CHAPTER I
MENTAL RETARDATION – AN OVERVIEW

Mental Retardation is a chronic irreversible condition diagnosed before 18 years that includes below average general intellectual function and lack of skills necessary for daily living. It is normally present at birth or develops early in life. It is a developmental disability that is marked by lower than normal intelligence and limited daily living skills. The term retarded comes from the Latin word *retardare* 'to make slow, delay, keep back or hinder'. The term was recorded in 1426 as a ‘fact or action of making slower in movement or time’ (www.dawsonsjourney.com).

According to the American Association on Mental retardation, 2002, “Mental retardation is a disability characterized by significant limitations both in intellectual functioning and in adaptive behaviour as expressed in conceptual, social and practical adaptive skills. This disability originated before age 18” (Heward, William L., 1996).

Mental retardation is defined by two standards. The first standard is a person’s level of intelligence. Intelligence is fundamentally a neuro-physiological capacity to more complex thought processes as a function of maturation and interaction. In accordance with this definition of intelligence, from a neuro-physiological view point, mental retardation is a condition of diminished efficiency of the central nervous system which results in 'a limited capacity for the formation of cell assemblies, intercellular and super ordinate associations and a consequent reduced
ability for perceptual and conceptual integration’ (Sarma, 2005). Intelligence level is measured by standardized tests called intelligence tests that measure ability to reason in terms of Intelligence Quotient (IQ). Mental retardation is defined as IQ score below 70. The second standard for the definition of Mental retardation is adaptive skills. Adaptive skills deal with the tasks of everyday life and include the ability to participate in communication, home living skills, use of community resources, health safety, self-care like dressing, toilet habit and self-feeding and social skills with peers, family members, adults and others, functional academic skills and work skills.

Mental retardation refers to significantly sub average general intellectual functioning resulting in or associated with deficits in adaptive behaviour and manifested during the developmental period (Heward, William L., 1996). This definition was incorporated in India’s special education Law, the Individuals with Disabilities Education Act (IDEA). Today, many states identify children under the disability category of mental retardation on the basis of this definition.

According to persons with Disability (Equal opportunities, protection of Rights and full participation) Act in India, 1995, Mental retardation means a condition of arrested or incomplete development of a mind of a person which is specially characterized by sub normality of intelligence.
1.1 Prevalence

Mental retardation is the most common among the developmental disorder. Mental retardation occurs in 2.5 – 3% of the general population. About 6 – 7 million mentally retarded individuals live in the United States alone. According to the 24th annual Report to Congress, United States Department of Education, 2002, nearly 613000 children ages 6 to 21 have some level of Mental retardation and need special education in schools.

In Kerala, according to 2001 census, the prevalence of Mental retardation is around 18,267 – 36,535. That is, 0 -1% of all children up to 6 years. 20% of the total patients seen by primary health care professionals have one or more mental disorders. One in four families is likely to have at least one member with a behavioral or mental disorder. It is hypothecated that mental disorders account for 10.5% of the Global Burden of Disease (GBD) in 1990, 12% in 2000 and it is estimated that this will increase to 15% by 2020.

1.2 Classification

There are different modes of classification of mental retardation. They are,

1. Medical Classification
2. Psychological Classification
3. Educational Classification
4. American Association of Mental Retardation (AAMR)
   Classification based on the level of support required.

1.2.1. **Medical Classification Based on the Cause**

The Medical Classification system describes symptoms of clinical conditions which are valuable for physicians for diagnosis. The International Classification of Diseases (ICD), Diagnostic and Statistical manual of Mental Disorders (DSM) and the American Association on Mental Retardation (AAMR) accept the following aspects as the basis of medical classification of retardation.

   a. infections and intoxications
   b. trauma or physical agent
   c. disorders of metabolism or nutrition
   d. gross brain damage
   e. conditions due to unknown prenatal influence
   f. chromosomal abnormality
   g. gestational disorders
   h. psychiatric disorders
   i. environmental influences and
   j. other related conditions

1. 2.2. **Psychological Classification**

Psychological classification is based on the level of Intelligence Quotient (IQ). IQ is a numerical measure of a person’s intelligence. *Diagnostic and Statistical Manual of Mental Disorders, fourth edition*
(DSM-IV, 1994) classifies four different degrees of mental retardation, that is, mild, moderate, severe and profound. The following chart shows the IQ ranges of retardates,

**Table 3**

**Levels of Mental Retardation**

<table>
<thead>
<tr>
<th>Levels</th>
<th>IQ</th>
<th>% of Retarded Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>50-55 to 70</td>
<td>85</td>
</tr>
<tr>
<td>Moderate</td>
<td>35-40 to 50-55</td>
<td>10</td>
</tr>
<tr>
<td>Severe</td>
<td>20-25 to 35-40</td>
<td>3.5</td>
</tr>
<tr>
<td>Profound</td>
<td>20-25</td>
<td>1.5</td>
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*a. Mild Retardation*

About 85% of the mentally retarded population is coming in the mildly retarded category. Their IQ score ranges from 50 – 75. Children may experience considerable performance deficits in school, especially, in the basic academic subjects such as reading, writing and arithmetic. They can become fairly self-sufficient and in some cases can live independently, with community and social support. They can develop social and communication skills. At the age of 3, they may speak 2-3 word sentences and can interact with others in simple play, while growing; they may communicate in complex sentences, and participate in group activities.
b. Moderate Retardation

About 10% of the mentally retarded population is considered moderately retarded. These individuals have IQ scores ranging from 35 – 50. They are obviously slow in learning to speak and reaching other developmental milestones. They show significant delay in development during the preschool years. They can carry out work and self care tasks with moderate supervision. They are able to live and function successfully within the community in a supervised environment such as institutions. They use 4-10 words at the age of 3, and may play with others briefly. While growing, vocabulary will also develop and can use grammatically correct sentences, and can interact cooperatively with others. They are more likely to have physical disabilities and behaviour problems than the children with mild retardation.

c. Severe Retardation

About 3-4% of the mentally retarded population is severely retarded. They have IQ scores of 20 – 35. They may master basic self-care skills such as cleaning, and some communication skills. They can learn only a small number of words, have very few or no modes of expression and have very poor muscle coordination. They often live in group homes or rehabilitation centers. They may say one or two words at the age of three. While growing they can use a maximum of two word sentences.
d. Profound Mental Retardation

Only 1-2% of the mentally retarded population is classified as profoundly retarded. They have IQ scores less than 20. They usually have no ability to walk, talk or understand. They have poor muscle coordination and almost always need nursing care. Their retardation is often caused by an accompanying neurological disorder. They need a high level of support and supervision. They have extreme cognitive limitation and limited communication skills. At the age of 3, they may imitate sounds and interact nonverbally.

1.2.3. Educational Classification

Educational classification depends on the current level of functioning of the retarded child. Education is oriented particularly to fulfill the needs of the retarded children. There are three types of mental retardation based on predicted ability to learn. They are,

a. Educable Mental Retardation (eM.R.)

The term ‘educable mental retardation’ refers to mildly retarded children who can speak and can learn simple academic skills such as reading, writing and arithmetic calculations.

b. Trainable Mental Retardation (tM.R.)

Trainable mentally retarded are the moderately retarded children whose vocational skills are to be trained. Their capacity to understand academic subjects is limited to simple rote learning and has difficulty for
transferring this learning to everyday situations. The training program for trainable retardates emphasizes more on functional academics with special weightage on daily living skills or self help skills and vocational skills.

c. Custodial Mental Retardation (cM.R.)

 Totally dependent children or not trainable are considered as Custodial mentally retarded. They are the severely or profoundly retarded children who are in need of long term special care, usually within an institutional or in a residential setting. They cannot perform even their daily living activities.

1.2.4. AAMR Classification Based on the Level of Support Required

The American Association on Mental Retardation (AAMR) has developed another diagnostic classification system for mental retardation. This system focuses on the capabilities of the retarded individual rather than on the limitations. This classification is based on the level of support needed. Support is categorized as follows,

a. Intermittent Support

It is the support needed only occasionally, perhaps during times of stress or crisis. It is the type of support typically required for most mildly retarded individuals.
b. Limited Support

Limited support means support such as a day program in a sheltered workshop. It is the kind of support required for moderately retarded individuals.

c. Extensive Support

Extensive support indicates daily, ongoing support. It is the kind of support required for severely retarded individuals.

d. Pervasive Support

Pervasive support means a high level of support for all activities of daily living, possibly including full time nursing care. It is the type of support required for profoundly retarded individuals.

Clinical findings and adaptive behaviour should also be used to determine the level of intellectual functioning.

Two additional classifications are also possible. They are Other Mental Retardation and Unspecified Mental Retardation

a. Other Mental Retardation

The term Other Mental Retardation is used to refer when associated physical or sensory impairments make the retardation difficult to assess the degree of impairment.
b. Unspecified Mental Retardation

When there is evidence of mental retardation but not enough information to assess the level of functioning, that type of retardation is called as Unspecified Mental Retardation. For example, in the case of a toddler with significant delays in development who is too young to be assessed with an IQ measure, it can be referred as unspecified.

1.3. Causes

In majority of retardates, the exact causes of retardation are unknown. According to Hallahan and Kauffman (1978) (cited in Heward, William., 1996) the causes of mental retardation can be primarily classified into two categories namely, known and unknown categories. When an individual’s cause of retardation is unknown but is identified, the diagnosis would be mental retardation due to unknown causes. If the cause of retardation is identified with a known cause that is, organic, genetic, or functional, it will be specified with the known cause.

The causes of mental retardation can be grouped in to two general categories. They are non environmental factors and psycho-social reasons. The non environmental factors include both genetic factors and biological causes such as prenatal exposure to alcohol or birth injuries. Retarded children who are psychosocially disadvantaged have no specific disabilities but having some low intellectual development. They experience little intellectual stimulation in their environment, unhealthy
food and living conditions. Thus their hereditary and environmental experiences may combine to cause a low range in their intelligence test scores.

National Institute for the Mentally Handicapped (1989) had proposed a more sensitive classification system namely, prenatal causes, perinatal causes and post natal causes. It was later adopted by the American Association on Mental Retardation. Thus the causes of mental retardation can be roughly broken down into three main categories,

1.3.1. Prenatal Causes

The factors that affect before the birth of the child which leads to mental retardation are called prenatal causes.

a) Genetic Abnormalities

Consanguinity marriages, that is, marriage between uncle-niece, nephews-aunt, and first cousins have greater chances of producing a child with genetic disorders including mental retardation. Genetic defects appear more with the increased maternal age. Mothers over the age of 35 have higher chances in producing an abnormal child. Similarly, very young mothers below 15 years of age whose reproductive systems are still immature and are still growing also face greater risk of producing an abnormal baby.

b) Chromosomal Abnormalities

Chromosomal abnormalities are due to,
i) Errors of Chromosome Numbers

e.g.: Down syndrome.

Down syndrome, trisomy 21, or trisomy G is a chromosomal disorder caused by the presence of all or part of an extra 21st chromosome. The condition is characterized by a combination of major and minor differences in structure. Down syndrome is associated with some impairment of cognitive ability and physical growth as well as facial appearance.

ii) Defects in the Chromosome or Chromosomal Inheritance

e.g.:– Fragile x Syndrome

Fragile X syndrome, or Martin-Bell syndrome, is a genetic syndrome which results in a spectrum of characteristic physical, intellectual, emotional and behavioural features which range from severe to mild in manifestation. The syndrome is associated with the expansion of a single trinucleotide gene sequence (CGG) on the X chromosome, and results in a failure to express the FMR1 protein which is required for normal neural development.

iii) Chromosomal Translocation

Chromosomal translocation means a gene located in the unusual spot on a chromosome

E.g. cri du chat syndrome

Cri du chat syndrome, also known as chromosome 5p deletion syndrome, 5p minus syndrome or Lejeune’s syndrome, is a rare genetic
disorder due to a missing part of chromosome 5. Its name is a French term (cat-cry or call of the cat) referring to the characteristic cat-like cry of affected children.

c) Developmental Disorders of Brain Formation

   The brain coordinates and directs various bodily functions. The brain not only controls involuntary movements of organs like heart, kidney etc but also initiate voluntary movements like walking, running and also higher order functions like thinking, reasoning, memory etc. Thus the abnormal developmental functioning of any part of brain makes an individual less able to adjust the environment and gives rise to various disorders, one of which is mental retardation. The damage caused to the brain is permanent.

d) Other Biological Causes

   Biological causes include different factors,

   i) Congenital Factors

      It means the chemical substances passed to the child through the mother’s placenta. It may be one cause of mental retardation.

   ii) Constitutional Factors

      Constitutional factors include congenital factors and factors that are due to illness or injury after birth.

   iii) Innate Factors

      Disorders caused by mutations or by predictable parental contribution are referred to as innate.
e) Environmental Influences

Environmental influences include maternal nutrition, fetal alcohol syndrome, and irradiation during pregnancy. Fetal alcohol syndrome is caused by excessive drinking by the mother during pregnancy and can lead to mental retardation in the fetus. Drug abuse and smoking during pregnancy may also cause mental retardation in the fetus.

f) Maternal Diseases

Maternal diseases like diabetes mellitus, high blood pressure, hyperthyroidism, hypothyroidism etc can result in mental retardation. Blood poisoning in a pregnant woman (toxemia) reduce the flow of oxygen to the fetus causing brain damage and mental retardation. Maternal infections may sometimes lead to mental retardation. The infections may spread to the fetus and damage its nervous system, including brain.

g) Maternal – Fetal Incompatibility

Maternal fetal incompatibility may sometimes leads to mental retardation

h) Unknown Reasons

Fetal damage may occur naturally, for unknown reasons. An example is the problem known as neural tube defect. In this disorder, the fetus spine does not close normally. Fluids may collect in its brain, producing a condition known as hydrocephalus that is, water in the brain. The result is mental retardation.
1.3.2. Perinatal Causes

Perinatal causes include the problems occurring during or shortly after birth. The important problems are the following,

a) Premature birth
b) Low birth weight
c) Prolonged Labour
d) Trauma to the head of the new born baby
e) Intra uterine disorders, that is, the infection of the fetus inside the womb which include maternal anemia, abnormal presentation etc
f) Neonatal disorders such as intra cranial hemorrhage, neonatal seizures, respiratory disorders, that is, lack of oxygen to the brain before or during birth (asphyxia), head trauma at birth etc. An intracranial hemorrhage is a hemorrhage, or bleeding, within the skull.

1.3.3. Post natal Causes

A baby born as normal becomes mentally retarded after birth because of injury to the brain any time during the period of development up to 18 years of age. The main causes are,

a) Malnutrition

Severe malnutrition such as protein-caloric malnutrition in the child especially during birth to two years of life can result in mental retardation.
b) Infectious Diseases

Infectious diseases such as rubella (an infectious, but mild viral disease characterized by an eruptive rash which starts on the face and spreads along the rest of the body), meningitis (infection of the membrane covering the brain called meninges), encephalitis (inflammation of the brain called brain fever), malaria, measles, whooping cough etc can lead to mental retardation.

c) Metabolic Disorders

Metabolic disorders like very high bilirubin levels in babies can cause mental retardation.

d) Toxic Substances

Being exposed to toxic substances like alcohol, cocaine, amphetamines and other drugs, methyl mercury poisoning, lead poisoning by eating the flaking lead based paint often found in older buildings etc can result in mental retardation.

e) Epilepsy

Repeated episodes of epileptic fits can lead to mental retardation.
f) Brain Injury

Injury to brain from accidents or falls or traumatic brain injury caused by a blow or a violent shake to the head can cause brain damage and mental retardation in children.

g) Environmental Causes

Environmental deprivation such as psycho-social disadvantages, child abuse, chronic social or sensory deprivation can cause mental retardation. Ignored or neglected infants who are not provided the mental and physical stimulation required for normal development may suffer irreversible learning impairments. Children who live in poverty and suffer from malnutrition, unhealthy living conditions, and improper or inadequate medical care are at a higher risk.

1.4 Symptoms and Signs of Mental Retardation

The severity of the symptoms and the age at which these symptoms first appear depend on the cause. Retardate children reach developmental milestones significantly later than expected. They develop more slowly than normal. They may learn to sit, to walk, and to perform other simple tasks later than an average child. If retardation is caused by chromosomal or other genetic or prenatal or perinatal causes, it is often apparent from infancy. If retardation is caused by childhood illness or injuries, learning and adaptive skills may suddenly become difficult. As the child grows older, low IQ scores and limitations in adaptive skills are the major symptoms of mental retardation.
Some retardate children have abnormalities apparent at birth or shortly thereafter. These abnormalities may be physical as well as neurological and may include unusual facial features and various other abnormalities. Sometimes children have an outwardly normal appearance but have other signs of some kind of serious illness and failure to feed and grow normally.

Mental retardation is often accompanied by other symptoms as well. These symptoms include aggression, a tendency towards self injury, mood disorders, and personality changes.

Retardate children do not form a uniform group. Deviations in normal adaptive behaviours depend on the severity of the condition. Mild retardation may be associated with a lack of curiosity and quiet behaviour. Severe mental retardation is associated with infantile behaviour throughout life. There are many signs of mental retardation such as failure to meet intellectual developmental markers, decreased learning difficulty, learn to talk later or trouble speaking and deficits in memory. They are maladapted with social life including difficulty in understanding social rules, inability in problem solving and have trouble in seeing the consequences of their actions. They are unable to think logically and thereby have difficulty in decision making. They have some behavioural problems and have difficulty in controlling their own feelings. They may be slow to learn to dress and feed themselves. They have continued infantile behaviour and are unable to meet the educational demands of the school.
Usually parents recognize mental retardation by children’s delay in language development. They are slower to use words, combine words together, and speak in complete sentences. Their social development is sometimes slow, because of cognitive impairment and language deficiencies. The limitations of cognitive functioning will cause a child with retardation to learn and develop, more slowly than a typical child. They require longer time and more repetitions for learning and the skills may need to be adapted to their learning level. Nevertheless, virtually every child is able to learn, develop and become participating members of the community.

1.5 Psychological Deficits

Due to below average level of intellectual thinking, the following factors affect their psychological and social skills.

a. Low attention and concentration
b. Poor memory or distortion in thinking
c. Delay in cognitive development
d. Emotional imbalance or disturbance
e. Poor emotional management
f. Deficits in adaptive behaviour that adversely affects the education and performance of self direction.
g. Poor physical health affects their mental development
1.6 Diagnosis

Diagnosis of mental retardation is appropriate when both intellectual and adaptive skills are significantly below average. The first step in diagnosing mental retardation is a complete physical examination and medical history. A child’s mental disorder may be treated after treating the medical problem that caused it. A complete medical, family, social and educational history will be compiled from existing medical and school records and from interviews with parents. Interviews with parents or other caregivers are used to assess the child’s daily living, muscle control, communication and social skills.

Newborns with physical abnormalities or other symptoms need laboratory tests to detect metabolic and genetic disorders. CT scan or MRI scan may be performed to check structural problems within the brain. Achromosome analysis, urine and blood tests, X-rays of bones etc can also help to diagnose retardation. While the children grow up, mental retardation is diagnosed by considering the Intelligence Quotient (IQ) and the ability to perform adaptive skills. To assess adaptive behaviour, professionals compare the functional abilities of a child to those of other children of similar age. There are many adaptive behaviour scales to measure adaptive behavior.
1.7 Prognosis

The life expectancy of children with mental retardation may be shortened, depending on the cause and severity. In general, more severe the retardation, the life expectancy will be short. Individuals with mild to moderate mental retardation are frequently able to achieve some self sufficiency and to lead happy and fulfilling lives. To reach these goals, they need appropriate and consistent educational, community, social, family, and vocational supports. The outcome is related to the aggressiveness of treatment, personal motivation, and opportunity and associated conditions.

1.8 Prevention

Many cases of mental retardation are now prevented by improved health care. Prevention applies to genetic, social, environmental, infectious and prenatal problems.

a. Genetic

Prenatal screening or genetic defects and genetic counseling for families at risk for known heritable disorders can decrease the incidence of genetically caused mental retardation. Counseling helps them to assess the risk of having another child who is retarded.
b. Social

Government programs to ensure adequate nutrition are available to the under privileged in the first and most critical years of life. These programs can reduce retardation associated with malnutrition.

c. Environmental

Environmental programs to reduce exposure to lead, mercury, and other toxins will reduce toxin-associated retardation. Programs to increase public awareness of the risks of alcohol and drugs during pregnancy can help to reduce the incidence of retardation.

d. Infections

The prevention of congenital rubella syndrome is one of the best examples of a successful program to prevent one form of mental retardation. Constant vigilance to limit exposure to infectious things helps to reduce retardation.

e. Prenatal

Proper prenatal care lowers the risk of having a child with retardation. Folic acid, a vitamin supplement taken during pregnancy can help to prevent certain kinds of brain abnormalities. Pregnant women should be educated about the risks of drinking and about the need to maintain good nutrition during pregnancy. Tests such as amniocentesis and ultrasonography can determine whether a fetus is developing normally in the womb.
1.9 Treatment

The primary goal of treatment is to develop the potential of the person. Special education and training may begin as early as infancy. This includes social skills to help the person function as normally as possible. A supportive, warm home environment is essential to help the mentally retarded to reach their full potential. They can learn throughout their lives and can obtain many new skills even late in life with the help of their families, care givers and clinicians. The outcome of treatment depends on the degree of retardation.

A multi disciplinary team including primary care giving doctors, linguists, social workers, speech therapists, occupational therapists, physiotherapists, neurologists or developmental pediatricians, psychologists, nutritionists, speech pathologists, special educators and others are involved in the treatment. Together with the family, these people develop a comprehensive individualized program for the child. Treatment begins as soon as the diagnosis is suspected. The parents and siblings of the child also need emotional support and sometimes counseling. The whole family will be an integral part of the program. It helps them to develop skills for dealing with the special needs of the retarded child.

The full array of the child’s strengths and weakness must be considered in determining what kind of support is needed. Factors such as physical disabilities, personality problems, mental illness, and interpersonal skills are all taken into consideration. Physiotherapy will be
given to the children in need of it by way of exercises, by the physiotherapist. Through physiotherapy, gross and fine motor skills, which are the important skills required for the development of functional abilities, can be improved. The linguist can assess the language of the children, transcribe the recorded language data, analyse it and can find out the language problems and can take role in intervention by stating the actual linguistic problems. Special education will be given to each individual according to his ability and needs. Speech therapy will be given by the therapist in order to improve their speaking skill.

1.10 Rehabilitation Process

The educational and rehabilitation process goes through a structured form with a multifaceted approach involving various components. It is a daily process through which children gain more skills through therapeutic activities such as special education, physiotherapy, speech therapy, creative activities like play, music, arts crafts drawing, painting, etc. In addition, toys, library, picnic, care givers meeting and medical management can also be given. These activities not only provide the child scope for learning but also help in the development of the person’s mind, body and spirit.

1.11 Educational Implications

Mentally retarded children usually have speech and language handicaps. Therefore, they form a special population that poses particular challenges to the educational system. Changes in the educational system
brought about by the legislation have dramatically improved the lives of mentally retarded people. Appropriate educational services begin in infancy and continue throughout the developmental period. Before the enactment of the Education for All Handicapped Children Act, 1975, known as Public Law (PL) 94-142, basically only two options existed for individuals with pronounced degrees of retardation; they could be cared for at home, or they could be placed in institutions. Now all children are entitled to an education appropriate to their level of functioning. This law mandates education for all school age children regardless of the degree of severity of the handicapping condition. Tests designed to measure intelligence are used as one tool for matching children with appropriate educational strategies- the original purpose for which they are intended.

Many teachers and parents now feel that the practice of inclusion or mainstreaming can apply to the retardates. Mainstreaming means placing such retarded children in standard classrooms for at least part of the day. It helps them to feel more a part of society and helps others to understand better their special needs and capabilities in education. The Federal Education for All Handicapped Children are entitled to a free and appropriate education in the least restrictive environment, has been widely interpreted as supporting the expansion of mainstreaming.

1.12 Neurological Approaches to Mental Retardation

Brain is the organ of thought and the mediator of behaviour. Dysfunction of the brain in the mentally retarded is accepted as being of at least two varieties. There may be very specific lateralizing perceptual
disabilities affecting unique input or output processes or there may be much generalized disabilities affecting all cognition. This construct is especially useful in the consideration of the development and use of language.

The specific input and output pathways affect the stimulability of the central process. Generalized intellectual disability or the inability to learn or comprehend or use the incoming stimuli is more easily understood as a gross failure to develop.

The actual defect in the retarded should be isolated through research. First determine whether the problem is seen as a demonstrable neurological impairment, and then determine whether the problem is perceptual or conceptual in nature. If it is a perceptual problem, questions arise as to where and to what degree the modality in question is limited and to how much of a role this delimitation plays in the acquisition of new learning. Also, how much adaptation can be made by compensation through the use of unimpaired pathways. If conceptual abilities are affected, and not the lower level perceptual functions, the research can point to the specific areas where making use of perceptual learning may increase the efficacy of the more complex conceptual functions.

If speech accuracy is not a problem in a given retarded child, the assumption can be made that the auditory pathway at the perceptual level is not seriously affected. If in the same child, language acquisition is delayed, then it can be assumed that the higher levels, that is, the levels of language and thought are affected. Such defects of function will
produce concentrated delays in verbal acquisition. Comprehension and use of vocabulary will be delayed. Then it is necessary to study how increased perceptual auditory training may assist the child in overcoming the conceptual defect (Schiefelbusch, Richard., 1967).

1.13 Language Problems of the Retarded Children

The language development of the mentally retarded children is the evidence for the active role of brain in language acquisition. The language development is lower in all aspects of language skills and the final achievements are lower, in spite of the fact that the stages and order of acquisition stage are similar to normal peers. (Rosenberg; 1982 cited in P.A. Suresh et al; 1994).

Structurally language of the retarded children is similar to that of normal children. But the speech and language development in retarded children is delayed as compared to normally developing children. That is, retarded children develop speech and language skills in the same sequence as do normal children. The only difference is that they develop skills more slowly and have a lower ceiling of development than normal individuals. Most of the retarded children babble during their first year and develop their first words within a normal time span; they are then slow in developing sentences or a varied vocabulary. It grows slowly in retarded children. The process of vocabulary development of retarded children seems quite similar to normal children. That is, retarded children also learn words from context and by incidental learning as normal children, not just by direct instruction.
Grammatical development, though slow, comes in the same way, and in the same order, as it does for children with normal intelligence. The child's conversation, however, may contain more repetition. Normal children at their three years will be able to speak with short sentences but is restricted in variety and complexity.

The frequency of language disorder is about 100% to the children who comes below the IQ 20, around 90% below the IQ 21-50, and about 45% in mildly retarded group.

Language delays are seen in both aspects of comprehension and expression. The common aspects of the speech and language problems of retarded children are categorized below,

1. Problems in language production
2. Problems in language comprehension
3. Other problems

1.13.1. Problems in Language Production

Retardate Children produce a wide variety of speech problems especially in expression, articulation, voice and in fluency.

a. Problems in Expression

In the case of severe and profound retardates, about 40% of the children are nonverbal. Some of them learn to use basic gestures for food, toileting and for other basic needs. Some of them not have even basic communication to fulfill their basic needs. Here the main problem
probably is not developing a viable phonological system. The verbal objective of retardates is restricted so that many of them resort to the use of nonverbal expression modes such as gestures. The number and variety of gestures used are also limited.

Most often retarded children respond with one word expressions. They generally fail to combine the words into sentences. When sentences are used they would resemble a telegraphic message. These problems are due to the failure in the processing of syntactic aspects of language. Some children repeat question instead of replying which is known as echolalia and have problems in asking questions using negative and complex sentences. They have difficulty in doing transformations. They fail in describing events or actions, asking for information, describing needs, requesting for clarification, telling lies, jokes and so on.

They have problems in pragmatic aspects also. In spite of knowing what to communicate, a retarded child may find it difficult to participate in a conversation. They have problems in taking appropriate turns while conversing. Here their main problems are the inability to initiate a conversation, and then maintain it and to terminate that conversation successfully.

b) Articulation Problems

The speech of retarded children may be distorted or slurred because of some phonemes which are inconsistently produced. This is
due to some articulation problems. The common articulation problems which have been seen among them are written here,

Some retarded children speak in sentences and phrases; but they may not be intelligible. Persons unfamiliar with the child will find it very difficult to understand the child's speech. Many times production of isolated sounds may not be defective but when saying in words and sentences it lacks clarity. In addition, many retardate children have problems in using suprasegmental features like stress and intonation. This results in monotonous and unintelligible speech. The typical misarticulations in retarded children are,

i) Distortion of Sounds

Distortion of sound means the mispronunciation of sounds. Children may distort certain speech sounds while attempting to produce them accurately.

   e.g. kaţa > /kaţ*a/ 'shop'

ii) Substitution

Substitution is the replacement of a correct sound by an incorrect sound. They substitute words, which look like the same. The substitution may come at the beginning, middle or at the end of the word.

   e.g. maşi > maci 'ink
iii) Simplification of Consonant Letters

Since the consonant clusters are difficult to articulate, they may simplify consonant clusters.

\[ \text{e.g. } \text{praavə} \rightarrow /\text{paavə}/ \quad \text{‘pigeon’} \]

iv) Omission or deletion of sounds

Omission or deletion of sounds from words or whole words from a sentence takes place here.

\[ \text{e.g. } \text{neelə} \rightarrow /\text{neesə}/ \quad \text{‘nurse’} \]

These problems may sometimes resemble to normal children during their first word development.

c) Voice Problems

Voice problems affect intelligibility quality, loudness, and pitch of the speech. The common voice problem is the feeble or week voice, which is not loud enough to hear clearly. Misarticulated speech along with these problems affects the intelligibility of speech severely.

d) Fluency Problems

Defects in fluency or rhythm affect intelligibility in speech. If the speech is characterized by hesitations, pauses, repetitions etc, it will not be fluent and rhythmic.
1.13.2 Problems in Comprehension

Language problems occur in comprehension also. Comprehension is the awareness of what is happening in surroundings. Retarded children have many problems during comprehension.

The knowledge about objects, persons and actions in the environment are limited in retardate children. Due to this limitation, they may have difficulties in understanding others speech except for daily routinely used commands and actions. They have a restricted receptive vocabulary mainly limited to food items. They can not understand some aspects of vocabulary such as adjectives, adverbs, question forms etc.

Retardate children generally understand concrete words that are represented in object form. The ability for abstract thinking is found difficult to them. They have difficulties in understanding indirect questions, ambiguous statements, riddles, jokes and humor. When they follow instructions and statements, they understand the key words and not the entire statements. They find difficult to follow multi step instructions and commands.

1.13.3 Other problems

In addition to the speech production and comprehension problems, there are many other problems in communication among mentally retarded children. About 40% of the retarded children have hearing problems. Hearing loss along with retardation makes the task of speech and language learning more difficult. Some can hear well but they may
be poor listeners. That means they have listening defects. They may have
difficulty in locating the sound from where it is coming and in
differentiating sound pattern. They have problems in attaching meaning
to the sounds which is heard. Problems in reading and writing skills
heavily affect the language development of the retarded children. Having
this general picture of the language disorders of the retarded children in
mind, their language or speech defects are analyzed in the fifth chapter
along with case study.