related to assessment, diagnosis, educational and rehabilitation plan and follow up procedures. Early identification and assessment of disabilities in children with MD are very important for early start for intervention for prevention of secondary problems and to intervene to reduce the developmental lags. If the child

with MD has medical problems like epilepsy, contracture or deformity. He/she may require immediate medical attention for medication or corrective surgery. Children with MD having difficulties related to mobility, like in case of CP and blindness, they require occupational therapy, orientation and mobility services and physical therapy. Parent counselling and psychological services are required by the parents and family members for better acceptance of the child as well as for implementation of intervention plan. The child may also require psychological services, recreational activities and other rehabilitation services like school health services, social work services in schools, speech-language pathology services and transportation to function independently in home, school and neighbourhood environment.

Occupational Therapy is concerned with analyzing the child's ability to perform in everyday contexts. Goals of occupational therapy intervention with children are to improve performance components, enhance performance of functional activities, modify performance context, prevent disability and social role dysfunction, increase self-esteem and self-actualization and to promote positive interactions and relationships.

Figure: A child receiving occupational therapy

Physiotherapy assists the child in improving position, movement, strength, balance and control of body.

Figure: A child receiving physiotherapy

Aids and Appliances

Children with MD require several types of aids and appliances, assistive devices

and assistive technology for their independent functioning like for mobility, communication, education, vocation or for performing day to day activities.

Orthotics designs calipers and splints for children with MD who have associated locomotor disability. An orthosis is a mechanical device fitted to the body to maintain it in an anatomical or functional position. The main purposes of orthosis are to support a painful joint, immobilize for healing, protect tissues, provide stability, restrict unwanted motion, restore mobility, substitute for weak or absent muscles, prevent contractures and modify muscles tone.

Lower limb orthoses are called as *calipers*. In foot orthosis, modifications made in the foot wear. Usual modifications are medial arch support for a flat foot and heel elevation for limb length discrepancy.

Figure: Ankle- Foot Orthosis

Figure: Knee- Ankle-Foot Orthosis

Figure: Hip-Knee-Ankle-Foot Orthosis

Splints are upper limb orthosis. Children who have deformities, sustained abnormal posturing, increased tone, limited movement of the hand and/or limitations in functional skills secondary to problems with hand functions benefit a lot by using splints. Splints can be static or dynamic. *Static splints* have no moving parts, prevent motion and are used to rest or rigidly support the splinted part. These are also used to stretch joint contractures progressively. *Dynamic splints* have moving parts to permit, control or restore movement.

Figure: Cock-up splint

Figure: Opponens splint

Figure: Resting hand splint

Assistive Devices

Adapted Furniture includes adapted chair, CP chair, corner stools, lap boards and standing frame in positioning a child with CP.

Mobility aids are appliances used to help people who have difficulty in walking. They enable some of the body weight to be supported by the upper limbs. Selection of a specific type of a mobility device depends on several factors such as the purpose of using the mobility device, the indoor and outdoor environments in which it will be used, the effort required by the individual to use the device, the positioning needs

and its optimal use in functional activities such as eating, transfers, augmentative communication, personal hygiene, and school activities etc. There are different types of mobility devices.

Scooters

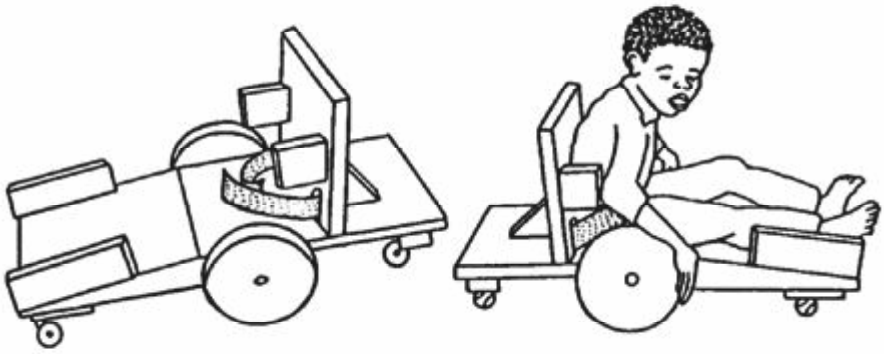

Figure: Scooters

Mobile Stander

Figure: A child using mobile stander

Parallel Bars

Figure: Parallel bars

Special furniture

Floor Seat

Figure: A child using floor seat

Box Seat

Figure: Box seat

Figure: Box seat with castors

Potty Chair

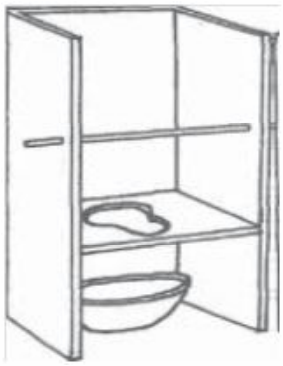

Figure: Potty chair

Figure: A Child using potty chair

Figure: Mobile potty chair

Figure: Mobile commode chair with pot

Pommel

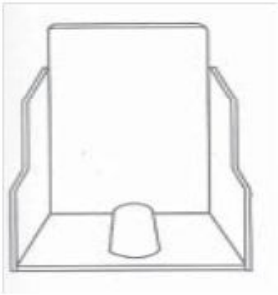

Figure: Chair with pomel

Ramped Seat

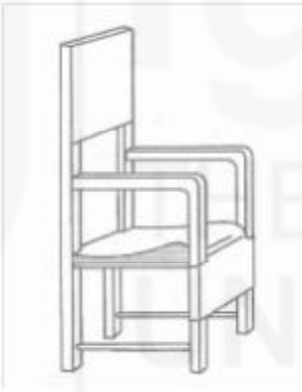

Figure: Ramped seat

Figure: A child using ramped seat

Pelvic Strap

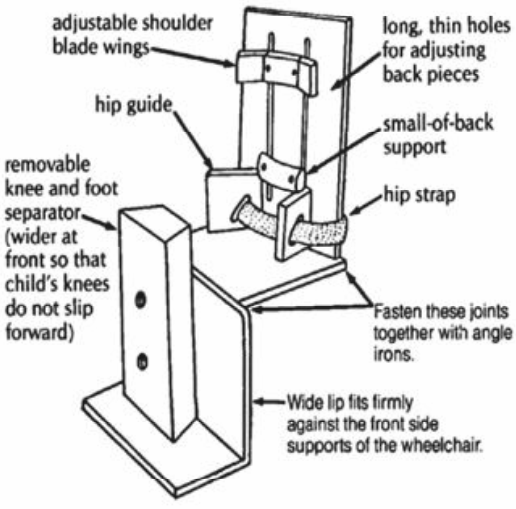

Figure: Special chair with pelvic strap

Figure: Corner chair with strap

Floor Table

Figure: Floor table

Cut-out Tray

Figure: Cut-out tray fitted to wheelchair

Figure: Cut-out tray

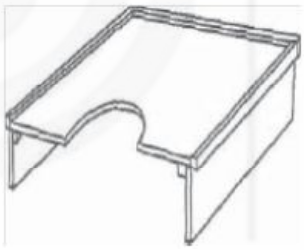

Figure: Cut-out tray on table top

Figure: A child using cut-out tray fitted as table top

Positioning, Handling and Carrying Techniques: Positioning refers to the use of appropriate body positions. Due to abnormal pull of muscles, children with cerebral palsy spend a lot of time in abnormal positions. These abnormal positions can lead to increased tightness and contractures, which may lead to deformities. Contractures and deformities must be avoided wherever possible. Proper positioning should be ensured in all routines throughout the child's day. Proper positioning must be encouraged which should be appropriate to the child's motor development. *Handling* refers to the techniques and methods that are used to move a child or assist a child to move as independently as possible from one position to another. It relates to how the child is picked up, put down, carried, held and so on through movement transitions (e.g.: lying to sitting). Actually, handling is not done only by the therapist's hands, but with his/her entire body. Specific handling, lifting and carrying techniques will vary according to the child's individual needs. Support can be gradually decreased as the child learns to support himself. Carrying techniques are applied while carrying the child or shifting the child from one position to another. Several carrying techniques such as c*arry across the teacher's hips* with the child's hips and knees bent and

knees separate and not over the shoulders, *carrying the child facing forwards*, with bent hips and knees and knees separate and *carrying the child using a wheel chair* are the simplest ones and mostly used.

Fig: carrying the child at back

Fig: carrying the child facing forward

Fig: carrying the child using a wheel chair

Positioning a Child with CP in the classroom: When the child does not have adequate head control or trunk control, in prone positioning, the child can be positioned on a wedge, head and neck should be off the wedge (SSA, 2003).

Figure: Prone positioning on wedge

He/she can bear weight on elbows. A roll can be placed between the legs and a small roll can be placed under the chest as well. Positioning a child in prone will help the child to develop head control and some amount of trunk control.

Orientation and Mobility Intervention: Children with deaf blindness, visual and motor disabilities require learning to travel independently with or without using mobility devices. There are many mobility devices that can, when properly used, provide a child with the means for independent, safe, efficient travel. The most commonly recognized mobility device is the long white/red and white cane. Many other mobility devices are also available, including *Electronic Travel Aids (ETAs)*. ETAs are portable devices that emit sonar or laser signals that are reflected to the user during travel, and are converted to auditory and/or tactile signals. The devices are hand held, or chest, head, wheelchair, or cane mounted, and usually serves to provide supplementary information during travel. Individuals using ETAs can learn to interpret information they receive from the device about obstacles that may be in their direct path, about "openings" in hallways, and about drop-offs or inclines in the travel surface. They may also be used to enhance trailing abilities. Mobility devices serve as an "extension" of the user's arm(s), hand(s), and fingers, and provide protection from obstacles while allowing access to needed information about the environment. Sometimes the environment in and around is required to be adapted and modified to allow a child to move more independently rather than just making things easier for him. Hence while adapting or changing the physical environment, ensure that changes

are increasing the child's independence and will benefit all the children in Natural way.

Fig: Red & white folding cane for people with deaf blindness

Fig: smart cane

Fig: Using red & white smart cane

Sensory Integration Therapy: Sensory Integration therapy is the neurological process that organizes sensation from one's own body and from the environment and makes it possible to use the body effectively within the environment. Sensory integration disorders are central nervous system disorders characterized by imbalance among the primary sensations of sight, hearing, touch, taste, smell, vestibular or proprioception. There are several sensory integration activities which can be carried out in school (SSA, 2003). These activities help in increasing muscles tone, reducing muscles tone, balancing, improving writing skills etc. Sensory integration activities such as jumping while sitting on a therapy ball, spinning on a sit- and- spin, jumping on a mini trampoline and pushing down on the top of their heads with their hands help in increasing muscle tone. To reduce muscle tone, activities like slow rocking and rolling, balance activities, weight shifting activities, weight shifting in half-kneeling, shifting from side- sitting to kneeling with hands on hips, smooth, repetitive, alternating movements may be incorporated during free play sessions or any other outdoor activities. Some activities like animal walks such as crab walks, bear walks, duck walk, push-ups on the floor or against the wall, resistive exercises with elastic tubing, weight bearing on the upper limb, cleaning chalkboards and table tops help in bringing stability. Hand muscles can be improved through activities of prewriting, handwriting and manipulative activities on vertical surfaces, moving writing equipment from the palm to the fingers of the hand, rotating pencil from the writing to the erasing position etc.

Intervention for Teaching Activities of Daily Living : Activities of daily living are "the basic activities we perform for self-care such as eating, bathing, dressing, grooming, personal hygiene, work, homemaking and leisure activities. Accessibility to reach the ADL activities in the school should be provided. Ramps and adaptive toilet facilities in the school should be made compulsory. Proper lighting facilities inside the premises should be provided and there should be a caregiver to provide service during the ADL activities.

Communication Intervention: Children with multiple disabilities face significant challenges in the development of communication skills. These difficulties arise due to the multiple associated conditions. They do not get any information or motivation from the environment around them due to which they tend to be less responsive than their non-disabled peers. As a result, people around them become less responsive.

These children also find it difficult to explore the environment physically and using their senses like vision, hearing etc. Thus, these children become passive and have very limited opportunities to initiate and imitate objects. We as teachers need to enhance the child's communication by adding to the modes or ways he /she communicates. This can be done by using objects, pictures, photographs, or symbols to support or supplement the child's communication. Teachers and parents can seek help from speech therapists in developing communication skills of the child. Most children with deaf blindness or multiple disabilities use different modes for receiving information and different ones for expressing information. Based on the situation modes may be used. However, it is important to remember that no single mode is more important than the other and its use depends entirely on the child's needs and situation.

The different modes of communication used in children with DB/MD are tangible symbols, for example, object cues, associated objects, pictures or photograph sand so on. Children with MD also need a calendar system to help them know about the different events and activities that are going to happen during the day, week or month. For these children, calendar is represented by placing objects or pictures for each of the activities in separate compartments or boxes. A calendar system helps the child to know what is going to happen next. Calendar box can be made of various materials such as wood, small plastic boxes, or shoe boxes attached to one another.

Fig: Calendar box

Source: http://www.tsbvi.edu/distance/communication/images/calendars/time-piece/daily-1181-web.jpg

Alternate and Augmentative Communication (AAC)

Alternative and Augmentative Communication attempts to compensate for limited verbal communication skills by integrating symbols, devices, techniques, and strategies to enhance or encourage communication. Alternative and Augmentative communication includes "unaided modes" of communication, such as gestures, signs and facial expressions, or "aided modes" ranging from the low tech-such as drawings and tangible symbols-to the high tech-such as speech-synthesized devices and laptop computers.

Sign Language

Sign language is the most obvious choice of communicative skills that can aid communication and can be very effective in children with dual sensory disabilities. The person with deaf blindness uses tactile sign language to communicate. The person puts his or her hands over the signer's hands to feel the shape, movement and location

of the signs. Some people with deafblindness with restricted but usable vision (e.g., tunnel vision) may follow signs by holding the signer's forearm or wrist and using their eyes to follow the signs visually. This helps them follow the signs more easily. Usually people with blindness or visually impairment who lose their hearing later, or people with deafness or hard of hearing who are depended on their speech reading and do not know how to sign, prefer tactile finger spelling because sometimes sign language can be difficult to learn. The person with deafblindness may prefer to put his or her hand over the finger speller's hand, or on the signer's palm, or cup his or her hand around the signer's hand. Similarly, people with deafblindness with little or no usable vision to speech read another person by touch. They put their thumb on the other person's chin, and their fingers on the other person's cheek to feel the vibrations of the person's voice and the movement of their lips. For individuals with autism, the use of visual strategies and schedules has been an invaluable tool for developing communication and helping with understanding. Many individuals on the autism learn and understand more easily when things are presented visually, whether it is an object, photo or line drawing. These visuals can be actual representations or symbols, and can be presented as reminders or to help explain a task. Alternatively, a non-verbal individual can use them to communicate. The Picture Exchange Communication System (PECS) is a type of AAC technique with which individuals with autism learn to communicate using picture cards (Maanum, 2009). Fluent users of PECS can use several pictures to make easily understandable and grammatically correct sentences. PECS begins by teaching an individual to give a picture of a desired item to a "communicative partner", who immediately honors the exchange as a request. The system goes on to teach discrimination of pictures and how to put them together in sentences. Later, individuals are taught to answer questions and to comment.

Assistive Devices to Support Communication

A variety of assistive devices, which include low tech and high-tech devices, are used to help children with severe and multiple disabilities in the classroom. It is very important that the individual has a device that is most suited to them. There is no "one size fits all". Some low tech and no tech devices include signing and gestures, communication books like about me, picture dictionaries, daily and weekly schedules, picture boards, books with pictures, objects and/ or messages, alphabet board, communication boards etc.

Fig: Picture communication board

Fig: Communication book

High tech devices which include computers, head sticks and adaptive switches allow children with MD to communicate effectively with others. Some deaf-blind people use a Screen Braille Communicator (SBC). This is a small, portable device that enables them to communicate with sighted people. The device has a QWERTY keyboard with an LCD display on one side, and an eight-cell Braille display on the

other side. The sighted person types short text on the QWERTY keyboard. The deaf-blind person reads the printed text by placing his or her fingers on the Braille display. He or she then uses the Braille display to type back text. The sighted person can read the text on the LCD display.

Fig: Two people use a screen Braille Communication to chat with each other

Source: http://aadb.org/images/stories/factsheet/communications/screen_braille_lg.jpg

Teenage switch progressions allow children to press a switch to activate activity-based instruction on the computer. Other types of assistive technology include speech synthesizers, speech generating devices, alternative keyboards, pointing systems, talking clocks and calculators, voice recognition software, reading machines, magnification software, phonic ear devices, telecommunication devices and sound magnification systems. In unit-7, such devices are discussed, which can be referred to, for detailed information about such devices.

Fig: Electronic Communication book

Fig: Electronic Speech Generating Device

Intervention for Social Skills Training: A social skill is any skill facilitating interaction and communication with others. Social rules and relations are created, communicated and changed in verbal and nonverbal ways. Interaction, socialization, sharing, use of resources and participation in play activities assist in developing social skills in children. Due to the various limitations as a result of combination of disabilities, children often get deprived of learning different social skills along with their family members, friends, neighbors and others in their community. Being a teacher, we need to create or modify the environment in such a way that children with multiple disabilities get ample opportunity to interact for their day-to-day needs.

Educational Intervention: Children with MD also have the right to education along with all other children. The school should have such resources and facilities where all children receive instruction that fits their individual skill levels and learning styles.

Teachers should work together with special educators to the benefit of all children, share their expertise in planning and implementing strategies and support. The curriculum can be adapted and modified as per the requirement of children. Alternative lessons, materials and activities can be tailored to individual needs and individual educational levels. The school can plan and implement individualized education programme (IEP), which is specifically designed to meet the learning needs of each child and may be integrated and transacted in the general classroom along with all other children. The child with MD studying in regular schools may require support services like therapeutic services, training in plus curricular areas, resource rooms services, special equipment, teaching learning materials, adapted curricular and adapted teaching strategies. Resource support could be given by the resource teachers and therapists working in resource centers. Wherever this option is not feasible, long term and short-term training of regular teachers is undertaken. Intensive in-service teacher education is necessary to sensitize regular teachers on effective classroom management of children with special needs.

Activity V

1. Prepare a resource book of aids and appliances and their utility for children with different disabilities by internet surfing/literature studies.
2. Prepare weekly classroom activity schedule for peer groups of children with multiple disabilities emphasizing upon different scholastic activities of the classrooms.

4.4 OTHER DISABLING CONDITIONS: NATURE, NEEDS, ASSESSMENT AND INTERVENTION

The Rights of Persons with Disability Act, 2016, has included 21 disabilities. We have already discussed some of them in detail. The remaining disabilities include, the acid attack victims, chronic neurological conditions, dwarfism, hemophilia, leprosy cured, mental illness ,multiple sclerosis, Parkinson's disease, thalassemia and sickle cell disease. The nature of each of these disabling conditions is specified in the descriptions given below:

Acid Attack Victim means a person disfigured due to violent assaults by throwing of acid or similar corrosive substance.

Chronic neurological condition means a condition that has its origin in some part of person's nervous system lasting for an extended period or marked by frequent recurrence.

Dwarfism means a medical or genetic condition resulting in an adult height of 4 feet 10 inches (147 centimeters) or less.

Hemophilia means an inheritable disease, usually affecting only male but transmitted by women to their male children, characterized by loss or impairment of the normal clotting ability of blood so that a minor wound may result in fatal bleeding.

Leprosy cured person means a person who has been cured of leprosy but is suffering from- (i) loss of sensation in hands or feet as well as loss of sensation and paresis in the eye and eye-lid but with no manifest deformity; (ii) manifest deformity and paresis but having sufficient mobility in their hands and feet to enable them to engage in normal economic activity; (iii) extreme physical deformity as well as advanced age which prevents him or her from undertaking any gainful occupation, and the expression "leprosy cured" shall be construed accordingly.

Mental illness means a substantial disorder of thinking, mood, perception, orientation or memory that grossly impairs judgment, behaviour, capacity to recognize reality or ability to meet the ordinary demands of life, but does not include mental retardation which is a condition of arrested or incomplete development of mind of a person, specially characterized by sub normality of intelligence.

Multiple sclerosis means an inflammatory, nervous system disease in which the myelin sheaths around the axons of nerve cells of the brain and spinal cord are damaged, leading to demyelination and affecting the ability of nerve cells in the brain and spinal cord to communicate with each other.

Parkinson's disease means a progressive disease of the nervous system marked by tremor, muscular rigidity, and slow, imprecise movement, chiefly affecting middle-aged and elderly people associated with degeneration of the basal ganglia of the brain and a deficiency of the neurotransmitter dopamine.

Thalassemia means a group of inherited disorders characterized by reduced or absent amounts of hemoglobin.

Sickle cell disease means a hemolytic disorder characterized by chronic anemia, painful events, and various complications due to associated tissue and organ damage; "hemolytic" refers to the destruction of the cell membrane of red blood cells resulting in the release of hemoglobin.

Needs of Children with Other Disability Conditions

Many needs are identified in children with these disabilities ranging from health and medical interventions, academic, self-care, communication, social, leisure and work etc. Health & safety needs are related to maintenance of one's health in terms of eating, illness, treatment and prevention, basic first aid, basic safety considerations such as following rules and laws etc. Self-care needs include activities involved in eating, drinking, toileting, dressing, hygiene, grooming. Communication needs are activities related to comprehension and expression of information through symbolic behaviours (eg. Spoken word, written word/sign language) or non-symbolic behaviours (eg. facial expression). Academic needs include cognitive abilities and skills related to learning at school that also have direct application in one's life (eg. writing, reading using basic practical math concepts, awareness of the physical environment and one's health and sexuality). Self-direction needs are related to making choices, following schedules, initiation activities appropriate to the setting, completing necessary and required tasks. Leisure needs are related to leisure and recreational interests, self-entertainment, interactional, personal preferences and choices. Home care needs are related to functioning within home, which include clothing care, housekeeping, food preparation and home safety. Social needs are related to social exchanges with other individuals, including initiating interacting and terminating interactions with others, sexuality, responding to pertinent situational cues, recognizing feelings. Needs of community use are training in activities related to the appropriate use of community resources, including travelling in the community, shopping at stores and markets, purchasing or obtaining services (e.g. gas station, worship, doctor, using public transportation) and other public facilities. *Vocational* needs are related to jobs (part or full time) and occupation, earning, work behavior, participation in volunteer activities (AAMR, 1992 and Singh & Singh, 2011).

Assessment of Other Disabling Conditions

Assessment of children with these disabling conditions include physical examination and clinical assessment, educational assessment, nutritional assessment, psychological

assessment, communication skill assessment, functional assessment and assessment for fitting of aids and appliances. These assessment dimensions have already been discussed above in the sections on children with locomotor disabilities and children with multiple disabilities. you can refer the section on assessment for details.

Intervention

The children with disabilities are required a range of intervention programmes which have been discussed in the sections on children with locomotor disabilities and children with multiple disabilities such as medical services, nutritional interventions, therapeutic services, psychological services etc. The challenges lie with inclusion of children with these disabilities in school education. The Rights of Persons with Disabilities Act, 2016 has several provisions to promote inclusive education to the children with disabilities. The Act defines "inclusive education as a system of education wherein students with and without disability learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities". These children must be admitted in schools without discrimination and be provided education and opportunities for sports and recreation activities equally with others. The building, campus and various facilities should be made accessible, and reasonable accommodation according to the individual's requirements must be provided. These children may require individualized support for their academic and social development which must be provided in consistent with the goal of full inclusion. The act made it mandatory to ensure that the education to persons who are blind or deaf or both is imparted in the most appropriate languages and modes and means of communication. Teachers should have competency to detect specific learning disabilities in children at the earliest and take suitable pedagogical and other measures to overcome them. They should monitor participation, progress in terms of attainment levels and completion of education in respect of every student with disability. The school should provide transportation facilities to children with disabilities and the attendants of the children with disabilities having high support needs. The act has also emphasized for conducting survey of school going children for identifying children with disabilities. The act articulated to establish adequate number of teacher training institutions, training of teachers and their employment, training of professionals and staff to support inclusive education at all levels of school education. Adequate number of resource centers is required to be established to support educational institutions at all levels of school education. The use of appropriate augmentative and alternative modes are pronounced in this Act including means and formats of communication, Braille and sign language to supplement the use of one's own speech to fulfill the daily communication needs of persons with speech, communication or language disabilities and enables them to participate and contribute to their community and society. Regarding teaching learning materials and assistive devices, the act has provisions to provide books, other learning materials, scholarships and appropriate assistive devices to students with benchmark disabilities (a person with not less than forty per cent. of a specified disability) free of cost up to the age of eighteen years. These children require suitable modifications in the curriculum and examination system to meet their needs. We will discuss them in detail in the following units.

Activity VI

1. Visit a Block Resource Centre run under Sarva Shiksha Abhiyan and prepare a list of activities carried out under intervention programmes for children with different disabilities.

4.5 LET US SUM UP

Locomotor Disability refers to a person's inability to execute distinctive activities associated with movement of self and objects resulting from affliction of musculoskeletal and/or nervous system. The major types of locomotor disabilities are musculoskeletal, congenital malformation, accidents and other chronic disabilities polio, rickets, spina bifida, congenital deformities of hip/s and limb/s, deformities of spine, muscular dystrophy and amputation. Assessment should be conducted by trained medical and rehabilitation professionals. The affected muscles, limbs, joints, spine and other body parts, the associated deformity and contracture and other problems etc. are required to be assessed thoroughly by many medical professionals like neurologist, orthopaedics, physical medicine and rehabilitation specialist etc. in the initial diagnosis of the disability and providing interventions. Therapists like physiotherapists, occupational therapists and speech and language therapists are essential for assessment and management of physical and speech and language related problems. Interventions programmes include medical management and corrective surgery, Physical therapy, Occupational therapy, Prosthesis and orthotics, Speech and language therapy etc. A follow up management programme is very important for periodical review of the therapeutic programmes and support for positioning and mobility of the child.

Multiple Disabilities mean a combination of two or more disabilities. Children with multiple disabilities will have a combination of various disabilities that may include speech, physical mobility, intellectual, visual, hearing, brain injury and possibly others. Children with cerebral palsy, deaf blindness, autism spectrum disorders and intellectual disability face a combined effect of different associated disabilities. There are many educational implications for these children. Clinical and functional assessments of children with multiple disabilities are important for identifying the needs of such children for planning of appropriate intervention programmes. Children with MD require multidimensional services like medical attention for medication or corrective surgery, occupational therapy, orientation and mobility services, speech-language pathology services and physical therapy etc. Parent counselling and psychological services are required by the parents and family members for better acceptance of the child as well as for implementation of intervention plan.

Assessment of children with chronic neurological conditions, haemophilia, cured leprosy cured, mental illness, multiple sclerosis, thalassemia and sickle cell disease include physical examination and clinical assessment, educational assessment, nutritional assessment, psychological assessment, communication skill assessment, functional assessment and assessment for fitting of aids and appliances etc. They require a range of intervention programmes such as medical services, nutritional interventions and different therapeutic services. The rehabilitation worker and the teacher work in partnership with the family by aiding and services that help the family to coordinate the intervention programmes and try to realize their full rights to education and rehabilitation.

4.6 UNIT END QUESTIONS

Write Short notes on the followings:

a) Accessible school environment for children with locomotor disabilities.

b) Therapeutic interventions for children with cerebral palsy.

c) Educational intervention programmes in school subject areas for children with deafblindness.

d) Interventions for social and communication skills for children with autism.

e) Positioning, lifting, carrying and transferring of a child with severe disability.

f) Resource room activities for children with intellectual disability.

4.7 ANSWERS TO CHECK YOUR PROGRESS

1. Activities for practice

2. Congenital malformation appears in babies born with a defect or malformation of any body part/organ system like congenital dislocation of hip, extremely short/missing limbs, hands and feet directly attached to the torso etc.

   The acquired amputation/disfigurement of the body may be neurological, amputation (loss of body parts/limbs) or disfigurement of the body caused by traffic accidents, domestic accidents, bullet injuries, explosions, sports injuries and natural catastrophes like earthquakes, floods, and landslide etc.

   II. Activities for practice

   A. Match the followings:

   1-E, 2- A, 3-D, 4-B and 5-C.

   III. Activities for practice

   A. Match the followings:

   1-D, 2-E, 3-B, 4-C and 5-A.

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