

# MENTAL RETARDATION

## A REVIEW FOR DENTAL PROFESSIONALS

### Purpose of this Module

The information presented in this module is intended to familiarize dental personnel with the definition, etiology, descriptive terminology, communication deficits, prevalence, and specific learning characteristics of individuals with mental retardation (MR).

### Learning Objectives

After reviewing the written and audiovisual materials, the participant will be able to:

1. Define the three factors necessary for a correct diagnosis of mental retardation and contrast mental retardation with mental illness and developmental disability.
2. Review and explain the two descriptive (classification) systems utilized in the field of mental retardation.
3. Compare the communication deficits/abilities of persons with mild, moderate, severely, and profound mental retardation.
4. State the prevalence of mental retardation and the approximate percentage of persons with mental retardation residing in institutions.
5. Describe Public Law 94-142 and its impact on persons with mental retardation.
6. Describe the three major etiologies of MR, provide several examples from each group and list the approximate percentage of persons with MR within each group.
7. Describe five specific learning characteristics of individuals with mental retardation.

**Authors Note:** The information outlined in this section can be found in the excellent text *The Mentally Retarded Child* by Robinson and Robinson. Primary bibliographical references were used only when appropriate.

# **MENTAL RETARDATION**

## **A REVIEW FOR DENTAL PROFESSIONALS**

### **INTRODUCTION**

The intent of this review is to distill from the vast amount of information on mental retardation those facts and concepts that would be considered important for institutional dental personnel for the appropriate modification of their procedures and services. As with any broad review, generalizations are necessary and exceptions are common. It must be remembered that although the following discussion centers on the differences between individuals who are mentally retarded and those who are not mentally retarded, there are far more similarities than differences between the two groups.

### **INTELLIGENCE AND INTELLIGENCE TESTING**

Opinions about the definition of intelligence and the value of intelligence testing seem as varied as the intelligence quotient (IQ) scores that result from such testing. Intelligence is generally thought to encompass three areas: (a) the capacity to learn (gain knowledge); (b) the ability to store this knowledge; and (c) the ability to adapt this stored knowledge to varied situations.<sup>1</sup> The individuals with mental retardation differ in the expression of these abilities, as do the general population. Intelligence quotients reflect intellectual performance at the time of testing, not the potential of the individual. Intelligence tests do well in predicting future academic performance, however they lack predictive ability in other areas such as creativity and social potential.<sup>2</sup> Although intelligence tests are still widely used, the resultant IQ scores are being supplemented by greater use of the Mental Age (MA) and scores from social maturity and adaptive behavior tests.<sup>3,4</sup> The derivation of an intelligence quotient (IQ) score is the individual's mental age divided by his/her chronological age times 100. For example, a 10 year old child with a mental age of five would have an IQ score of 50. An IQ score of 100 is the mean (average) for the general population.

### **DEFINITION OF MENTAL RETARDATION**

Mental Retardation (MR) refers to significantly sub-average general intellectual functioning resulting in or associated with concurrent impairments in adaptive behavior and manifested during the developmental period.<sup>5</sup> This definition refers to three components, all of which must be present in order to correctly diagnose mental retardation: (a) a learning deficit which is general in nature, differing from specific learning disorders such as dyslexia, and which is significant in severity (usually interpreted to mean an IQ of below 70); (b) impairments in adaptive behavior which include, among others, deficits in communication, self-care and mobility; and (c) a learning disorder which is recognized during the developmental or growing years, generally considered earlier than 18 years of age. Since MR originates during the developmental years, it is considered one of the major developmental disabilities (DD) along with epilepsy, autism and cerebral palsy. Therefore, MR and DD differ considerably from mental illness which is a disorder of behavior that causes difficulty in adjusting to life but which assumes normal intellectual capability. There are some persons with mental retardation who also have a psychiatric disorder and are often referred to as a person with dual-diagnosis.

### **PREVALENCE OF MENTAL RETARDATION**

The prevalence of mental retardation is generally accepted as three percent (3%) of the general population. Most people with mental retardation are diagnosed prior to or during the first years of school.

## **CLASSIFICATION OR DESCRIPTIVE SYSTEMS**

The old terms, idiot, imbecile and moron referring to various degrees of mental retardation have been discarded in this country, although reference to this learning deficit descriptive system may be encountered in professional references from the United Kingdom, Australia and New Zealand. Two descriptive systems that relate to IQ scores remain in use. The first, Degrees of Retardation, utilizes groups based upon standard deviations below the mean of IQ scores: Mild: 55 to 70(75%); Moderate: 40 to 55(20%); Severe: 25 to 40(3.5%); and Profound: 0 to 25(1.5%). The second, a Functional Classification, is less concerned with IQ scores and by definition, is related to the functional level of the person: Educable (EMR) with an approximate IQ range of 40 to 70; Trainable (TMR) with an approximate IQ range of 25 to 48; and Dependent with an approximate IQ range of less than 25.<sup>2</sup> The term Educable refers to some ability to read and write, although academic achievement of these individuals is less than that of the general population. The term Trainable refers to the acquisition of adaptive or self-help skills such as feeding, dressing, toilet training. The term Dependent (or the outdated term Custodial) refers to persons with mental retardation whose needs will largely be met by others.

The first classification system is often used by psychologists, physicians, dentists, and researchers to indicate the severity of the learning disability. The second or functional system, used by special educators and others, relates to the person's ability, with help, to cope with their learning disability and to participate in education and training programs.

## **UPDATED TERMINOLOGY**

The above information on definition, classification and prevalence represents current professional thought through the 1990's and indexes the various changes since the original was outlined in 1921. In 1992 the American Association on Mental Retardation (AAMR) again modified the definition of MR. The changes center on three areas: 1) The IQ limitation of approximately 70 has been raised to 75 with flexibility in clinical judgement allowed (actually adopted in 1983). This would clearly raise the prevalence rate of MR. 2) The global term, adaptive behavior, has been

extended to ten specific adaptive skills areas, and 3) substituting for the levels of MR (mild, moderate, severe, profound) is the concept of support systems needed for these levels (intermediate, limited, extensive and pervasive).

These changes have generated much controversy and are not fully accepted by many professionals serving this population. The use of the older concepts of levels of MR are probably more functional for the institutional dental staff. That is, communication is probably more clear when referring to a dental patient as being profoundly mentally retarded rather than as needing pervasive support.<sup>7</sup>

## **LOCATION WITHIN THE COMMUNITY**

Until the mid 1950's many persons with mental retardation at all levels of disability were located in institutions. With widespread deinstitutionalization in the 1970's and mandated school attendance legislation (PL 94-142) enacted in 1978, school age children at all levels of function are provided services within the local school system through extensive special education programs. Day training and service centers established at the community level in most states in the 1970's now provide education and training services for adult clients (age 22 and older) of all levels of learning disabilities.

Through the efforts of normalization, only one or two percent of all persons with mental retardation now reside in institutions. These are primarily individuals with severe and profound mental retardation together with severe medical and behavioral problems.

## **ETIOLOGY**

The etiology of mental retardation may, for convenience, be categorized by genetic, physical, and cultural-familial (multi-factorial) causes and the resultant syndromes or conditions that arise from these causes.<sup>1</sup>

(Note: The relative percentages given here for each of the three etiological categories are approximate and arguable.)

## O Genetic - 8%

Genetic causes of mental retardation and their resultant syndromes have been belabored in the literature of mental retardation despite the fact that these genetic causes account for only about eight to twelve percent of the population with MR. This emphasis is due most likely to the fact that this eight percent comprises approximately thirty-five percent of the *known* specific causes of retardation.<sup>1</sup>

Those interested in a complete review of this area including physical characteristics of various syndromes should refer to appropriate texts and to Module 7. However, brief mention of the general nature of genetic deficiencies and the most common resultant syndromes seems in order. In general, genetic factors contributing to mental retardation are chromosomal aberrations (both sex and autosomal) and specific defective genes.

Aberrations in sex chromosomes can produce Turners' syndrome (lack of X chromosome) and Klinefelter's syndrome (presence of extra X chromosome). Turner's syndrome occurs in females only, with mental retardation occurring in twenty percent of the cases. Klinefelter syndrome occurs in males only, with mental retardation frequent. A recently recognized sex chromosome abnormality is the Fragile X syndrome which occurs primarily in males and may be the cause of a considerable number of males with mental retardation previously diagnosed as cultural-familial (or diagnosis unknown) and is the second most common genetic syndrome associated with mental retardation.

The major aberration in somatic chromosomes produces Down syndrome (Trisomy 21; Mongolism). Although there are several trisomies associated with Down Syndrome, Trisomy 21 is the most common. Mongolism is an outdated term and should not be used. This most widely known of the genetic syndromes affects both males and females, is characterized by the presence of an extra chromosome and accounts for ten to twenty percent of the individuals with moderate and severe mental retardation and approximately five percent of all persons with mental retardation.<sup>6</sup> The age of the mother is considered the greatest determinant, i.e., the older the mother, the greater the incidence. A detailed review of Down Syndrome and associated dental implications is presented in Module 3.

Specific defective genes include: (1) Congenital ectodermoses such as tuberous sclerosis; (2) Meta-

bolic storage disorders or inborn errors of metabolism such as galactosemia and phenylketonuria (PKU), the former a carbohydrate disorder and the latter a well known protein disorder; (3) Disorders of endocrine function; and (4) Familial cranial anomalies such as familial microcephaly. In general, the genetic causes and the characteristics of the resultant syndromes are specific. The percentage of persons with MR with specific and known genetic etiology should gradually rise as newer and better cytogenetic diagnostic techniques are developed.

## O Physical - 12%

The mental retardation that results from demonstrable brain damage contributes approximately 10 to 12 percent of the total population with MR. The major physical factors precipitating mental retardation include the following:

- **Prenatal:** Maternal malnutrition, acute maternal infections (e.g. Rubella), chronic maternal infections (e.g., Syphilis), maternal sensitization (e.g., Rh factor), maternal dysfunction (e.g., hypertension, diabetes), anoxia, radiation, and drugs (including alcohol).
- **Neonatal:** Prematurity, apnea or asphyxia, birth injury.
- **Postnatal:** Traumatic head injury, brain tumors, infections (e.g. meningitis), toxins (e.g. lead).

Despite the multitude of specific causes, relatively few specific clinical syndromes of brain damage can be delineated. The most well known of these is cerebral palsy (CP). Although only approximately fifty to seventy percent of persons with cerebral palsy are mentally retarded, this seventy percent comprises a large proportion of the severely and profoundly mentally retarded group. A detailed review of cerebral palsy and associated dental implications is presented in Module 4. Some forms of cretinism, microcephaly and hydrocephaly can also result from brain damage.

There is also a set of behavioral characteristics associated with brain damage. Although some non-brain damaged persons with mental retardation exhibit these characteristics and some with known brain damage do not, there is an association of brain damage and this set of behavioral characteristics, sometimes referred to as minimal brain dysfunction (MBD) or attention deficit disorder with hyperactivity (ADD-H). These characteristics are: hyperactivity, distractibility, short-lived aggression, destructive behavior, poor self

control (lack of inhibition), erratic and impulsive behavior. The percentage of persons with MR with the etiology of known brain damage appears to remain stable.

### **O Cultural/Familial, Multifactorial, Psychosocial, Diagnosis Unknown - 80%**

The remaining eighty percent of the population with MR falls into this category. Heredity plays an obvious part since the chance for retardation is greater for children born into families with parents who are significantly intellectually limited. Equally apparent is the environmental influence upon the incidence of mental retardation. The environmental factors include: cultural, familial or sub-group attitudes; indifferent maternal care; parental rejection; sensory deprivation; and institutionalization.

In the vast majority of cases, the degree of influence of the familial or environmental factor cannot be determined. Persons with mental retardation with cultural/familial etiology comprise nearly all of the mild and most of the moderate categories. Although the causes are nonspecific, it must be emphasized that this etiological group comprises the large majority of the population with MR. There are, however, very few individuals with mild retardation in institutions. Those persons with mild MR in institutions usually have severe medical or behavioral complications. As previously stated, as other etiologic factors, especially genetic, are better recognized, the percentage of persons with MR in this category may decline.

## **CHARACTERISTICS OF INDIVIDUALS WITH MENTAL RETARDATION**

### **O Physical**

With the exception of specific genetic syndromes (e.g. Down Syndrome) and certain additional handicapping conditions, such as cerebral palsy, there are no specific physical characteristics that distinguish the population with MR from the general population. While most individuals diagnosed with mental retardation do not necessarily have distinguishing physical characteristics, many do have obvious physical abnormalities including unsteady gait, scoliosis, orofacial abnormalities and hypotonicity.

### **O Behavioral**

With the following exceptions, there are no specific behavioral characteristics that are common to all individuals with mental retardation: (a) those characteristics previously described as associated with brain damage; (b) affection seeking and stubbornness that are sometimes associated with Down Syndrome; and (c) behaviors associated with the emotional and psychological problems that sometimes accompany retardation.

### **O Intellectual**

It is the area of intellectual or learning deficits that engenders the term mental retardation. The previous description of intelligence should aid in the understanding of these deficits. That is, these deficits occur in the areas of acquiring knowledge, storing knowledge and using this stored knowledge in various situations. Only a brief mention of the major learning characteristics that are important for dental professionals is presented here. One must always remember that this discussion, as well as most information concerning persons with MR, consists of broad generalizations and that obviously individual differences abound.

- A person with mental retardation learns visual and auditory discriminations more slowly than do others. Whether this is an inherent characteristic or the result of a short attention span commonly observed in these individuals, is in question.
- The person with MR often exhibits a short-term memory deficit, however, long-term memory seems unaffected.
- Abstract terminology or verbal cues produce more difficulty in problem solving than the use of concrete terminology and visual cues with these individuals.
- Separation of a stimulus from a distracting background is difficult for a person with MR, especially one who is brain damaged.
- The population with MR is considered to be more concrete in thinking and often lacks the ability to generalize from one stimulus to another. Because persons with mental retardation have difficulty in predicting outcome, changes in routine can create behavioral instability.
- Perseveration (continued, meaningless repetition of words, phrases or certain physical movements)

may be characteristic of some individuals with MR, especially those who are brain damaged.

- In addition, their experience and expectation of failure compared to success greatly influences the intellectual development of the person with mental retardation.

Further elaboration of these characteristics and suggestions for coping with these differences in a dental environment will be explored in Module 2.

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