NETAJI SUBHAS OPEN UNIVERSITY

B.Ed.Spl.Ed. (M.R./H.I./V.I.)-ODL

INTRODUCTION TO LOCOMOTOR AND MULTIPLE DISABILITIES

B-9

B. Ed. Spl. Ed (M. R. / H. I. / V. I)-
ODL Programme

AREA - B

B - 9 : Introduction to Locomotor and Multiple Disabilities

A COLLABORATIVE PROGRAMME OF
NETAJI SUBHAS OPEN UNIVERSITY
AND
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AREA - B ● CROSS DISABILITY AND INCLUSION

COURSE CODE - B9

INTRODUCTION TO LOCOMOTOR AND MULTIPLE DISABILITIES

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The Self Instructional Material (SIM) is prepared in conformity with the B.Ed.Spl. Edu.(MR/HI/VI) - ODL Programme as prepared and circulated by the Rehabilitation Council of India, New Delhi and adopted by NSOU on and from the 2015-2017 academic session.

Dr. Ashit Baran Aich

Registrar, (Acting) NSOU

Netaji Subhas Open University

From the Vice-Chancellor's Desk

Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities.

Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner.

The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners.

So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. 1 must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time.

Professor (Dr.) Subha Sankar Sarkar
Vice-Chancellor, NSOU

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B-9 : INTRODUCTION TO LOCOMOTOR AND MULTIPLE DISABILITIES

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AREA - B

B-9 : INTRODUCTION TO LOCOMOTOR AND MULTIPLE DISABILITIES

B-9 ❐ Introduction to Locomotor and Multiple Disabilities

Unit - 1 ❐ Cerebral Palsy (CP)

Structure :

1.1 Introduction

(i) The term cerebral palsy is a description; not a specific diagnosis, resulting from a non-progressive encephalopathy whose etiology may be prenatal, perinatal or postnatal.

(ii) Cerebral Palsy is a persistent but not unchanging disorder of movement and posture due to a defect or lesion of a developing brain. Development of the brain starts in early pregnancy and continues until about age three. This damage interferes with messages from the brain to the body, and from the body to the brain. Cerebral = "of the brain", Palsy = "Lack of muscle control". It occurs in about 2 in 1000 live births. It may be the most common paediatric'problem

referred to Physiotherapists and at the same time represent the least understood paediatric neurological problem.

(iii) Many children with cerebral palsy may have associated problems because the brain that control posture and movement can be damaged, so too other parts of the brain can be damaged. Therefore their intellectual abilities, hearing, sight, perceptual capacities may be affected. About half the children with cerebral palsy have epilepsy.

(iv) In developed countries, most children with cerebral palsy need to see a physiotherapist, an occupational therapist and a speech therapist. The physiothearapist will work with the child to help to develop good posture and movement, the occupational therapist will help the child's function, visual perception and fine motor control, ano the speech therapist will help with eating, drinking and communication.

(v) Dependingon the physical ability, some children with cerebral palsy may need extra support. For many children, a table placed in front of them may provide adequate support. The children who cannot control their head or are unable to keep their body straight, a special seat may be required when they are placed in a sitting position. In the following discussion some ideas of the special furniture are given which may be suitable for the children.

1.2 Objective

After going through this unit you will be able to know about :—

(i) According to English Surgeon William Little in 1862, ''cerebral'' refers to the brain and the word 'Palsy' describes a lack of muscle control.

(ii) Cerebral Palsy (CP) is an umbrella like term used to describe a group of chronic disorders impairing control of movement that appear in the first few year of life and generally do not women over time.

(iii) Cerebral Palsy (CP) is characterizedly sensorimotor dysfunction.

(iv) The expression of the disorder can appear worse as the child grows, develops etc.

1.3 Nature, Types and its Associated Conditions

1. Cerebral Palsy is an umbrella like term used to describe a group of chronic disorders impairing control of movement that appear in the first few year of

life and generally do not worsen over time. The term Cerebral refers to the brains two halves or hemispheres and Palsy describe any disorder that impairs central of body movement. These disorders are not caused by problems in thy muscles or nerves. Instead faulty development or damage to motor areas in the brain disrupts the brain's ability to adequately control movement and posture.

2. Cerebral Palsy is characterizedby sensorimotor dysfunction, which has its expression in abnormal muscle tone and abnormal posture and movement. While Cerebral Palsy is caused by static encephalopathy, the symptoms often appear to be progressive because it affects a changing organism in which a developing, although abnormal, central nervous system (CMS) attempts to direct and control other maturingsystems, including musculoskeletal structures.
3. The expression of the disorder can appear worse as the child grows, develops and attempts to compensate for abnormality while confronting the force of gravity in every effort to move.
4. Cerebral Palsy, a developmental disorder affects the total development of the child either directly, relating to sensorimotor function, or indirectly through associated problems. As a developmental disorder, Cerebral Palsy has varying effects on children at different stages of development as well as different chronologic ages. Although the hallmark of cerebral palsy is motor dysfunction, and various other problems frequently coexist.

Aetiology

Information about the cause of the disability is helpful for families and essential for generic counseling.Investigations such as urinary metabolic screening and chromosome analysis may elucidate rare causes of cerebral palsy.

Radiological procedures such as magnetic resonance imagining (MRI) can be useful if preliminary investigations have been negative

Cerebral Palsy is associated with a number of variables, which have been grouped into birth weight and gestational age, other biological factors occurring during prenatal and perinatal and postnatal time periods and selected social factors.

- The most commonly reported relationship is with birth weight. There is a strong association with low birth weight and prematurity.There is remarkable agreement across countries in the marked increase in cerebral palsy as birth weight decreases below 2,500 grams (5.5 pounds). Birth weight is obviously less as gestational age decreases.

- Birth factors are viewed by some as the major cause of cerebral palsy, While others believe that the damages occurs in utero and leads to perinatal problems.
- Part of the problem in resolving these different views is that intrauterine insults are more difficult to identify and measure, whereas many perinatal factors are easier to monitor.
- There are many different causes of cerebral palsy.
- In a considerable proportion of cases the cause remains unknown or elusive.

Note : It is important to establish the cause if possible.

Prenatal Events.

- Prenatal events are thought to be responsible 75 percent of all causes of cerebral palsy.

Known causes include :-

- Congenital intrauterine infection, e.g. Rubella.
- Developmental brain anomalies
- Placental insufficiency (sometimes).

Perinatal Events

- Birth asphyxia may be caused by antepartum haemorrhage or other placental cord problems.
- Perinatal asphyxia accounts for about 8 to 10 percent of all cases of cerebral palsy.
- If hypoxia is severe enough to cause neurological damage it usually results in death or hypoxic encephalopathy with cerebral oedema and associated seizures, irritability and feeding difficulties.
- The motor centres are the area of the brain most vulnerable to perinatal hypoxicischaemic damage, and if there are long term sequelae they will include cerebral palsy.

Postnatal Events
Postnatal events account for about 10% of all cases. Known causesinclude:-

- Accidental injury, e.g. hypoxic events such as near - drowning accidents, head trauma from motor vehicle accidents.

- Non-accidental injury or child abuse
- Severe brain infections, e.g. meningitis.

Classification of Cerebral Palsy

1. Muscle tone refers to a constant state of partial contraction or tension in moving or resting rnusaes of the body. TQ maintain a posture or movihg in and out of the posture requires us to have postural tone. Children with CP usually have problems with postural tone. Total qualities seen in CP are :-

Hypertonia – Too much muscle tone leading to stiffness.

Hypotonia – Too little muscle tone beading to floppiness.

Dystonia – The muscle tone fluctuates stiffness to floppiness.

Rigidity – Sustained stiffness of limb.

Spasm – Involuntary and possibly painful contraction of muscle.

Tiemors – Repeated rhythmic uncontrolled movements of parts of the body.

2. Classification of Cerebral Palsy by nu.nber of Limbs involved.

I. Quadriplegia - All four limbs are involved.

II. Diplegia - All four limbs are involved - Both legs are more severely affected than the arm.

III. Hemiplegia - One side of the body is affected the arms are usually more involved than the leg.

IV. Triplegia -Three limps are involved usually both arms and a leg.

V. Monoplegia - Usually one limb is affected. Usually an arm.

- Quadriplegia
- Diplegia
- Hemiplegia
- Paraplegia
- Monoplegia

Problems associated with CP Mental Retardation -

Mental Retardation is a disability characterized by significant limitations both in Intellectual Function and adaptive behaviour as expressed in conceptual, social and

practical adaptive skills. This disability originates in childhood Intellectual function should be evaluated by an appropriately trained professional with standardized psychometric tests appropriate to the child's mother tongue & qulture.

An often quoted incidence is that about 50% of the population has an I.Q below 70. The unsuitability of formal tests of intelligence often used in the past have caused such figures to be questioned. Current procedure is much more likely to use a variety of methods to gather information,such as checklists, administration of appropriate subtests of a number of standardized tests, observation of the child's (or adult's) performance in a variety of situations, and a synthesis made of all the results based on the examiner's experience.

Emphasis on early intervention and the increasing use of augmentative communication systems are making it possible to assess the degree, if any, mental retardation in an individual. It is increasingly recognized that sensory deprivation are often important contributing factors to mental retardation.

Hearing Impairment

Impairment in hearing capacity is defined in terms of degree of hearing loss. Total inability to hear is deafness but those whose sense of hearing is defective but who manage with or without hearing aids are called hard of hearing. It might be congenital or acquired.

Congenital - Hearing loss at the time of birth.

Acquired - Hearing loss acquired any time in one's life. Eligibility of services under the categories of deafness & HI is based on degree of hearing loss.

Degree of Hearing loss -

0-25-Normal

26-40-Mild

41 - 55 - Moderate

56 - 70 - Moderately Severe

71-90-Severe

91+- Profound.

Reports on incidence vary from 8% to round 30% of the population. All children and adults with cerebral palsy need hearing assessment every 2 to 5 years.Hearing

problems occur frequently and may remain undetected. It has been noted that a person with the athetoid type of cerebral palsy has a greater likelihood of being hearing impaired. The child with cerebral palsy who is also hearing impaired is handicapped not only in his ability to receive language through speech, but also because, physically, he may not be able to explore his environment, get objects he wants or direct the attention of others. His deafness may not be diagnosed until late, his lack of response being thought to be due to his cerebral palsy or mental retardation. Many schools for the deaf are equipped to provide services to the physically handicapped child. If he does attend a school for the deaf, the severely handicapped child with cerebral palsy may gain a receptive language. Opportunity to learn to use an aided technique, such as a communication board, will be very useful.

Visual Impairment Vision

Visual Impairment is defined in terms of visual acuity, field or vision & visual efficiency. Vision is the most actively used sense by man. Cognition depends upon his visual experiences. Their ability to get along is also limited because of restricted mobility. They are unable to control their own environment and themselves is relation to it. These are significant defects. Visual ability of the eye to see the distant objects clearly is assessed using the Snellen Chart. An individual may be considered as blind if the visual field is severely limited even if visual acuity is better than 20/200. If the visual field is no greater that 20 degree in width, the individual can still be classified an being blind though visual acuity in not within typical range of blindness. Visual efficacy means how will are can use ones vision. This means how this visual information is processed analyzed and interpreted in the brain.

- Individuals with cerebral palsy have special eye care needs that should be examined and monitored by an ophthalmologist.
- All children and adults require visual assessment every 2 to 5 years.
- Vision disorders particularly strabismus are common.
- Visual acuity may bo impaired and can remain undetected.

Reports indicate that as many as 25% to 50% of children with cerebral palsy have visual impairments that could significantly affect academic work (Cruickshank, 1976). The most prevalent of the visual impairments in the population, strabismus and nystagmus, can be related to muscle imbalance and muscle control respectively. Assessment of impairments may be more difficult than usual in the presence of reduced or uncontrolled head movements. Assessment of vision is often difficult, especially with nonspeaking children who are severely physically involved.

Disorders of Bodily Sensations

Noted in the literature on the cerebral palsied population are such problems as disorders in tactile sensation, two- point discrimination, body image and position sense, pain and temperature, any of which will affect to a lesser or greater extent, a person's relationship with his environment and the people in it. For example, a visually impaired person who has difficulty in recognising objects by their shape is extremely handicapped.

Seizure Disorders Epilepsy

Epilepsy could be defined as a sudden uncontrolled episode of excessive electrical activity which could lead to a change in behaviour consciousness or movement. Epilepsy is not disease it is a sign/symptom of a structural or a chemical disorders it can range from severe to minimal and are exhibited in a number of ways.

Epilepsy is the most common neurological disease. Due to seizure there is a sudden change in intellectual sensory motor, autonomic or emotional activity limited in length and presumably associated with neural over activity. Treatment to control fits is important.

Cerebral Palsy and epilepsy often occur together.

- Epilepsy occurs in up to 50% of children and approximately 20% of adults with cerebral palsy.
- It is most common in those with severe motor problems and requires careful management.
- Adults may have been on antiepileptic medication for many years and are also at increased risk of osteoporosis and therefore fractures.
- Regular review of antiepileptic medication is important.

Reports as to the degree of incidence vary widely, but there is lessincidence in the athetoid than in the spastic type of cerebral palsy. Cruickshank(1976) suggests that 35% - 60% of all children with cerebral palsy are likely to develop seizures at some time in their lives.

Seizure problems, such as frequent petit mal seizures, may have significant effect on the attention. Drugs to control seizures may, but not necessarily, affect the individual's alertness.

Visual-Motor Deficits

Visual motor deficits are reported more frequently than in the general population. This may affect writing,ability quite apart from the presence or otherwise of a motor handicap.

Physiological - Sociological Problems

An individual with cerebral palsy is an individual first with his own strength and personality traits. His particular circumstances and experiences combine to help him react to a situation in a particular way. Some individuals triumph over exceeding odds to become examples and sources of strength to us all.

However, given the variety of frustrations which an individual with cerebral palsy may have to face daily, it is not surprising to find reports of emotional problems, such as emotional immaturity and instability, introversion and depression (Mysak, 1980) occurring with more than average frequency in this population.

Motivation is an element of personality which has much bearing on a person's ability to achieve communicative competence. In recent years it is becoming increasingly recognized that it is the attitude of others - parents, friends, professionals, and society at large- whether overprotecting or rejecting, which forms a person's biggest handicap. A negative self concept is more often a result of these attitudes than the frustration arising in adolescence.

The public awareness and acceptance of the person with cerebral palsy are paramount. These will contribute to the formation of a positive self concept by the individual".

After Physiological- Sociological Problem

Eating, Drinking & Speaking problems-

Eating & Speaking are skills that come from the coordinated, controlled movement of lips, totigue, throat etc. Taking is good, chewing and swallowing gets difficult on there is no muscle control. Learning to speak also gets affected.

Drooling - Unintentional loss of saliva from mouth occurs on there is poor coordination of swallowing mechanism.

Specific learning difficulties - Essential cause mostly due to logical and cognitive defects in children with CP. They may have problems in memory, attention, physical co-ordination activities like hand writing & self-help.

1.4. Assessment of Functional Difficulties of CP Including Abnormalities of Joints and Movements (Gaits)

Possible Physical Problems

- Unable to lift head when lying or held in sitting position
- Unable to move to change position
- Unable to use hands for support or movement or for function
- Unable to function, protect or reach out with arms while sitting independently
- Unable to get in and out of sitting position
- Unable to lean forwards or backwards while sitting independently
- Unable to do active forward and backward weight shift cf the trunk in different positions, e.g., long sitting, supported crawling position, supported standing position
- Poor balance reactions in standing (unable to protect effectively when falling)
- Unable to transfer weight forward, backward or sideways in the standing position
- Unable to get into or get out of standing position
- Can step but cannot stop
- To get into, maintain and get out of standing position
- Balance reactions and weight transference in standing

Types of Motor Disorder Spasticity

- It is characterized by an increase in muscle tone causing difficulty in movement. Movements are slow and laborious or, in severe cases virtually non- existant.
- Spastic muscles are tight and stiff hypertonic - and have an increased resistance to being stretched (clasp knife). Normal muscles work in pairs; when one group contracts, the other group relaxes to allow free movement in the desired direction. Spastic muscles become active together and block effective movement. This muscular" tug-of-war" is called co-contraction.
- Sensory loss occasionally occurs in spastic hemiplegic hand and visual field.
- Growth of hemiplegic limbs is less on affected side.

- Epilepsy is more common in this type of CP.
- Excitement, fear or anxiety increase hypertonus; sudden rather than slow movements increase hypertonus.

Athetosis

- Almost always affects the whole body and all four limbs and generally results from damage to the basal ganglia.
- It is characterised by variable muscle tone, dysarthria, loss of control of body posture and constant involuntary movements.
- Hearing loss of specific high frequency types is associated with athetoids, caused by kernicterus.

Ataxia

- Refers to a disorder of balance associated with damage to the cerebellum.
- They have poor muscle tone (hypotonic) staggering walk. Tremor may be present.
- Disturbance of balance.
- Poor fixation of head, trunk, shoulder and pelvic girdle.
- Poor fine hand movements occur.
- Nystagmus may be present.

Mixed

- A mixture of more than one type of cerebral palsy is common, particularly the combination of spasticity and athetosis.

Presentation and Diagnosis Childhood:-

- Follow-up of at risk infants.
- Delayed motor milestones.
- Development of asymmetric movement patterns.
- Abnormalities of muscle tone.
- Management problems, e.g. severe feeding difficulties, abnormalities of behaviour such as irritability.

- It is important to remember that many young infants may have normal tone during the first few months of life.
- The onset of spasticity may be gradual;
- Similarity, athetoids movements may not appear until between 9 and 18 months of age.
- It is also important to exclude progressive neurodevelopmental and spinal lesions that may initially present in a similar manner to cerebral palsy.

Presentation and Diagnosis
Adulthood

- Adults with an established diagnosis of cerebral palsy may also present for management of other acute or chronic health issues.
- A decrease in overall functioning may be related to the interaction between lifelong motor impairment, associated conditions, ageing and age - related disease.

1.5 Provisions of Theraputic Intervention

Possible Physical Needs for Developing Head Control

- Weight bearing on arms in different positions: prone, sitting, crawling.
- Developing righting reactions in lying (maintain balance by moving head or body.
- Promoting active extension of trunk which will make it easier for child to lift and hold head up (reaching up and out with alternate arms in prone or supported sitting).
- Encouraging segmental rotation of trunk through rolling.
- Bringing hands together in front of the body (holding objects such as toys).
- Encouraging reaching out with arms - in lying, side lying and supported sitting position.

Recommended Positions for Mealtimes

- Feeding or Eating to *be* done in sitting position using Floor seat with a floor table or cut-out table in front.

- Sitting on a Chair or wheelchair with a cut-out tray in front (Please note you may need to support the head with your hand)

Play

- Sitting on floor seat.
- Sitting on chair with cut-out tray.
- Standing with support (wearing gaiters) Toileting.
- The child/ student must be well secured on plastic or wooden potty chair.

Possible Physical Needs for Developing Sitting

- To get in and out of sitting position
- To improve balance reactions in long sitting (to sit without support and be able to do an activity with the hands)
- Active forward and backward weight shift of the trunk in different positions, e.g., long sitting, supported standing position

Recommended Positions for Mealtimes

- Feeding or Eating to be done in sitting position using Floor seat with a floor table or cut-out table in front
- Sitting on floor against a wall with floor table or cut-out table in front
- Sitting on a Chair or wheelchair with a cut-out tray in front **Toileting**
- Western toilet with grab rail attached to wall at side
- Potty chair-wooden or plastic

Methods of Mobility

- Moving on board with castors
- Chair with castors
- Wheelchair

Possible Physical Needs for Developing Standing

- Getting into, maintaining and getting out of kneeling, half-kneeling and standing positions
- Balance reactions and ability to transferring weight actively in long sitting, kneeling, hal kneeling and bear standing positions
- Standing against wall or holding grab rail.

Recommended Positions for Mealtimes

Normal seating arrangement which is available in child's environment for eating, play and work Toileting

- Normal Indian / Western style toilet with a grab rail or some support for holding.
- Cut-out stool over Indian style toilet to enable child to be self-sufficient while washing

Methods of Mobility

- Crawling
- Bottom shuffling
- Walking with Kaye Walker
- Walking with crutches

Possible Physical Problems for Developing Walking

- Poor balance reactions in standing (unable to protect effectively when falling)
- Unable to transfer weight forward, backward or sideways in the standing position
- Unable to get into or get out of standing position
- Can step but cannot stop

Possible Physical Needs for Developing Walking

- To get into, maintain and get out of standing position
- Balance reactions and weight transference in standing

Recommended positions for Functional Needs

Independence in all functional skills using normal facilities available as far as possible.

Methods of Mobility

Independent walking

Lifting, Carrying and Transfer

Lifting and / or carrying a person with a physical disability should always be kept to minimum. Wherever possible a wheelchair should be used to move a person.

When lifting or carrying is required ensure :

- Dignity of the person being lifted / carried

- Safety of person being lifted / carried
- That the person who is lifting / carrying should care his / her back

Techniques for Lifting and Carrying

- Always explain to the person you are going to lift: What you are going to do How you are going to do it What you would like them to do
- Stand as close as possible to the person you are going to lift
- When lifting a person, bend your knees, not your back, so you are at the same level as the person
- Move as close to the person as possible, bend your knees, place one arm under the thighs and place the other hand across the back and under the armpit
- When two people are required, Bend your knees and link hands firmly with each other under the thighs and across the back
- Decide beforehand the direction in which you will move
- Work in unison (e.g., 'on count of three lift')
- Ask the person being lifted to lean forward as much as possible

Techniques of Transfer

When transferring a person to or from a wheelchair to bed / toilet / car / floor or to another chair the wheelchair should always be placed as close possible to the place where the person is being transferred to.

1.6 Implications of Functional Limitations of children with CP in Education and Creating Prosthetic Environment in School and Home: Seating arrangements, Positioning and Handling Techniques at home and school

Education

Reading

Difficulty in Early Literacy
Children may have difficulty in the following areas

- Concepts about print

- Visual matching
- Whole-word recognition
- Phonological awareness
- Comprehension
- Creative comprehension

Difficulty in Formal Reading, Writing, Handwriting
Children may have difficulty in -

- Naming the letters
- Spelling words
- Accuracy of Reading (Aloud) - words, text, poetry

b) Types of errors

- Mispronunciations
- Omissions
- Substitutions
- Reversals
- Additions.
- Loses place

c) Rate of reading may be

- Too fast
- Fast, jerky, unclear
- Variable - in bursts, sometimes fast, sometimes slow
- Slow, jerky, unclear
- Too slow, loses flow of text

d) Children may have difficulty in

- Comprehension of text
- Creative writing
- Handwriting

Seating Arrangement: Special Furniture

Some children with cerebral palsy have difficulty sitting on their own. A special seat may be required when they are placed in a sitting position. Some ideas of the special furniture are discussed that may be suitable for the children with cerebral palsy.

Advantages of Special Furniture

If a child with cerebral palsy has difficulty controlling his head or sitting upright, a special seat may help him in many ways:

- It will give extra support
- He will be more comfortable
- He will feel more secure
- He will be able to maintain a better posture

Disadvantages of Special Furniture:

- Special furniture keeps the child in one position and may hence limit his activities.
- Children's size and sometimes their posture changes in time but special furniture is static and usually cannot be adjusted.
- A prolonged period of sitting can be very tiring for a child. If he is stiff, he is also at risk of becoming stiffer or getting contractures (permanent tightness) especially in his hips and knees.

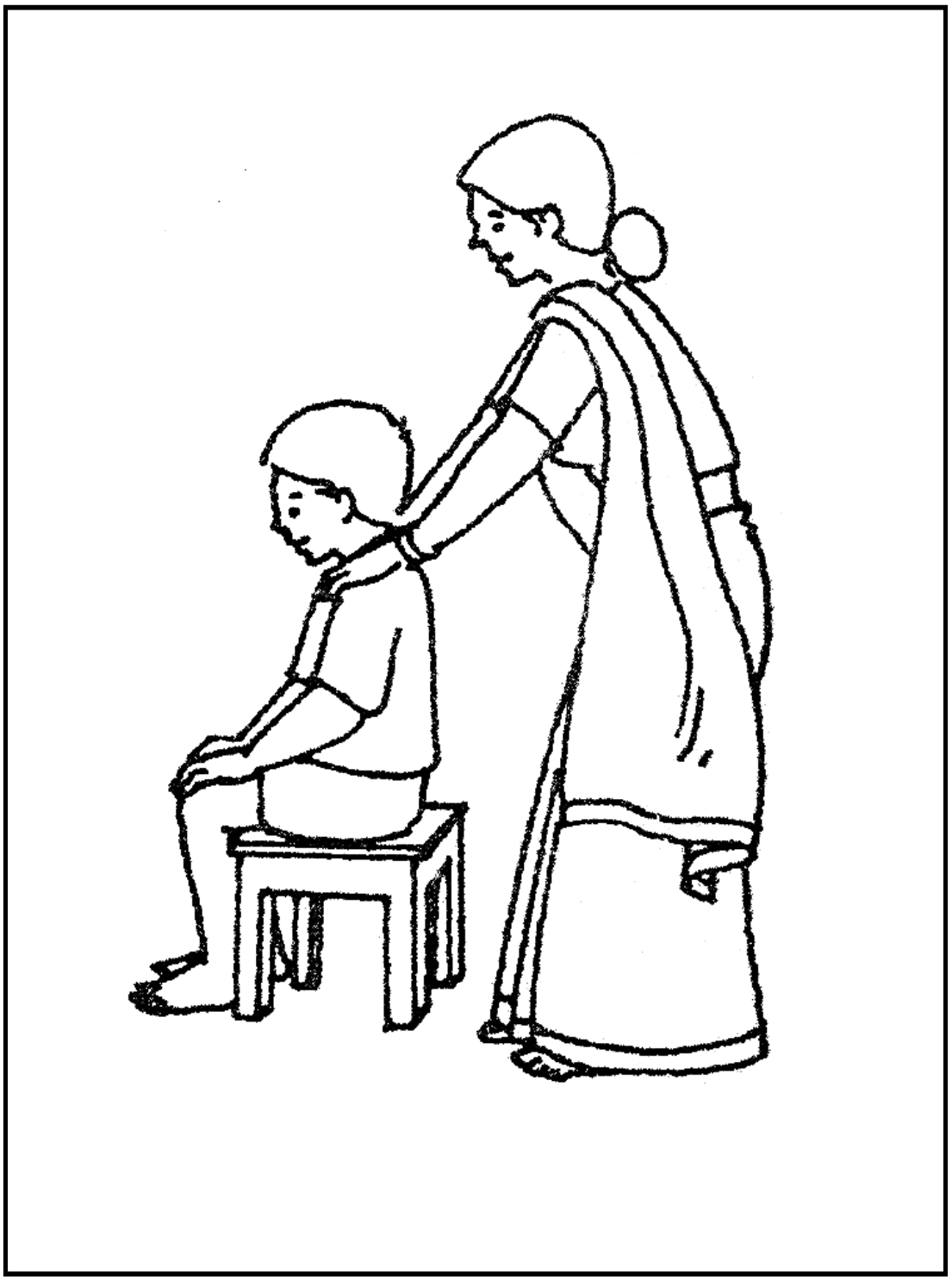
Making Special Furniture

- To make any special furniture for the child, give exact measurement to the carpenter.
- Make sure that the carpenter uses adhesive along with nails or screws on all wood joints, as this will make the furniture sturdier. It will also prevent urine or spilt liquid seeping through the joints of the wood.

- Always make sure that the wood surface is smoothed well with sandpaper before it is painted.
- Ensure that all sharp edges and corners are removed to prevent the child from hurting himself.
- Laminated sheets can be used on the surface of tables or trays if preferred. This makes cleaning easier.
- Painting the furniture makes it much more attractive. Use the child's favoritecolour for painting.

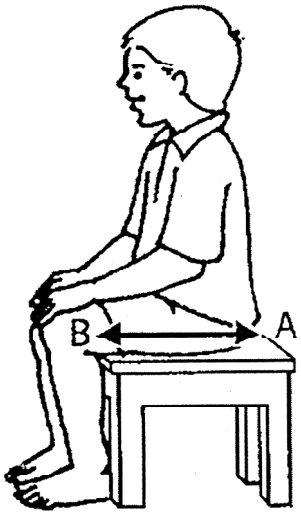
How to measure a child for a special seat

- Seat the child on a low stool (the height of the stool should be such that he / she can place his/ her feet flat on the floor)
- If the child cannot sit by himself, hold him in the sitting position on the stool.
- Try to keep the child as straight as possible.



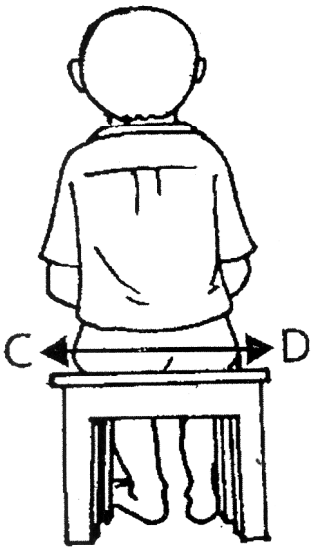
Seat Length

Measure from the child's back to where his knee bends (A to B).



Seat-width

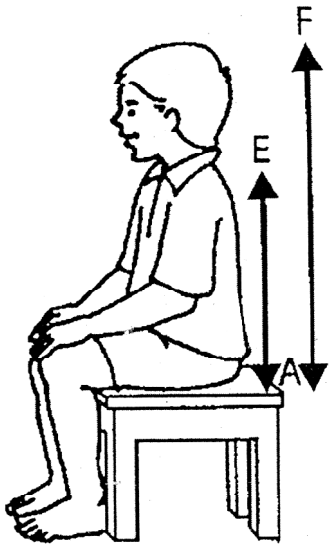
Measure the width of the child's back and add an extra 2 inches (C to D).

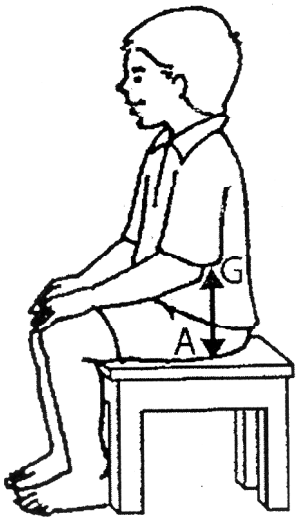


Height of the back of the seat

Measure from the stool to the top of the shoulders (A to E).

If the child cannot hold his head straight and does not have head control; measure from the stool to the top of the child's head (A to F).



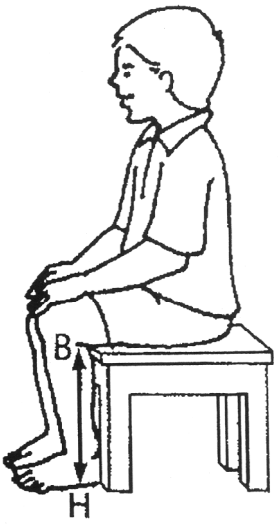


Arm rests (sides of the seat)

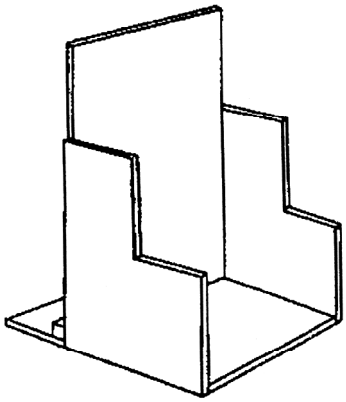
Measure from the stool to 2 inches above the child's waist (A to G).

Height of seat from the floor

Make sure that his knees are at right angles and his feet flat on the floor. Measure from the back of the knee to the floor (B to H).

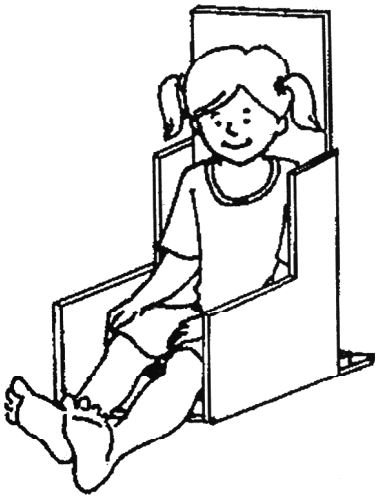


Following are some examples of special furniture and the type of child who may benefit from using the furniture.



Floor Seat

A floor seat is a simple seat that is suitable for children and families who sit on the floor at home or for many of their activities, such as eating and playing. It is most suitable for small or young children.

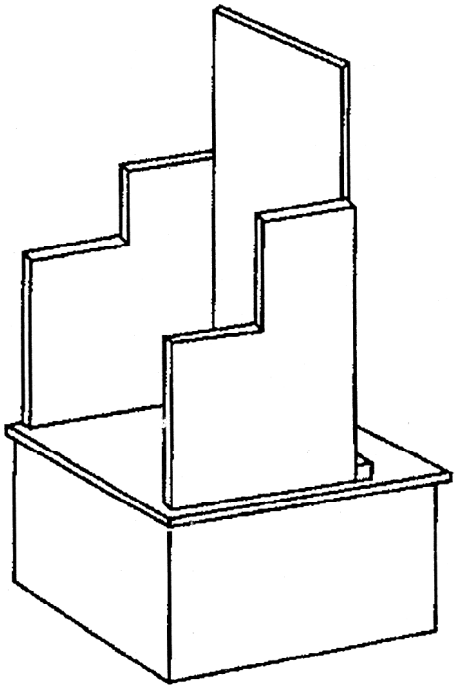


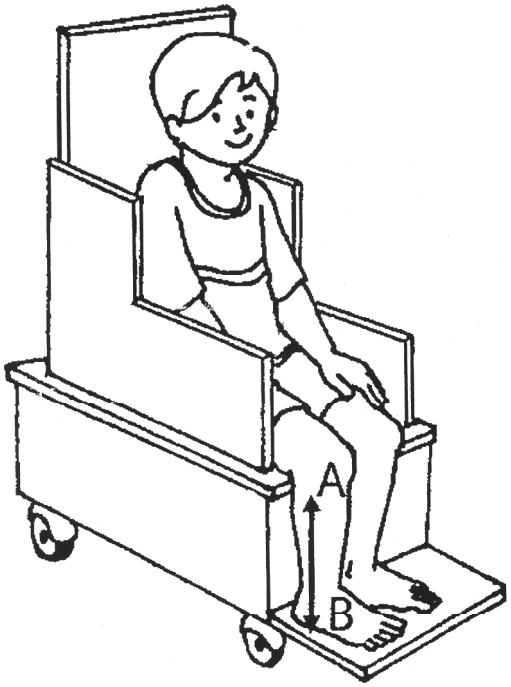
The floor seat gives support at the back and sides. If the head is not steady, it can be made higher at the back to give the child support at the back of his head. If the child is tight between the legs or tends to slip forward in the seat, a pommel can be fixed to the seat. The measurement for the pommel is given

The measurements for the floor seat are as explained earlier on page 3. The only difference is that the measurement of height of seat from the floor is not required as the seat is on the floor.

Box Seat

The same type of seat as the floor seat can be made at a higher level for the child who does not sit on the floor. The measurements for the height of the seat from the floor should then be included.



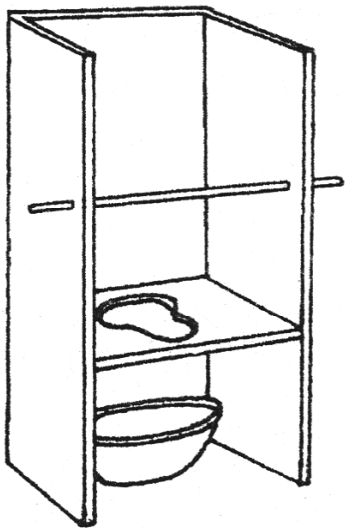


If you want to move the child around in the box seat, castors can be attached to the bottom of the seat so that it moves easily. If castors are attached, a foot rest will have to be added to the seat. To measure for the height of the foot rest, measure the child from the back of the ankle to the back of the knee (B to A).

Potty Chair

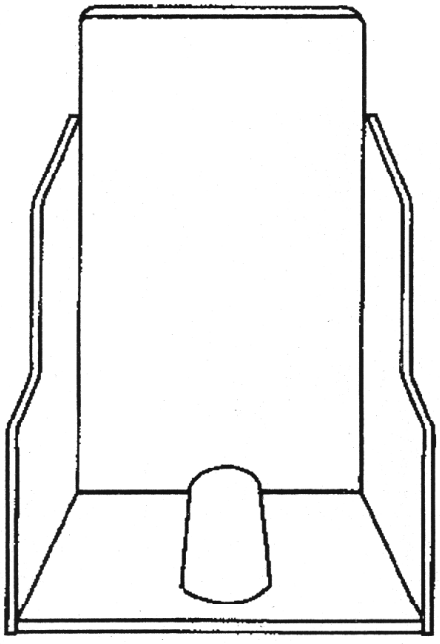
If the child cannot sit, or has unsteady sitting balance, it is often very difficult for him to use the toilet, whether it is western or Indian style. A potty seat should give the child enough support for him to sit without being held by anyone, so he has some privacy. It can be placed in a convenient discrete place in the home. It is also useful for children who are not yet toilet trained and need to be taken to the toilet very regularly.

The measurements are the same as for the box seat. However the sides of the potty seat should be straight up to the shoulder. Two circular holes are made in the sides of the seat through which a rod can be inserted to ensure that the child does not fall out of the potty chair.



The height of the rod will be from the seat to just below the armpits. It should be at a distance of 2 inches in front of the child's chest.

There will be a hole cut in the seat of the chair through which the child passes stool or urine. A bucket or container is placed under the hole. Remember the hole in the potty seat should be pear-shaped for boys.

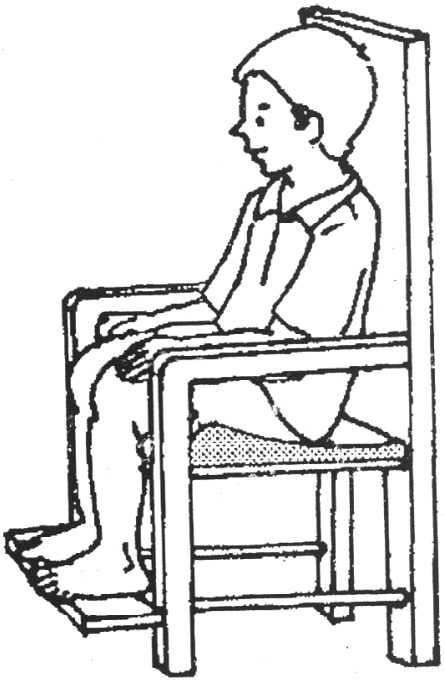


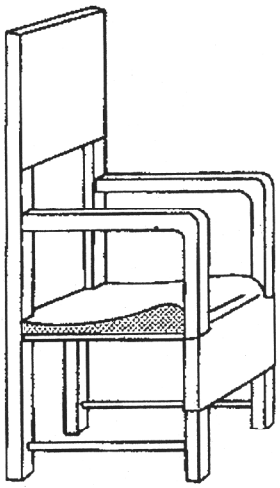
Pommel

Some children who have tightness between their legs may require a pommel which separates the legs. It also helps to stop children slipping forward in the chair. This is a cylindrical block of wood 6 inches high and 2 inches in diameter. It is secured to the seat at a distance of 1 inch in front of the child's groin. For extra comfort, pad the pommel with 1 inch thick foam and cover it with rexine.

Ramped Seat

Children who tend to slip forward on the seat often benefit if a ramp is fitted to the seat to prevent slipping. It is more comfortable than a pommel and often adequate to keep the child in place. If the child still slips forward even with the ramp, then a pommel may be required.

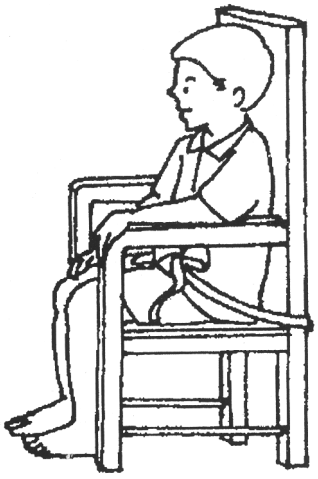




The ramp is usually two inches high at the front. It slopes gradually to cover 1/3 of the chair and becomes level with the rest of the seat. It can be made from ply wood, but should always be well padded with 1 inch thick foam which covers both the ramp and the rest of the seat.

Pelvic Strap

A pelvic strap gives added support and stability for children, who tend to slip forward in the seat. It is also a safety factor, as the child cannot fall out of the seat if left alone. The pelvic strap is always fixed at the back and below the level of the seat, so that it comes upwards and round the waist. This ensures that the child cannot slip under it. The strap should be made of thick cotton strapping 2 inches wide, which can be knotted in front.



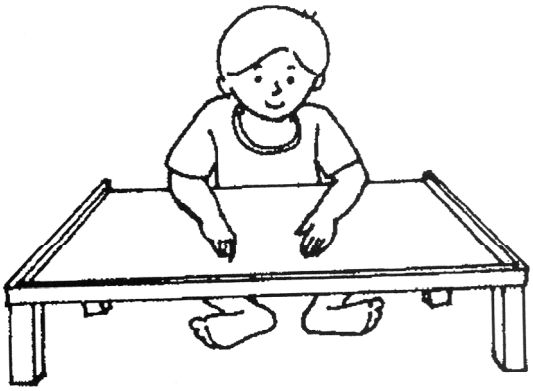
Padding for Seating

Children often spend a great deal of their day sitting so it is very important that the seat is comfortable and well padded. The padding usually consists of 1 inch foam. If the child is not toilet trained or if he tends to spill food when eating, it is best to cover the seat with rexine, which can *be.* easily wiped clean and dry. If the child sweats a lot, it is advisable to place/to towel over the rexine when the child is sitting in the seat. For children' who do not have toilet accidents and are not likely to spill food or water, it is more comfortable to cover the seat with cloth.

When padding a seat, the back, sides and seat of the chair should all be padded.

Padding is not advisable for toilet seats.

Floor Table

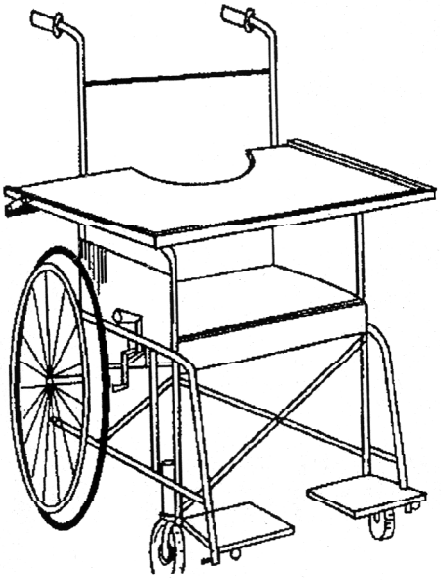


This type of table is very useful for children who sit on the floor. It is simple to make and does not take up too much space.

If children have difficulty sitting, it gives a support in front on which they can lean. They will be able to use their hands more effectively. Children who have a tendency to keep their knees bent and sit with their legs crossed or between their knees can be encouraged to sit with their legs straight if they have a floor table to lean on. The floor table can also be used with the floor seat.

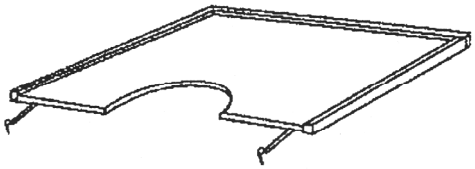
There should always be raised beading round the three sides of the table not in contact with the child to prevent objects or toys from rolling off the table.

The measurement for a floor table is usually 18" X 18". However for a younger child who uses a smaller chair, the floor table can be 15" X 15".



Cut-out Tray

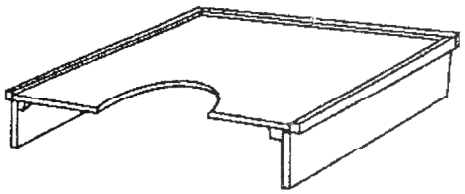
This type of tray can be fitted to a chair or wheelchair. It gives extra support for the child who tends to fall forwards or sideways when placed in a seat. The tray gives support round the trunk, and enables the child to be more upright and if possible, use his hands more effectively.

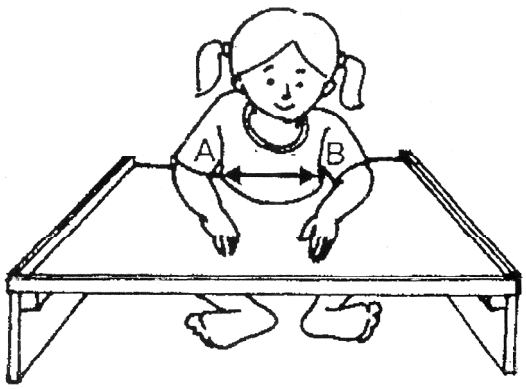


The tray needs to be anchored to the chair with hooks at both sides.

It could also be made into a table, by fitting it with legs, so it can be used'with a floor seat.

Measurement for the cut out tray will be the same as a for a cut out table. The height of the table should be just above the child's waist.





The cut-out portion should be measured to fit the child. The diameter of the semi-circle should be the width of the child's waist, plus two inches (A-B). It should fit comfortably around the child.

As with the floor table, beading should be placed round the thre.e sides of the trav.

A child will be most comfortable in a chair for which he has been measured carefully. These are just few ideas that may be suitable for the children. However, when possible, it is always better to seek expert advice before making a seat. As the child grows and develops we may need to change the size and the design of the seat.

1.7. Facilitating Teaching-Learning of children with CP in school, IEP, Developing TLM, Assistive technology to facilitate learning and functional activities.

Many children with CP will also have some type of learning disability. Assessment by a psychologist and the support of special educators can reduce the handicapping effects of the learning disability. Children with CP will often start their education early to help improve their mobility and communication skills before starting school.

Most children with CP will receive an integrated education enabling them to mix with their peers in their neighborhood school. A child with mild CP may simply require minor programme adjustments. For example, he may need a little more time to write an exam if his hand control in poor. A child with more severe disabilities may require considerable support from resource staff and teaching assistants.

Children should have an Individualized Education Plan (IEP) which assesses the child's performance, sets goals and specifics which supports are required.

The amount of support offered and the commitment to successful integration varies widely between school boards and individual schools. A good partnership between parents and educations will help children to achieve their goals.

The ultimate long term goal is realistic independence, to get there me have to have some short term goals, those being a working communication system, education is his potential, computer skills and above all friends.

IEP

To facilitate learning, all children with cerebral palsy need to be assessed to determine what kind of help they need. An assessment involves gathering information about the children and his development. It generally includes what kind of help a child needs.

Information comes from a variety of sources, for e.g., parents, the multidisciplinary assessment team, the child's doctor and medical history, reports and results from developmental tests and or checklists. A multidisciplinary assessment team of professionals includes a special educator, an occupational therapist, a physiotherapist, a speech and language specialist, medical specialist, and a psychologist. These professionals observe and test the child, and determine the child's strengths and needs. Based on their reports thelndividual Educational Programme / plan (IEP) is

prepared. The written plan describes the child's needs, as well as the services that are to be prepared for the child.

In the school at an IEP meeting the people who have assessed the child explain their findings, what tests/ checklist they used, and they also report the strengths of the child. On the basis of this meeting the IEP is developed. The plan lays out what the school intends to do during the school year. After that, during the whole academic year in a regular interval the school must schedule a meeting with the team to review the child's progress and if needed the IEP may be modified.

The IEP

IEP - IEP is a well formed written document which serves as a management tool for intervention. Components of IEP - this is written in two parts.

Part A

1. Demographic data - It includes, Child's name, age, sex, education, mother tongue, address, parent's name, occupation, income, date of filling IEP, registration number, class and roll no. etc. specific heads can which information is required.
2. Significant information about the person with CP. Sensory preference, learning time preference, attention span, rate of learning etc.
3. Goals - Goals selected on annual basis which the teachers expect the students to achieve over a period of one year as per curricular content is documented.
4. Associated condition - Many person with CP have an additional disability or more. Curricular strategies and planning may differ in cases with additional impairments.
5. Staff responsible - The person responsible for implementation of the IEP is documented for administrative and clinical reasons.

Part-B

1. Specific statements of what skill/activity to be taught is documented in the specific term. E.g. writing names of month of year.
2. Baseline or current level - The current level of the student is reference to the task/activity for teaching is documented. Eg. Can write names, 3 - better words.
3. Specific objectives - This is the statement that specifies what the student will learn (content) what the student will do with the content (behavior), performance level of the student in the content (criteria) and how much is the time period required for achieving the target (duration).

4. Materials and learning aids - learning aids make learning meaningful and carrier. Depending upon what is to be thought and child's specific interest level and needs learning aids may differ for same activity.
5. Procedure - How to motivate the child to learn the activity and how the task will be taught is described in a stepwise procedure. This all include different strategy to be used to make learning effective.
6. Evaluation - The student's performance in the particular task chosen against the set criteria as per the specific objective is noted.

Teaching Learning Materials (TLM) for Children with Cerebral Palsy

TLM are a necessary and important part of any classroom or learning situation. Learning materials to be imparted or conveyed through a medium which the learner easily accepts and comprehend. The TLM to be used depends on the subject to be taught and the age of the learner.

Bruner talks about three modes of Learning. They are: ENACTIVE MODE (Activity -based learning) **ICONIC MODE** (Learning by use of images and diagrams) **SYMBOLIC MODE** (Learning by use of symbols / languages)

We must always remember that each subject of study requires a different kind of TLM because

- It depends on the nature of the material to be learnt
- The methods of teaching being employed
- The needs and the nature of the learner at each stage of development

There are various criteria of selection of learning materials. Wood (1963) has suggested six criteria for selection of TLM.

- All TLM should make a definite contribution in achieving the goal on the part of the learner.
- There are individual differences in a group of students - variety of learning materials should be used.
- To increase the objectivity of analysis TLM should be authentic.
- TLM should be adapted to the maturity level of the pupils who are to use them.

- TLM should be selected on the basis of efficiency- the materials that result in the greatest amount of learning in the least amount of time.
- If there is a choice between two types of materials of equal learning value, the less expensive one should be chosen.

Using TLM

Junior-Most (Infancy) Classes (approx 2- 6 years) - we use play-way method. Children are instinctively curious and have innate desire to play, explore and learns through play.

Use - concrete objects made of different materials, shapes,colours etc.

Early Childhood (approx 6-10 years) - imagination and make believe play are important.

Role playing, hand work, project work are incorporated into the TLM.

Late Childhood (10-13 years) - the peer group becomes more important than parents and family.

Students like to participate in group activities requiring participation of each learner like project work, competition, exhibition, etc.

Adolescent (13+ years) the learner requires intellectual stimulation, emotional security, physical exercise, opportunity to make personal or individual decisions and contributions.

So demonstrations and guidance are employed

Group activities

Workshops

Projects, etc become part of the learning process

Assignments completed by the learners become important as TLM.

The Requirement of Visual Aids

To attract attention to what is being taught

To keep thoughts focused

To highlight the key points of a lesson

To introduce new, unfamiliar concepts

To outline or summarize the points of discussion

To advance the learning situation To add interest and involvement To make learning more permanent To help to overcome language barrier To develop greater understanding.

Audio-Visual Aids help to learn 35% faster and retain 55% longer.

Language and Reading Aids

Look and say card

Feely bag

Mystery picture

What's happening cards

Half-moon cards

Alphabet booklet

Beginning-ending

Read, write and draw

Action words

Action dice

Flannel board & cut-outs(for story telling)

Number Aids

Colour box and pegs

The sorting tray

Sandpaper numbers on cards

Number jigsaws

Fishing games

Number dice

The abacus, etc

Assistive Technology to Facilitate Learning
Technology Refers to

- Any tool that has the potential to remove the tedium and repetition and will allowus to perform that which is most human
- Application of knowledge to meet the goals, goods and services desired by people
- The way to use, to develop a 'tool', any 'tool' to solve a specific problem minimizing the effort to do it.

Information Communication Technology (ICT)

- Deals with information
- Facilitates communication

The concepts covered by the word ICT are -

- Computer technology
- Networking
- Data collection- analysis
- Gathering information and managing it efficiently
- Interactive
- Innovative
- Entertaining

Assistive Technology (AT) is any item, piece of equipment, or product system whether acquired commercially off the shelf, modified or customized that is used to increase, maintain or improve the functional capabilities of individuals with disabilities.

Different types of Assistive Technology (AT) :

* Furniture, Work Surfaces and Work Stations
* Mobility devices
* Low tech devices or assistive devices for the activities of daily living
* Computer Access: Hardware and Software
* Aids for people with low vision and visual impairment

* Hearing impairment
* Augmentative and Alternative communication devices and software
* Electronic Aids to Daily Living (EADLs) or Environmental Control Units (ECUs)
* Mounting Devices and other Performance Enablers
* Single switches and controllers - for access to many types of AT devices

Inclusive Technology

- Is the application of scientific advances to benefit humanity
- Supports the Rights of All Citizens
- Provides support for learning, communication and living
- Empowers All people

Therefore Inclusive Technology needs to be

- Pragmatic
- Affordable
- Flexible
- Culturally relevant

1.8 Let us Sum Up

''Cerebral Palsy'' (CP) or ''Cerebral Paralysis, was first indentified by English Surgeon William Little in 1862, and therefore the condition is known as ''Little Disease''. The term CP was given by Phelps (1946). According to him, ''Cerebral'' refers to the brain and the word 'Palsy'describes a lack muscle control.

cerebral Palsy describes a group of permanent disorders of the development of movement and posture, causing activity limitation, that are attributed to the nonprogressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompained by disturbances of sensation, perception, cognition, communication, and behaviour, by epilepsy, and by secondary musculoskeletal problems.

Cerebral Palsy (CP) does not always cause profound disabilities. While one child

with severe cerebral palsy might be unable to walk and need extensive, lifelong care, another with mild cerebral palsy (CP) might be only slightly awakward and require no special assistance. Supportive treatments, medications, and surgery can help many individuals improve their motor skills and ability to communicate with the world.

1.9 ‘‘Check your Progress’’

1. Define cerebral Palsy.

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2. Give a brief descriptions of associated conditions of C.P.

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3. Classify Cerebral Palsy?

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4. What are the possible physical problems of CP?

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5. What are the areas children may have face due to CP?

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6. Describe the criteria of selection of learning materials for CP Children.

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1.10 References

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Unit-2 ❐ Amputees, Polio, Spinal Cord injuries, Spina-Bifida and Muscular Dystrophy

Structure :

2.1 Introduction :

The aim of the unit is to develop awarness regarding amputation, polio, spinal cord iujury, spinobi-fida and muscular dystrophy and also the therpeutic measres including assessment points. So that you can identfy the children with above disabilities and plan an effective programme education. You can also refer for effective therapeutic programme and medical intervention.

2.2 Objectives :

- After completing the unit you will be able to understand :-
- Idnetify the person with amputee. Spinal cord injury, polio, muscular dystropy
- Plan an effective programme for creating awareness.
- You can refer properly
- Handling will be easy during teaching time
- You can reudce the future complication and strain to the parents
- You will be able to understand the educational implications and medical management.
- You will know the causes, classification and symptoms of the conditions.

2.3 Amputations :

2.3.1 Defination : An amputation is the loss of same part of the body. Rarely children are born with out one or both hands or feet. More after, children lose one arm or leg because of injuries in accidents. Accidents with agricultural implements are a major cause of amputations. Machines like fodder cutters are often used with out proper safety devices. Adults working on these machines and large portation of fingers and arms. Therefore, accidents often result in severe injuries of the forearn and evenarn, resulting in amputations.

Some time lack of proper case of the wound can lead to the amputation of a limb, for example ofter tourniquents or tight bandages around the lime are applied as a first aid for shaked and for control of bleeding.

In the urben areas road accidents are significant cause ofamputations.

Sometimes limbs must be cut off because of advanced bone infections of dangerous tumors (cancers) burns, leprosy, surveys around the country have shown that most children and adult amptees.

2.3.2 Therapeutic Management of Amputee :

Care of the Amputated Limb : The goals in caring for the stump are to maintain a good shape and good position for filling an artificial limb. This means taking active step to :

1. Avoid swelling
2. Keep the full range of motion (Prevent Contractures)
3. Maintain strength

Wrapping the Stump : To prevent swelling and keep a good shape for fitting an artifical limb. It is importent to wrap the newly amputated limb for a long time after it has been cut off.

The leg should be wrapped in a way that squeezes the liquied in the leg upward (rather the trapping it at the end).

2.3.3 Prevention of Contractures :

A child with an amputated leg does not use his leg normally. He usually keeps it bent and he tends to develop contractures of the hip or knee (or both)

Therefore special positioning and exercises are needed to prevent contractures and maintain full range of motion.

Position : Encourage positions that keep the joints strectched, and avoid those that keep the joint bent.

Stretching Exercises : Stretching exercise for the fight muscles to avoid contracture and to avoid contracture and deformity.

- Surgical intarvention if necessary

2.3.4 Assessment of Functional Difficulties :

Muscle tone of both upper limbs and lower limbs.

Tightness/deformity/contracture — of muscles joint range of motion of both upper limbs and lower limbs.

Muscles strength of upper limbs and lower limbs.

Hand function (Reach, grasp pinch, release, grip, pinch)

Functional skill achieved — Spine to sit, sit to stand, squit, bed mobility etc.

Balane — Static, Dynamic.

Co-ordination—Upper and Lower Limbs.

Sensory Evaluation : pain, temp, pressure–present or absent sensibility–tactile, vestibular, auditory visual presnet or absent.

Skill Achieved : Gross motor skill—skill achieve/ Not achieved

Fine motor skill—skill achieved/Not achieved

Adl skill—feeding, toileting, dressing, bathing, grouming, mobility.

Shoret term goal—

Long term goal—

2.4. Polio :

Polio is the single most common cause of physical disability amongst children.

2.4.1 Defination :

Poliomyelitis is a virus infection of the Antenior Horn Cells (AHC) in the prain stem and spinal cord resulting into temporary or permanent paralys's or weakness of muscles associated with those A.H.Cs.

What causes it? A virus (infection). The infection attacks parts of the spinal cord, where it damages only the nerve cells that control movement. In areas with poor hygiene and lack of Sanitary Latrines, the polio infection spreads stool of a sick child to the mouth of a healthy child i.e facco–oral route. The virus can contaminate drinking water or food through flies or dirty hands and attack another child. Where sanitation is better, polio spreads possibly through coughing and sheezing.

Do all children who become infected with the polio virus become paralyzed? No, only a small percentage become paralyzed. Most only get what looks like a bad cold, with fever. However, if a child a 'cold' causes by the polio virus is given an injection of any medication, the irritation caused by the injection can bring on paralysis.

(1) Pre-paralytic stage (About 2 days) : In this stage there are symptoms of fever nausea and pain, spasm and fatigue (tiredness) in muscles of vertebral coloumn / limbs / respiration.

(2) Acute paralytic stage (About 2 weeks) : In this stage muscles become tender and are completely or partically paralysed. If the muscles of respiration are involved breathing becomes difficult.

(3) Convalescent stage (Upto 2 years) : In this stage the infection subsides. The muscles recover in their actin depending on the recovery of the A.H.C which supplies them. Those A.H.Cs which recover fully, the muscles supplied by them recover fully. Those A.H.Cs recover partially the muscles supplied by them recover partially and they remain weak in power. those A.H.Cs dieout, the muscles supplied by them do not recover and they remain paralysed forever.

(4) Residual stage (After 2 years) : In this stage the patients relearns to compensate his motor deficits. The patient may learn to adapt and adjust the actions of paralysed muscles with the help of the actions of affected weak muscles or non affected strong muscles.

How does the paralysis begin : It begins after signs of a cold and fever, sometimes with diarrhoea or vomiting. After a few days the neck becomes stiff and painful and parts of the body become limp. Parents may notice the weakness right away, or only after the child recovers from the acute illness.

Once a child is paralyzed, what changes or improvement can be expected ? Once the child is paralyzed the paralysis will not go away, nor, will it get worse.

In the initial acute stage of the disease, the child may not be able to move his limbs because of the pain and paralysis. He may seem more paralyzed than he actually is. Once the pain goes and as the partially damaged muscles recover there will be improvement in function.

Symptoms :

1. Paralys's in young children, which is accompained by illness such as bad cold with fever and sometimes diarrhea.
2. Paralysis may affect the muscles of the body but is most common in the legs. It is usually a symmetrical.
3. Paralysis causes the limb to be flaccid (not still but very loose)
4. The muscles and bones of the affected limb becomes thinner than the other limb.
5. The feeling is not affected (sensation)
6. There may be many deformities or contractures due to paralysis of the position in which the limb is held and disuse of the limb.

Other Common Deformities : Weight bearing (supporting the dody's weight) on weak joints can cause deformities.

What Can be Done : During the Original Illness when the child first become paralyzed.

- No medicines help, either during the first illness or later.
- Rest is important
- Good food during recovery helps
- Position the child to be comfortable and to avoid contractures. At first the muscles will be painful, and the child will not want to straighted his joints. Slowly and gently try to straighted his arms and legs so that the child lies in as good a position as possible.

Following the Original Illness : Continue with good food and good positions.

- As soon as the fever drops, start exercises to prevent contractures and return strength. Range of motion exercise.

2.4.2 Censes :

The cense of poliomyclitis is an neurotropic virus. They enter the body by the way of interlinal tract, pass through the blood stream and finaly infect the AHCs.

The origin of infection can be established through a previous attack of chicken pox, mumps, measles or upper respiratory tract infection.

It is caused by three starains of the polio virus namely—

1. Brunhilde; 2. Lansing; 3. Leon.

Lansing is the most virulant. It spread through the stool of another child who has sub-clinical polio.

2.4.3 Types :

There are three main types of polio myelitis.

(1) **Encephalitic type :** involving the brain.

(2) **Bulbar type :** involving the brain stem.

(3) **Spinal type :** involving the spinal cord.

The most common is the spinal type. The diseases progress through the following stages—

2.4.4 Deforminitis Commonly Seen in Polio :

1. **Scoliosis :** It is when the spine curves latually. It decreses the space in the throasic cavity thus decreasing space for the heart and lungs.
2. **Over-extended knee joints :** It is also called genureurvatum. It is caused due to weight learning an a weak leg causing the knee to bend backwards.
3. **Knee flexion contracture :** If the knee in left is a bent position then it gets fixed in that position.
4. **High arched foot (pescavse) :** It is caused due to bending down of the bones of the mid foot. Since the middle of the foot bends it appears as it the foot arches are very high.

Contractures of Joints : A contructur is a shortening of muscles and tendons (cords) so that the full range of limb movements is prevented.

2.4.5 Therapeutic Management for Polio :

- When ever possible, make exercise fun. Active games, swimming.
- Crutches, leg braces (calipers) and other sids may help the child to mone better and may prevent contractures or deformities.
- In special cases surgery may be needed to correct contractures or to change the place where strong muscles attach. So that they help to the work of weak ones. When a foot is very floppy or bends to one side, surgery.
- Encourage the child to use his body and mind as much as possible, to play actively with others children to take care of his daily needs, to help with work.

Rehabilitation of the child with paralysis : All children paralyzed by polio can be helped by certain basic rehabilitation measures – such as exercise to keep a full range of motion in the affected limbs.

However, each child will be have a different combination and severity of paralyzed muscles and therefore will have his own special needs.

(i) **Exercise :** To keep as strong as possible and prevent, contractures, probably the best therepy, at least at first, is to stay active, to walk, run, and play. While range of motion and stretching exercises may help, it is even better to involve the child in games, work and other activities that keep his joints flexible. Even though he is slow and awkward, encourage him to take part. Feeling sorry for him and just letting his sit is the worst thing you can do.

(ii) **Braces.** Long-leg braces should not be used untik absolutely necessary, as they will let the child's legs grow weaker faster. Sometimes lightweight plastic ankle splints, worn day and night, will help delay ankle contractures and keep him walking better.

(iii) If contractures of the knees and hips begin to develop, try resting or sleeping with 'sand bays' to press down the legs and help straighten them.

2.5 Spinal Cord Injuries :

2.5.1 Definition :

Spinal cord injury usually results from an accident that breaks or severly damages the central nerve cord in the neck or back : falls of old people in a soapy bathrooms, onunlit staircases, due to crush injuries during beilding construction, falls

fom frees on mucles or into unprotected wells, automobile, mining and diving accidents, bullet wounds and other injuries spinal cord injury is more common in young adults and in general it is twice as common in men as in women.

The spinal cord is the line collection of nerves that comes out of the brain and runs down the back bone from the cord, nerves go out to the whole body. Sensation of pain temperature, pressure and movement are controlled by messages that travel back and forth through the spinal cord. When the cord is damaged, sensations and movement in the body below the level of the injury are lost or reduced.

2.5.2 Level of the Injury :

How much of the body is affected depends on the level of the injury along the backbone. The higher the point of injury is the greater the area of the body that is affected.

Complete and incomplete injuries : When the spinal cord is damaged so completely that no nerve messages get through the injury is said to be complete feeling and cornpletely and permanently lost. If the injury are cormplete or partial some feeling and movement may remain or felling and controlled movement may return (partly or entirely) little by little during several months. In incomplete injuries, one side may have less felling and movement than the other.

Early Question That a Spinal Cord Injured Child and Family May Ask : "Will my child always remain paralyzed?" This will depend on now much the spinal cord has been damaged. If paraoysis example, if the child has some felling and control of some inplovement.

Helping The Child and Family Adjust : Spinal cord injury expecially in the child brings many of the same problems as does are similar. Suggest you read spina bifida to get additional ideas for the rehabilitation of young children with spinal cord injuries.

Perhaps the biggest difference from spina bifida is that spinal cord injury beging later. One day the child is physically active and able the rest he is suddenly prarlyzed and (at first) unable to do much for himself. He has lost all feeling and control inpart of his body. It is like a dead weight. This is very hard for the child and family to accept. Both have a anormous fear and uncertainly about the future the child may become deeply depressed or angry and unco-orperative. He may refuse even to sit in a wheel chair because this means acception not being able to walk. The child in the hospital to make sure the child is kept clean and turned regularly. So that the

bad, sores and pheumonia are avoided. (Busy hospital staff with less experience treat on spinal cord injuries, sometimes severe bed sored develop.)

2.5.3 Therapeutic Management of Spinal Cord Injury :

Rehabilitation goals in a child with spinal cord injury :

(1) Education of the child and the family in spinal cord function and spinal cord injury.

(2) Training in appropriate movement.

(3) Training in self care and actives of daily living.

(4) Prevention of deformities and presselan sores.

(5) Boldder and bowel training and pressure sores.

(6) Control of so motor dysfunction (postural hypotension and autonomic dysreflexia).

(7) Maintenance of nutrition with out letting the child come fat.

(8) Control of pain.

(9) Sex education.

(10) Emotional and spcieal adjustment.

(11) Intoduction of appropriate recreation and sports.

(12) Return to home and school.

(13) Information on financial and other assistnce avaible from the government and other agencies (for parents).

(14) Regular life long follow up.

Preventing Pressre Sores (bed sores) : When feeling has been lost pressure sores and sores can easily form on the over body areas-especially on the hips and buttock. The biggest risk of sores is in the fast weeks after the injury. This is because. The child, due to paralysis, must stay very still and has not yet learned to move or turn over his body. Prevention of pressure sores is extremely. Importance and needs under standing and continuous care, both the child and house caring for him.

Avoiding Contractures : In the first weeks following a spinal cord injury, when the child in alying position, joint contractures (muscles shortening) can easily

develop, aspecially in the feet and elbows, pillows and pads should be placed to keep the feet supported the elbows strainght, and the hands in a good position, gentle range of motion exercises of the feet, hands and arms should begin as easy as possible laking care hot to move the back umlit the injour is healed. Further discussion on the prevention of comtres in the spinal cord injured is on P. 215.

Physical Therapy Folloiwng Spinal Cord Injury :

Assisted Breathing and Coughing : Persons with spinal cord injury in the neck or upper back after have past of their breathing muscles paralyzed. Slowly the ramining muscles become stronger and breathing imporve. But breathing often stays weak.

Movement and Exercise : Do range of motion exercises for about 10 minutes for each arm and leg in the first week do this twice a day. Later once a day may be enough.

Range of motion exercises should begin with great care the day after the spine is injured, the exercieses will help to improve the flow of blood to prevent contractures, and to build the strength of the muscles that still work.

2.6 Spina Bifida

2.6.1 What is Spina Bifida :

Spina bifida is a defect in the early development of the body when it is in the womb. It happens when some of the back bones (vertebral) do not close over the large cnetral nerve, i.e. incomplete closure of the vertebral canal. (the spinal cord). As a result there remians a soft unprotected area of the spinal cord which bulges out in the centre of the back. This bulged out area (sac) may contain the covering (meningeal membrance) of the spinal cord with fluid (cerebro-spinal-fluid) and sometimes either nereve fibrs on even a part of the spinal card. It may be covered by very thin skin or normal skin.

The cause of spina bifida is not known.

All spina bifida are not alika. All of them do not contain nerve fibres or the spinal cord in the sac. In some the sac may be very small but the spinal cord lies exposed on the surface.

2.6.2 Types of Spina Bifida :

Spina bifida can be divided in to two broad groups, as (a) Spina Bifida Occulta (b) Spina Bifida Cystica.

(i) Spina Bifida Occulta : In this condition there is no bulge (sac) on the surface but there is non closure of the verteb rac around the spinal cord. In a large number of these children the condition is indicated by the presence of skin vscons at the site of the spina bifida occulta.

Characteristics : (a) The posterior arches of the vertebra are not formed.

(b) The meninges do not come out of the opening.

(c) The spinal cord does not come out of the opening.

(d) The defect is fully covered (hidden) by skin. Hence the from 'occulta' which means 'hidden'.

(ii) Spina Bifida Cystica : In this condition there is a bulger (sac) on the surface of the back because of the non closure of the non-cloure of vertebrac. The problems that these children will face at birth or cater will depend on the contents and nature of the sac. There are **3 types of spina bifida cystica**.

(i) Meningocele : The sac on the back is covered by normal skin. It contains only slouid and covering of spinal cord. It does not contain any nerve fibres.

(ii) Meningomyelocele : This is a common and fifficult condition. The bulge is in the centre of the back. It contains fluid the coverings of the spinl cord.

Characteristic of Myelomeningocele :

(a) The posterior arches of the vertebra are not formed.

(b) The meninges come out of the opening.

(c) The spinal cord comes out of the opening.

(d) The defect is covered by a thin transparent membrane and the cerebre-spinal fluid (C.S.F) oozer through it.

(iii) Myelocele : In this condition the spinal cord lies exposed on the surface. Like a red ribbon like structure in the centre of the back.

Problems Associated With Spina Bifida Birth :

High risk

- Muscle weakness
- Big head
- Brain damage
- Hips one or both hips may be dislocated
- The feet may turn down and in.
- If the defect is relatively highly up the back
- Poor urine and bowel control

2.6.3 Problems Associated :

What to look for when a baby is born with spina Bifida :

- First of all examine the baby to see if there is any other birth defect which may be serious. For example a heart defect
- Try to make out the type of spina bifida and where exactly it is located on the back.
- What is the size of the bulge and what is the condition of the skin covering it?
- Try to see if there is any movement or sensation in the legs.
- Does the child urinate or is there dribbling of urine.
- Are there any problems in the feet. Joints or in the back bone.
- **What are the problems when the child is older :**
- **Urinary infections :** Because of poor control on the passing of urine the bladder is never completely emptied out.
- **Curve of the spine :** The spine may be curved at birth and this may become more marked later.
- **Pressure sores :** If the child cannot feel, pressure sores may form over the body areas, due to pressure.
- **Posture :** Due to muscle weakness or paralysis fo the legs, the child may not be able to sit or stand with out support.
- **Foot injuries :** Children who can walk but have no feeling in their feet may easily develop sores or injuries.

- **Contractures :** In correct postures may result in contractures.
- **Social problems :** Because of a lack of urine and bowel control, sometime children with spina bifida get socially isolated.
- **Bladder and Bowel Management :** A child with spina bifida usually does not develop the some control of urinating (bladder control) and possing stool (bowel control) as other children do. The child may always dribble urine or as she gets older she may continue to empty her baldder or bowels with out warning perhaps without even knowing or feeling it.

2.6.4 Therapeutic Management :

- **Prevention and correction of contractures :** Some children with spina bifida tend to develop contractures either because of muscle imblance or, less often, because of spasticity (abnormal muscle tightness). Contractures most often develop in the feet heps, and knees range of motion and stretching exercises can help prevent and correct early contracutres.
- **Helping the child develop :** Many children with spina bifida are paralyzed from the waist down. In spite of their disablity,it is important for them to develop their bodis, their minds, and their social abilities as much as possibles. Certain adaptive aids can be used to help paralyzed children go through the same stages of development.

Whent adapting aids for children with spina bifida, some children manage to walk with out braces perhaps with the aid of parallel bars like these, and later crutches, others will need above knee or below knee braces.

- **Prevention of pressure sores and injuries :** As a child who has no feeling in parts of his body grows older and heavier there is increasing danger that pressure sores (bed sores) will form over bony areas that support his wieght (mostly his bottom of his feet) to prevent this :
- Have the child sleep and sit on a mattress or cushion that is soft (such foam rubber) clean and move on turn over often.
- Examine the child's lower body daily for early signs of irritation on sores everyday cheak especially the hipe knees and feet clean the childs body every day.
- When he is a little older the child can learn to check his owe body each day for sores.

2.7 Muscular Dystrophy

Muscular Dystrophy is a muscluar skeletal condition. In this condition the muscle fibres are replaced by fat cells and the muscle gradually waste (strophy). This causes "a progressive" loss of muscle power.

Definition : Muscular dystrophy is a progressive diffuse weakness of all muscles groups characterized by degeneration of muscle cells and their replacement by fat and fibrous tissue.

2.7.1 What is Muscular Dystrophy :

Muscular dystrophy is a condition in which muscles, month by month and year by year, get weaker and weaker. Because the disability gradually gets worse, we say it is progressive.

1. How to Recognize if Muscle Weakness is Caused by Muscular Dystrophy :

(i) Mostly affects body (rarely girls)

(ii) Often brothers or male relatives have some problem.

(iii) First signs appear around ages 3 to 5 the child may seem awkward or clumys or the begins to walk 'tiptoe' because he cannot put his feet flat. Runs strangely. Falls often.

(iv) Problem gets steadity worse over the next several years.

(v) Muscle weakness first affects feet, fronts of things, hips, belly shoulders and elbows later it affects hands, face and neck muscles.

(vi) Most children become unable to walk by age 10.

(vii) May develop a severe carve of the spine.

(viii) Heart and breathing muscles also get weak. Child usually dies before age 20 from heat failure or Pheumonia.

2. Early Common Sign of Muscular Dystrophy :

(i) To get up from the ground, the child 'walks up' his things with his hands. (climbing his own body)—Gower's sign. This is maily because of weak thigh muscles.

3. Questions about Muscular Dystrophy :

(i) What causes it? Nobody knows, but in 2 out of 3 families with muscular dystrophy, there is a history of it among male rlatives of the mother. Though

the parents are usually normal the mother carries the 'gene' that produces dystrophy in her sons. Her daughters will develop normaly, but they may have sons with muscular dystrophy.

2.7.2 Cause :

The exact cause of the disease is not fully known. It is observed to be inherited genetrically from mother by mostly the male child. There are even cases where no positive history is tracted in the family.

2.7.3 Types :

There are several types. The most common and severe type is the Duchenne type or Duchenne Muscular Dystrophy. Hence only this type of muscular dystrophy has been described here.

Duchenne Muscular Dystrophy :

Characteristics of Duchenne Muscular Dystrophy are :

(1) Progressive weakness of muscle which starts at the age of 3 years.

(2) Weakness progresses from muscles of ankle joint to the muscle of hand, face and neck.

(3) Muscles around pelvic girdle and shoulder girdle are affected more leading to a typical manner of getting up the floor (Gower's sign).

(4) The muscles show false enlargement (pseduo-hypertrophy) owing to deposit of fatty material in place of degenerated muscle tissur. The common site of pseudohypertrophy is the calf muscle.

(5) Postures and gait become atypical. [waddling gait]

(6) Respiratory and cardiac muscle are eventually affected in the later stage leading to death.

2.7.4 Associated Problems :

(1) **Locomotor Retardation :** Locomotor retardation starts appearing in the form of frequent falls and slowness in walking at an early age. Subsequently climbing, running and finally walking becomes impossible. The person needs to move around only in a wheelchair in the last stages.

(2) **Skeletal Deformities :** Weakness of muscles leads to their shortening i.e. contractures. This leas to deformities.

(a) Trunk-Scoliosis

(b) Neck-flexion deformity

(c) Lower limbx — (i) ankle - downward an downward bending [planter flexion]

(ii) knee and hip - flexion deformity

(3) **Obesity :** Because of restricted activity and probable compensatory overating, these children tend to become obese.

(4) **Slowness in Learning :** Slowness in learning, not mental retardation, is present in about 70 percent of the cases, The intelligent Quotient is normally above 80 but generally below 90.

Educational Implication :

Progression of the disease does not allow the child to attend school regularly. This leads to poor performance in school work and eventual scholastic backwardness.

Owing to their slower speed in learning a special teacher doing a remeidal educational programme at home is most effective. But even such special educational approach goes on becoming difficult as the age progresses because the child becomes increasingly tired. Motivation to study becomes less.

2.7.5 Therapeutic Management :

(1) Helping the Child to keep Walking for as lang as Possible :

(ii) Other aids. The child will reach a point where he needs to use cratchess, later (often by age 10) he will not be able to walk. Do not force him when it becomes too hard. Instead, try to obtain or make a wheelchair.

(iii) Breathing deeply is important, especially when the muscles that move the lungs begin to weaken. Encourage the child to sing liudly to shout to blow whistles and to blow up bolloons.

Other Problem :

(i) Getting fot is a common problem in children with dystrophy.

(ii) Constipation (hard, difficult stools) may become problem.

(iii) Spinal curve can become severe.

(iv) Arm weakness in time may become a problem for self care and eating.

2.8 Implication of Functional Limitations for Education and creating Prosthetic Environment in School and Home :

Seating Arrangements, Positioning and Handling Techniques at Home and School.

- Widen aisles to make room for wheelchairs. Also, add walkers and
- Handrails where needed/ramp should be there.
- Hang paper and other art supplies in reach of the children.
- Alow for adaptations in the classroom. Seat the child closer to the front if she has visual or hearing impairments. If the child has hard time writing, allow him to record lectures with a tape recorder.
- Change your style to teaching you may have to make text larger on the overhead machine or the chalk board. Remember to write lower on the baord so it at eye if it is only by nodding.
- Encourage social relationships by having the children form small group to discuss ideas of recent chapters covers in the class.
- Stay involved with the other educatin and therepists involved in the childs individualized education programme (I.E.P)

Generally, a student with cerebral plasy will have impaired motor abilities. He/ She might not be able to write with a pen/pencil without it taking a long time or possible at all. He/she might be able to speak, but is probably hard to understand. Though he/she is wheelchairs bound, he/she has normal achieving cognative abilities. The ideas below are some possible adaptations that might help these students to succeed in your classroom. These adaptations are fairly simple and can be applied in your classroom. Without much disruption to your normal routine.

If possible, let him/her use a lap computer at the desk so that he/she can type the work instead of writing it by hand. A computer with adoptive devices would work best, if available. This would be a lot easier on him/her and it would help the student

to keep up with the rest of the class of course, it would depend on if a lap computer were available to the student.

- Adaptation of pen/pencil if required.
- Positioning of chair, bench/table etc.
- Should be porper to avoid contracture.
- Design activities to develop fine motor skill.
- Proper anatomical position : Chair, table for study.
- Foot rest if needed should be those
- Assist the child with adaptive and assistive devices.

2.9 Facilitating Teaching - Learning : IEP Developing TLM; Assitive Technology :

Acitivities :

Tug-of-war, Backpack hiking, Jumping over obstacles, crab walking relay races, crawling under a Parachute.

Crawling (can crawl through tunnel, over beanbags or pillows), Running, Climbing, Marching, Wall push-ups, Weighted garments, Pressure, Heavy work, Scooter board, Therapy ball.

Jumping on a trumpoline, acitivities for auditory sense, soft music, soft voice, white noise, quiet room up beat music, loud voice, Instruments/noise makers, Classical music, Activities for visuals sense :

Sense of colours, soft colors, solid backrounds, Dim lights, Desk lamp, Flash light tag, Visual schedules, Bright colours bright lights.

Name identification through puzzle

Material – 1 colour paper, marker, scissors.

2. Ice Cream sticks, colour Pencils, scissors group activity

- **Action Dice**

Material – unused box, marker, picture....

TLM for developing pre-writing skill

- **Line Tracing.**

Material – match stick, glue, cardboard play Dough letters.

Material – clay, straw

- **Letter Tray**

Material – tray/dish, sand/ flour, shavin foam cdor, salt tray games.

Salt, old box, flash cord, market

- **Sensory Tracing**

Materials – colour material paper, white paper, pencil, glue

TLM for developing pre-math skills.

- **Big-Small**

Sorting

Materials – Egg crate, square colour paper.

Number writing and counting

Materials – Flash cards with dots, salt, old box.

Balloon counting–1–10

Materials–balloons, market

- **Shapes**

Materials – ice cream sticks, market, glue number object relationship

2.10 Let us Sum up :

To define as a process through which child born with certain impairment are helped to channelise their capacity and explore to their maximum development so that he/she could live as normal life as possible. To help a child born with an impairment. Development of abilities that never existed. Need to develop basic skills of day to day life. Usually as long time process. Sensory motor development begins from birth. The rapeutic approaches help the child to restore his functions and facilitate his functional skill and minimize secondary complication.

2.11 ‘‘Check Your Progress’’ :

(1) What do you mean by Amputation ? Describe the causes of amputation.

(2) What are the therapeutic management of amputation?

(3) List The Complications after polio ?

(4) Plan a Rehabilitation management of a child with paralaysis after polio ?

(5) What is muscular dystrophy ? What are the features of child with muscular dystrophy ?

(6) Describe, in brief, management of muscular dystrophy child ?

(7) What are the difference between complete spinal cord injury and imcomplete spinal cord injury.

(8) Describe therapeutic management of spinal cord injury.

(9) What is spina-bifida ? Classify it ?

(10) What are the problems associating with spina-bifida ?

(11) Plan a classroom adaptation for a child with cerebral palsy ?

(12) Suggest a list of TLM for writing practice.

2.12 References :

David warner (Disabled village children)

Frame of reference for pediatric occupational therapy (Paul kramer, Jimhinojosa)

Clinical reasoning in physical disabilities (Rebecca Button)

Occupational therapy for children, smith.

Occupational theerapy for children. smith or Brien

Early intervention NIMH manual

Unit - 3 ❐ Multiple Disabilities and Other Disabling Conditions

Structure

3.1 Introduction

Children with severe and multiple disabilities pose unique challenges to educators. Such children need more individual support and care than a normal child. The services for such children are gaining focus and importance in the country with the recognition of this disability under the National Trust Act (1999). Children who have a combination of severe disabilities are called "Multiply Disabled". Caring for multiply and severely disabled children is never easy and they need an enormous amount of time, patience and love. Realising the need for promotion of services for children with multiple disabilities, an autonomous organization of the Ministry of Social Justice and Empowerment, Government of India, was set up under the "National Trust for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities" Act (Act 44 of 1999).The National Trust was set up to find an answer to the worries of parents of such children.

National Institute for empowerment of persons with Multiple Disabilities (NIEPMD) was established in the year 2005 at chennai, Tamilnadu under Ministry of social Justice & Empowerment, Govt. of India to serve as a national resource centre for empowerment of persons with Multiple Disabilities such as those with two or more disabilities in a person.

Multiple Disabilities refers to: a combination of two or more disabling conditions that have a combined effect on the child's communication, mobility and performance of day-to-day tasks. We can say that just as every child is different, similarly every child with MD is different. However there are some things that this group of children has in common.

- It affects the all-round development of the child
- Communication with the world around is most severely affected
- Opportunities to interact with the environment becomes very limited
- Ability to move around in the environment is restricted

- Need regular help in simple day-to-day activities such as wearing a shirt, opening a door, finding a chair to sit down and so on.
- A highly structured educational / rehabilitation programme helps in their training.

3.2 Objectives

After going through this unit you will be able to

- About Multiple Disabilities and different definitions
- Characteristics of children with Multiple disabilities
- Different combinations and associated conditions of multiple disabilities
- Educational Limitations and Interventions
- TLM and Assistive Devices

3.3 Multiple Disabilities: Meaning and Classifications

3.3.1 Meaning according to Individuals with Disabilities Education Act's (IDEA)

According to the Individuals with Disabilities Education Act's (IDEA), multiple disabilities refers to "concomitant [simultaneous] impairments (such as intellectual disability-blindness, intellectual disability-orthopedic impairment, etc.), the combination of which causes such severe educational needs that they cannot be accommodated in a special education program solely for one of the impairments. The term does not include deaf-blindness."

In other words, a student whose special needs are categorized under multiple disabilities requires coinciding adaptations for more than one disability. The exception is the combination deafness and blindness, as this pair of impairments has its own classification under IDEA.

This disability category includes those students with the most severe physical, cognitive, and communicative impairments. It should be noted however, that these students can also have average or even above-average intelligence. The common connection between students in this category is not just that they have two or more coexisting impairments, but that they generally need extensive support across any number of skill areas.

A key part of the definition is that the combination of disabilities causes the student to have severe educational needs. In fact, those educational needs must be severe enough that they cannot be addressed by providing special education services for only one of the impairments.

The federal definition of multiple disabilities gives two examples of possible combinations of disabilities:

- intellectual disability and blindness; and
- intellectual disability and orthopedic impairment.

But these are just examples. A child may have another combination of disabilities that causes severe educational needs-cerebral palsy and autism, for example, or blindness and an emotional disturbance. Whatever the combination is, a child served under IDEA's category of "multiple disabilities" will have a special education program that is designed to address the educational needs that arise from all of the child's disabilities, not just one.

3.3.2 Meaning according to Persons with Disabilities Act

Multiple disabilities means a combination of two or more disabilities as defined in clause (i) of Section (2) of the Persons with Disabilities. (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995, namely -

I. Locomotor disability including leprosy cured

II. Blindness/low vision

III. Speech and hearing impairment

IV. Mental retardation V. Mental illness.

Children who have a combination of severe disabilities are called "Multiply Disabled". Caring for multiply and severely disabled children is never easy and they need an enormous amount of time, patience and love. Realising the need for promotion of services for children with multiple disabilities, an autonomous organization of the Ministry of Social Justice and Empowerment, Government of India, was set up under the "National Trust for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities" Act (Act 44 of 1999).

The National Trust was set up to find an answer to the worries of parents of such children. Disabilities under the National Trust Act are in fact Developmental Disabilities

caused due to insult to the brain and damage to the central nervous system. These disabilities are Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities. These are neither diseases nor contagious nor progressive. They cannot be cured by drugs or surgery. But early detection and training improve outcome. This is done using the services of Physio-Occupational and Speech Therapists, Community Based Rehabilitation Workers and Special Educators.

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 to a few days after birth, from early childhood till late teens. 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.

Multiple Disability refers to: a combination of two or more disabling conditions that have a combined effect on the child's communication, mobility and performance of day-to-day tasks. We can say that just as every child is different, similarly every child with MD is different. However there are some things that this group of children have in common.

- It affects the all-round development of the child
- Communication with the world around is most severely affected
- Opportunities to interact with the environment becomes very limited
- Ability to move around in the environment is restricted
- Need regular help in simple day-to-day activities such as wearing a shirt, opening a door, finding a chair to sit down and so on.
- A highly structured educational / rehabilitation programme helps in their training.

3.3.3 Classification of Multiple Disabilities

This disability category includes those students with the most severe physical, cognitive, and communicative impairments. It should be noted however, that these students can also have average or even above-average intelligence. The common connection between students in this category is not just that they have two or more coexisting impairments, but that they generally need extensive support across any number of skill areas.

The 14 IDEA Classifications That Can Combine To Produce Multiple Disabilities

Autism

Deaf-Blindness

Deafness

Developmental Delay (ages 3-5)

Emotional Disturbance

Hearing Impairment

Intellectual Disability (formally referred to as Mental Retardation)

Multiple Disabilities

Orthopedic Impairment

Other Health Impairment

Specific Learning Disability

Speech or Language Impairment

Traumatic Brain Injury

Visual Impairment (including blindness)

If two of the above disabilities are present and require separate programming, then a student should receive the label of Multiple Disabilities.

3.4 Various Combinations of Multiple Disabilities and Associated Conditions Such as Epilepsy, Motor and Sensory Conditions

Children with multiple disabilities will have a combination of various disabilities that may include: speech, physical mobility, learning, mental retardation, visual, hearing, brain injury and possibly others. Along with multiple disabilities, they can also exhibit sensory losses and behaviour and or social problems.

3.4.1 Various Combinations of Multiple disabilities

Cerebral Palsy (CP)

"Cerebral" means brain. "Palsy" means a disorder of movement. CP refers to a group of non progressive neuromuscular problems of varying severity.

Cerebral Palsy is damage to the brain, primarily to the part of the brain that controls motor functions. However other parts of the brain may also be affected. In such cases the person affected has more than one disability. The extent of the damage varies from person to person. Mild disability might mean fine motor skills, like using scissors or writing, are difficult. Severe disability can mean poor movement of all four limbs, the trunk and neck. The child may even have difficulty in swallowing.

Autism

All children with ASD demonstrate deficits in 1) social interaction, 2) verbal and nonverbal communication, and 3) repetitive behaviours or interests. In addition, they will often have unusual responses to sensory experiences, such as certain sounds or the way objects look. Each of these symptoms runs the gamut from mild to severe. They will present differently in each individual child. For instance, a child may have little trouble learning to read but exhibit extremely poor social interaction. Each child will display communication, social and behavioural patterns that are individual but fit into the overall diagnosis of ASD.

Intellectual Disability

Intellectual disability is characterized both by a significantly below-average score on a test of mental ability or intelligence and by limitations in the ability to function in areas of daily life, such as communication, self-care and getting along in social situations and school activities. Intellectual disability is sometimes referred to as a cognitive disability or mental retardation. Children with intellectual disability can and do learn new skills, but they develop more slowly than children with average intelligence and adaptive skills. There are different degrees of Intellectual disability, ranging from mild to profound. A person's level of Intellectual disability can be defined by their intelligence quotient (IQ), or by the types and amount of support they need.

Locomotor Disability

"Locomotor disability" means disability of the bones, joints or muscles leading to substantial restriction of the movement of the limbs or any form of cerebral palsy.

- **Spinal cord injuries:** usually the result of a traumatic blow to the spine. Some spinal cord injuries can completely heal; others will cause paralysis.
- **Cerebral palsy:** a group of non-progressive conditions involving muscle control, posture, and movement caused by brain damage.

- **Polio:** a highly contagious infectious disease caused by polioviruses. It is destructive to the nervous system and can cause paralysis.
- **Muscular Dystrophy:** an inherited group of diseases that affect the muscles, causing them to weaken and break down over time.
- **Contractures:** permanent tightening of muscles and joints
- **Club Foot (talipes equinovarus) :** There are 3 components of deformity - equinus, hindfoot varus and forefoot adductus. Club foot is more common in boys.

Hearing Impairment

"Hearing impairment" means loss of sixty decibels or more in the better ear in the conversational range of frequencies.

Deafness

A hearing loss greater than 90 dB. Individuals who are deaf have vision as their primary input and cannot understand speech through the ear. Deafness means a hearing impairment so severe that the child is impaired in processing linguistic information through hearing, which adversely affects educational performance. (IDEA).

Different types of Hearing loss

Sensor neural Hearing Loss: Permanent hearing loss that is a result of damage to the cochlea or auditory nerve. The treatment for sensorineural hearing loss is often the use of hearing aids or cochlear implants.

Conductive Hearing Loss: Conductive hearing loss results from defects in the outer or middle ear. The sound is not conducted efficiently to the inner ear. All sounds heard thus become weak and/or muffled. Usually such individuals speak softly irrespective of the surrounding environmental noise. It can generally be offset by amplification or medical intervention. Sometime surgery can restore hearing in a conductive hearing loss.

Mixed Hearing Loss: A hearing loss resulting from a combination of a conductive hearing loss and a sensorineural hearing loss.

Central Auditory Disorder: Central hearing loss is due to a damage, malformation or infections of the neural pathways and the hearing centers in the brain. The child may

hear but has difficulty in understanding what he hears. Some of the children classified as learning disabled or slow learners may have this type of hearing loss.

Visual Impairment

Blindness: refers to a condition where a person suffers from any of the following conditions, namely: Total absence of sight or Visual acuity not exceeding 6/60 or 20/ 200 (Snellen) in the better eye even with correction lenses; or limitation of the field of vision subtending an angle of 20 degree or worse. For deciding about blindness, the visual acuity as well as field of vision has been considered.

Low Vision: The Persons with Disabilities Act, 1995 also recognizes low vision as a category of disability and defines it as follows:

"Person with low vision" means a person with impairment of visual functioning even after treatment or standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive device". The loss of vision caused by these conditions can range from a mild impairment to complete blindness. The children with visual impairment and brain damage may seem to use their vision differently at different times of the day. In addition these children have trouble with perceptual responses, such as perceiving depth, remembering visual information, searching for objects they see and identifying important visual information. (Punani and Rawal)

Mental Illness

Studies indicate that approximately 2% of children and adolescents receive intervention for mental illness and psychosocial problems (Cohen, Cohen, & Brook, 1993).

Psychological Disturbances

The most common types of psychological disturbances seen in children are

Anxiety Disorders: Children with anxiety disorders respond to certain things or situations with fear and dread, as well as with physical signs of anxiety (nervousness), such as a rapid heartbeat and sweating. Separation anxiety disorder, overanxious disorder and posttraumatic stress disorder are the common types of anxiety disorder seen in children.

Disruptive Behaviour disorder: Children with these disorders tend to defy rules and often are disruptive in structured environments, such as school. Common types seen in children are conduct disorder, oppositional defiant disorder and attention deficit hyperactivity disorder (ADHD).

Eating Disorder: Eating disorders involve intense emotions and attitudes, as well as unusual behaviors, associated with weight and/or food. Anorexia nervosa and bulimia nervosa are the two types of eating disorders seen in children.

Affective disorders: These disorders involve persistent feelings of sadness and/or rapidly changing moods. Most common types seen in children is major depressive disorder

Pervasive Developmental Disorders or Autistic Spectrum Disorders: These children have difficulties and abnormalities in their abilities to form reciprocal social interaction and to verbally and nonverbally communicate.

3.4.2 Associated Conditions with Multiple disabilities

Epilepsy

It affects 40 to 50% of children with multiple disabilities, and in one case out of 4 or 5 these seizures are difficult to control. There may be absence seizures, brief tonic seizures, and sometimes falls caused by epilepsy with unpredictable seizures, which lead to repetitive traumatic injuries and deformities becoming real secondary impairments. Behavior disorders may also be following repeated seizures (drowsiness alternating with hyperactivity episodes, and sometimes aggressiveness or self-destructive behaviors).

At the functional level, these highly disabling but fortunately rare forms are a sign of poor prognosis, especially at the level of life expectancy. In contrast, episodic seizures are more easily treatable with the treatments currently available, and affect the daily life of these individuals to a lesser extent.

Severe hypotonia

Severe tone abnormality in posture and limbs is observed in some forms of brain deformities. Diagnosing peripheral or muscle lesions are not always easy, and moreover, central, peripheral and muscular lesions coexist in some forms of progressive diseases affecting the nervous system.

In addition, rare forms of myopathies are combined with mental retardation, which produce a clinical picture close to multiple disabilities.

Motor control disorders

These are very specific motor defects mainly observed in children with early epileptic encephalopathy..

There is no actual paralysis present, but severe central hypotonia is at least observed

in young children. As a result, a slow recovery of motor activity takes place that may lead children to resume gait, which remains risky. There are unawareness of the body's position in space, balance disorders, robot-like gait, neglecting obstacles. Falls are also commonly observed. Severe motor regression sometimes follows a convulsive state or repetitive absence seizures (form of epileptic seizure during which the subject seems awake, but is 'absent' and does not react or communicate. This regression is usually temporary, but causes motor function to be impaired in a very random fashion.

Slightly different motor control disorders may also affect subjects with encephalopathy due to malformation or some chromosomal aberrations. For instance in Angelman syndrome, individuals can hardly use their lower limbs. Congenital joint and peri-articular lesions may also be associated.

Secondary motor impairments

They are resulting from the impact of spasticity, abnormal postures or motor stereotypes on joints. Hip dislocations, progressive scoliosis in adolescence, as well as limb deformities cause limitations in motor performance and capacity of mobility, and are a source of pain. All the efforts put in early motor training and orthopedic equipment focus on the prevention of these secondary impairments and must be undertaken at a very young age.

Sensory impairments

They are very often part o the disabling problems experienced by the individual with multiple disabilities.

Audiological assessment is not easy to perform, as it requires that the individual can understand what the tester asks of him in order to be properly assessed. Deafness is relatively rare and involves adjustment and tolerance problems to hearing aids. However, middle-ear deafness due to infection or malformation is also observed.

Vision impairments are very common and accout for 40% of persons with multiple disabilities. Ametropia (myopia, astigmatism), congenital or acquired cataracts, eye deformities or retinal lesions validated bu ophthalmologic examinations.

Emphasis has recently been placed on the frequency of visual processing disorders (cortical blindness or central visula disorders). These disorders cannot be measured with traditional examination methods as vision becomes tedious and random, with difficult perception of depth, background contrast versus object, ans sensitivity to visual clutter. These indiciduals perceive moving objects better because the image is formed

on the peripheral retina, as opposed to macular or central vision; hence the use of very peculiar visual stimulation methods involving the ovedrall structures of the head and neck.

Combined visual and auditory sensory disorders are currently scarce ever since the prevention of congenital rubella syndrome.

3.5 Other Disabling Conditions such as Leprosy Cured Students, Tuberous Sclerosis and Multiple Sclerosis

3.5.1 Leprosy Cured

"Leprosy cured person" means any 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 from undertaking any gainful occupation, and the expression "leprosy cured" shall be construed accordingly;

3.5.2 Tuberous Sclerosis

Tuberous sclerosis causes non-cancerous (benign) tumours to develop in many areas of the body. The condition can lead to a range of different problems, depending on where the tumours grow.

The areas most commonly affected are the:

- brain
- skin
- kidneys
- heart
- eyes
- lungs

Problems caused by these tumours can develop at any age, but most often start early in

childhood. The severity of these problems can vary significantly and some tumours cause no noticeable problems. Tuberous sclerosis has an incidence of 1:6000-12,000, with most being sporadic. Tuberous sclerosis was classically described as presenting in childhood with a triad of:

1. **seizures:** absent in one-quarter of individuals
2. **mental retardation:** up to half have normal intelligence
3. **adenoma sebaceum:** only present in about three-quarters of patients

The full triad is only seen in a minority of patients.

Nearly half of all children with tuberous sclerosis will have learning problems, which can range from mild to severe.

Possible problems include:

- poor memory
- poor attention span
- difficulty making plans or organising activities
- learning much more slowly than other people
- in severe cases, being unable to communicate or look after themselves

3.5.3 Multiple Sclerosis

Multiple Sclerosis is a neurological condition of the brain and spinal cord, affecting muscle control, vision, balance and causing fatigue, loss of sensation or numbness.
Multiple sclerosis (MS) affects nerves in the brain and spinal cord, causing a wide range of symptoms including problems with muscle movement, balance and vision.
Each nerve fiber in the brain and spinal cord is surrounded by a layer of protein called myelin, which protects the nerve and helps electrical signals from the brain travel to the rest of the body. In Multiple Sclerosis, the myelin becomes damaged.
This disrupts the transfer of these nerve signals, causing a wide range of potential symptoms, such as:

- loss of vision - usually only in one eye
- spasticity - muscle stiffness that can lead to uncontrolled muscle movements
- ataxia - difficulties with balance and co-ordination
- fatigue - feeling very tired during the day

3.6 Implications of Functional Limitations for Education and Creating Prosthetic Environment in School and Home: Seating Arrangements, Positioning and Handling Techniques at Home and School

3.6.1 Functional Limitations for Education.

Children with Multiple Disabilities show the following functional limitations for Education :

Vision Problems: As children grow, some of them appear to always squeeze their eyes together to look at something closely, or keep looking at their moving fingers/paper, bump into things while walking, complain of too much light all the time. Their eyes may also look different from 'normal' eyes.

Hearing Problems: A child with a hearing problem may respond to only particular sounds. They may take a long time and repeated training to develop speech. And mostly they may only repeat what they hear. They may also learn to adapt to their routine environment by 'guessing' the conversations going around, but may actually face a lot of difficulty in a new place with unknown people. Sometimes deaf children also show difficulty in balancing their body or walking in a straight line.

Learning Problems: Due to two or more disabilities, the rate and speed of learning of the children is very slow. Learning often becomes repetitive and meaningless, unless special care is taken to make the child feel safe about exploring the world around him. Multi handicapped children also have very limited ideas to play with toys or things around them.

Communication: Communication is probably the one area that is most significantly affected in children with multiple disabilities. The children are unable to see or hear or follow the different ways in which their brother and sister play with each other, elders are greeted, standing in a line to get a ticket or passing a bottle of water around a dining table.

Posture and Mobility: Our sight, hearing and body movements help us to move around, without bumping into things, remember the way to reach places or even to use our own hands to hold and look at things. Presence of Cerebral Palsy, locomotor disabilities and balance difficulties makes it hard for the child to manage his own body movements

sometimes and so it becomes very difficult to use his body to move from one place to another.

Odd Behaviours: Most children with multiple disabilities show strange behaviours that are called 'self-stimulating' behaviours. Some of these are moving one's body repeatedly, shaking head side to side, moving fingers in front of eyes, hitting or slapping the ears, swinging in one place and so on. Sometimes it is important for them to continue doing it from time to time as it helps them get some information about the world around them in their own special way. Sometimes these children also show disturbed sleep patters.

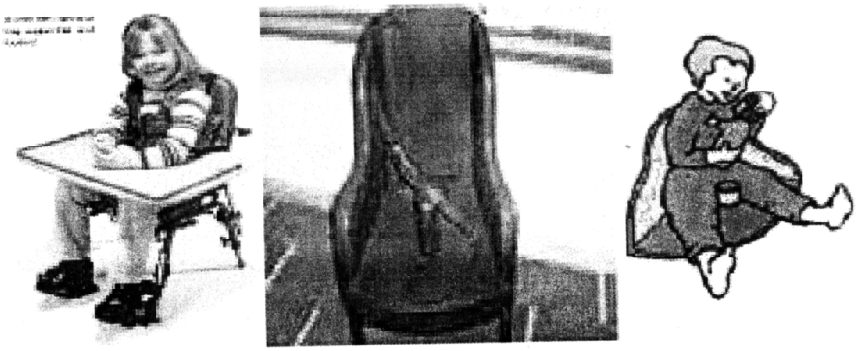
Medical Conditions: Most multi-handicapped children also suffer from other medical conditions such as epilepsy, frequent eye and ear infections, respiratory disorders, muscular degeneration frequent surgeries and so on. Such medical conditions lead to frequent hospitalizations and the child again misses out on a lot of exposure and learning from the environment.

3.6.2 Creating prosthetic environment in school and home

Seating Arrangement

- Corner sitting: lap boards to be provided, so that the child can engage in activities
- Corner stools: Can be used when the child has some amount of head control. It provides trunk support to the child. Lap boards to be provided.
- Make sure that, the hips, knees and ankle are at 900.
- The feet should always rest on the floor. If not, we should provide a small foot rest.
- The hips should always be kept apart. This can be done by keeping a roll between the legs.
- If a child slips off from the chair, modification is needed.
- If the child cannot keep her back straight, modification is needed.
- Height of the back should depend on the child's trunk control.
- If the child does not have head control, provide support for that also.
- A lap board should be provided, so that the child can do activities on it.
- If the child bends his trunk to one side while sitting, it will lead to deformities.

- Trunk blocks can be added to prevent this.
- If the child is not mobile, wheels can be attached to the chair, so that it will be easier for the parents to move the child around the house.



Positioning and Handling

Positioning refers to the use of appropriate body positions. Due to abnormal pull of muscles, children with cerebral palsy and MD spend a lot of time in abnormal positions. These abnormal positions can lead to increased tightness and other contractures and deformities and should be avoided whenever possible. Proper positioning should be used in all routines throughout the child's day. Try to encourage proper positing 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 the next. It relates to how the child is picked up, put down, carried, held etc through movement transitions (e.g.: laying to sitting). Actually, handling is not done only with 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.

Positioning a Child with Multiple Disabilities

When the child does not have adequate head control or trunk control

- In prone
- Position the child on a wedge
- Head and neck should be off the wedge
- Child can weight bear on flexed or extended elbows

- Place a roll between the legs
- 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.

- Side lying
- Place a small roll under the head such that the neck is slightly laterally flexed
- Long roll in front extending from chest to legs
- One leg to be kept on the top of the roll
- Position the child on both sides

Carrying Techniques

While carrying the child or shifting the child from one position to another the following techniques can be used

- Carry across the teacher's hips with the child's hips and knees bent and knees separate and not over the shoulders
- Carrying the child with the child facing forwards, with bent hips and knees and knees separate
- Using a wheel chair.

3.7 Facilitating Teaching-Learning: IEP, Developing TLM; Assistive technology

3.7.1 Individualized Education Programme (IEP)

Individualised, because the education/training programme is specifically designed to meet the learning needs of the individual child rather than a general syllabus for a group or class full of such children. To put it simply, IEP includes, a brief background of the child (medical and educational), statement of present level of functioning, annual goals, including short-term objectives, teaching strategies, specific educational services to be provided, the child's ability to be able to participate, the projected dates for initiation and anticipated duration of such service, appropriate objective criteria and evaluation procedures and schedules for determining, on at least an annual basis, whether instructional objectives are being achieved.

IDEA requires that schools create an Individualized Education Program (IEP) for each student who is found to be eligible under both the federal and state eligibility/ disability standards. In addition to the child's parents, the IEP team must include at least one of the child's regular education teachers (if applicable), a special education teacher, someone who can interpret the educational implications of the child's evaluation, such as a school psychologist, any related professional concerned with the child.

Effective teaching leads a child to function as independently as possible in the world around him. A curriculum for a child with Multiple Disabilities needs to reach the goal of enabling the child towards personal adequacy, social competency and economic independence. More significantly make his life easier and healthier.

Points to be noted for effective educational program

Independence is the goal: No matter how small or big the task is the child should learn to use it to make life easy and simpler for him.

Teaching **skills that are functional and meaningful** with the limited opportunities available to the child, it is wise to teach him things that are directly related to his environment and those that he has high chances of doing through out the day.

Teaching skills in natural settings: The child is able to remember things that he learns while going through his/her day to day routines. This helps him to learn better and remember.

Providing assistance as needed: Encourage the child in every attempt.

Taking advantage of the teachable moment: Sometimes teacher may not plan to teach an activity, but the child shows curiosity to explore a particular object. Teacher should use this time to teach him more about that object.

Providing repeated opportunities to practice: This will help the child to get opportunities to try out the activity again and again.

Using real/ concrete objects: When experience to know about the world is so limited it is better to use objects that he sees and uses everyday rather than expensive and unusual things.

Developing routines/ activity schedule: We should have fixed timetable for the day with the child. This helps him to have more control over his life and to anticipate what is going to happen with him next. This also helps to encourage communication attempts by the child immensely.

Multi-sensory approach: It is best to make use of all remaining sensory abilities of the child- like seeing, hearing, touching, smelling and movements. All should form a part of the teaching moments for the child.

Planning inclusive activities: With highly individualized activities being planned for the child, there is always a risk that either the parent or one caregiver is constantly trying to teach the child. It is important that the child should know what others enjoy doing and for him to be part of that too.

Making use of resource persons from the community: It is important that the best advantage is taken from the resource persons from the community as teachers.

3.7.2 Teaching Learning Materials

Children with Multiple Disabilities represent a heterogeneous group in the terms of cognitive and functional capacities. The unique support needs of these students include specialized communication and mobility instruction, the ongoing adaption of sensory information and the provision of experimental learning opportunities in the context of safe, but responsive, environments.

What area will TLM help develop?

- Language & Communication
- Sensory development
- Orientation & Mobility training
- Cognitive & Social skills
- ADL

Teaching Learning Material (TLM) is a tool available to the teachers/ parents/ CBR workers to achieve learning outcome. It is not just a set of teacher-made or purchased material, but a well designed tool for the child's needs.

The teacher decides at what level the child is and what activities within the level he/ she wants to give. Once the decision is made, the teacher looks for appropriate teaching learning materials so that the teaching becomes effective and goal-oriented.

3.7.3 Assistive Technology

A variety of AT devices are used to help children with severe and multiple disabilities in the classroom. Communication boards, computers, head sticks and adaptive switches allow disabled children to communicate effectively with others. Teenage Switch

Progressions allow students to press a switch to activate activity-based instruction on the computer. Other types of AT technology include wheelchairs, walkers, speech synthesizers, alternative keyboards, pointing systems, talking clocks and calculators, voice recognition software, picture boards, Braille machines, reading machines, magnification software, phonic ear devices, telecommunication devices and sound magnification systems.

Adapted Furniture

Adapted chair, CP chair, corner stools, lap boards and standing frame: mentioned in positioning a child with CP.

Mobility Aids

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:

- 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
- Positioning needs
- Optimal use in functional activities such as eating, transfers, augmentative communication, personal hygiene, and school activities

Example: Scooters, wheelchairs, crutches, parallel bars

Commode Chair or Toilet Stool

Commode chair or toilet stool is needed for a child who cannot squat and use Indian toilets. It can be made by cutting a hole over the seat of a plastic chair for children. Other options are to place a tyre over the toilet on which the child can sit comfortably.

Other modifications in the toilet

– Side bars near the toilet will help a child with poor sitting balance to maintain his balance.

– Hose pipe for a child who cannot hold a mug with water and clean himself.

3.8 Let us Sum Up

1. Disabilities under the National Trust Act are in fact Developmental Disabilities caused due to insult to the brain and damage to the central nervous system. These disabilities are Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities. These are neither diseases nor contagious nor progressive.
2. They cannot be cured by drugs or surgery. But early detection and training improve outcome. This is done using the services of Physio-Occupational and Speech Therapists, Community Based Rehabilitation Workers and Special Educators.
3. Students with severe and multiple disabilities are identified at birth or in the early stages of life, or after a traumatic accident or illness. These children are identified by medical professionals. Assessments performed on these students are to primarily help teachers understand the student's needs and how they can motivate and provide the best possible services to the student.
4. Functional assessment for a child with Multiple Disabilities involves two basic steps. The first is to gather information about the child by talking to the people who know the child well, by examining medical reports and by actually observing the child engaged in typical activities.
5. Support services like physical access, resource rooms at cluster level, special equipment, reading material, special educational techniques, remedial teaching, curricular adaptation or adapted teaching strategies should be provided.

3.9 ‘‘Check Your Progress’’

1. What are the possible combinations of multiple disabilities?

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2. What are the educational opportunities for children with multiple disabilities?

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3. Discuss about the different adaptive devices available for children with multiple disabilities.

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3.10 Unit End Exercise

Discuss about the classroom management for children with multiple disabilities. Prepare and IEP for a child with multiple disability, from your practical work.

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Notes

মানুষের জ্ঞান ও ভাবকে বইয়ের মধ্যে সঞ্চিত করিবার যে একটা প্রচুর সুবিধা আছে, সে কথা কেহই অস্বীকার করিতে পারে না। কিন্তু সেই সুবিধার দ্বারা মনের স্বাভাবিক শক্তিকে একেবারে আচ্ছন্ন করিয়া ফেলিলে বুদ্ধিকে বাবু করিয়া তোলা হয়।

— রবীন্দ্রনাথ ঠাকুর

ভারতের একটা mission আছে, একটা গৌরবময় ভবিষ্যৎ আছে, সেই ভবিষ্যৎ ভারতের উত্তরাধিকারী আমরাই। নূতন ভারতের মুক্তির ইতিহাস আমরাই রচনা করছি এবং করব। এই বিশ্বাস আছে বলেই আমরা সব দুঃখ কষ্ট সহ্য করতে পারি, অন্ধকারময় বর্তমানকে অগ্রাহ্য করতে পারি, বাস্তবের নিষ্ঠুর সত্যগুলি আদর্শের কঠিন আঘাতে ধূলিসাৎ করতে পারি।

— সুভাষচন্দ্র বসু

Any system of education which ignores Indian conditions, requirements, history and sociology is too unscientific to commend itself to any rational support.

— Subhas Chandra Bose

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