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# Biological factors of Mental Retardation among the tribal population in Dinajpur

Ali, Md. Solaiman

University of Rajshahi

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**BIOLOGICAL FACTORS OF MENTAL  
RETARDATION AMONG THE TRIBAL  
POPULATION IN DINAJPUR**



THESIS SUBMITTED FOR THE DEGREE  
OF  
MASTER OF PHILOSOPHY  
IN THE  
INSTITUTE OF BIOLOGICAL SCIENCES  
RAJSHAHI UNIVERSITY, BANGLADESH

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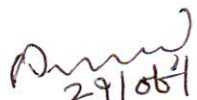
BY  
**Md. Solaiman Ali**

August 2003

Institute of Biological Sciences  
University of Rajshahi  
Rajshahi-6205  
Bangladesh.

## Declaration

This thesis entitled **Biological factors of Mental Retardation among the tribal population in Dinajpur** contains no material, which has been accepted for the award of any other degree or diploma in any University and contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

  
29/05/2006  
Md. Solaiman Ali

## **Acknowledgement**

The author wishes to acknowledge the co-operation and help of all those who have directly or indirectly assisted in this research and the preparation of this thesis.

The author is very thankful to his supervisor, Professor Anwarul Hasan for his invaluable co-operation, guidance and encouragement to complete the work.

The author wishes to acknowledge the special co-operation of Late Dr M A Moeed and Mrs Mahmuda Moeed for their inspiration to conduct this research work.

The author acknowledges the active co-operation of Principal Gopal Chandra Roy of D N Degree College, Lecturer Prokash Chandra Mondal of Durgapur Women's College, Teacher Md Motaharul Islam of Lohagara Girls High School for their sincere co-operation in all phases of this research work. He is thankful to Ms Halima Banu Shelly, Psychologist, SWID for her active co-operation during the research work.

He is especially indebted to Mr Alimur Rahman Sumon, Mr Tanzir Ahmmad Tushar and Mr Shahinoor Rahman Kajol for their active co-operation during the last moment work of editing the thesis.

He is thankful to the Director and his colleagues, Institute of Biological Sciences, Rajshahi University for their sincere co-operation during all phases of this research work.

The author is grateful to his father, Mr Md Habibur Rahman and all members of his family who always encouraged him and made a lot of sacrifice for his education and research.

Finally, the author expresses his deep love and affection to all the mentally retarded children whom he studied and for whom this research is done.

## **Abstract**

This research was designed mainly to study the biological factors of mental retardation among the tribal population in Dinajpur area of Bangladesh. Randomly selected 83 tribal and 78 non-tribal cases of mental retardation were studied. The mentally retarded subjects live in different villages of Dinajpur area in Bangladesh. The age range of the subjects are between 2 and 38 years. 105 cases are male and 56 cases are female. Out of total 161 cases 11 are Down's Syndrome, 14 are cranial anomalies, 5 are Cretinism and 131 are cultural familial cases. Only 15 cases are simple mental retardation cases. Others have different handicapped conditions with mental retardation.

The researcher used a checklist to assess the degree of handicapped conditions of the subjects. A case history form was used to trace the possible factors of mental retardation. The researcher also observed the cases at their home and during different social interactions. He interviewed the parents, guardians, family members and neighbors of the subjects to understand the real situation. Field studies were done from July 2000 to June 2003. Each case was observed on several days.

The major objectives of the study were to identify the biological factors of mental retardation among the tribal and the non-tribal population, compare the factors of the tribal and non-tribal subjects, study the degree and severity of the problems of the mentally retarded persons and to suggest ways and means to prevent mental retardation in the study areas.

Though the study was a survey of a small geographical area of the country, it is expected that the findings will help the medical scientists, concerned professionals and policy makers to plan and implement appropriate steps to prevent birth of mentally retarded children in

Bangladesh. It is also assumed that the findings will help facilitate formulation of a National Policy for the mentally retarded persons in Bangladesh.

The researcher did not identify a single factor or few factors which are exclusively related to the birth of mentally retarded children among the tribal population in Dinajpur area. Many well known factors are there among the tribal population. All these factors work together for birth of the mentally retarded children. These factors are poor nutrition of the pregnant mothers, infantile illnesses of the subjects including high fever, meningitis, infection, etc. Smoking and wine intake of the mothers, illnesses and diseases of the pregnant mothers, defective birth process, prolonged labour, etc. are important factors of mental retardation in the tribal population.

There are many factors which are common biological factors for both the tribal and non-tribal cases of mental retardation. These are: lower age of the mothers before pregnancy, diseases and illnesses of the parents before conception, poor nutrition of the pregnant mothers, difficult births after prolonged labour pain, faulty treatment and indiscriminate use of medicines by the pregnant mothers, illness and diseases of the infants and babies, etc.

Now it has become essential to promote awareness about mental retardation among the tribal population in Dinajpur. The Christian Missionary Groups can undertake a programme to promote the awareness. If the Health Directorate of Bangladesh Government insists or motivates the Christian Missionary Groups, they will definitely undertake the awareness development programs which will be more effective than the programs of other organizations.

The tribal people of Dinajpur are also the citizen of this country. They pay taxes, they cast votes and they are hard working honest people. But they are deprived from many socioeconomic development programs sponsored by the Government. It seems that the life and living of these

people are more controlled by the Christian Missionary Groups than the Government. But in Dinajpur area the Christian Missionary Groups did not promote suitable health care facilities, clinics and hospitals for the tribal people. Therefore, it has become necessary for the Government to look into the matter and promote some specialized health care facilities for the tribal people. Government health care programs will also help prevention of further birth of the mentally retarded children in the area.

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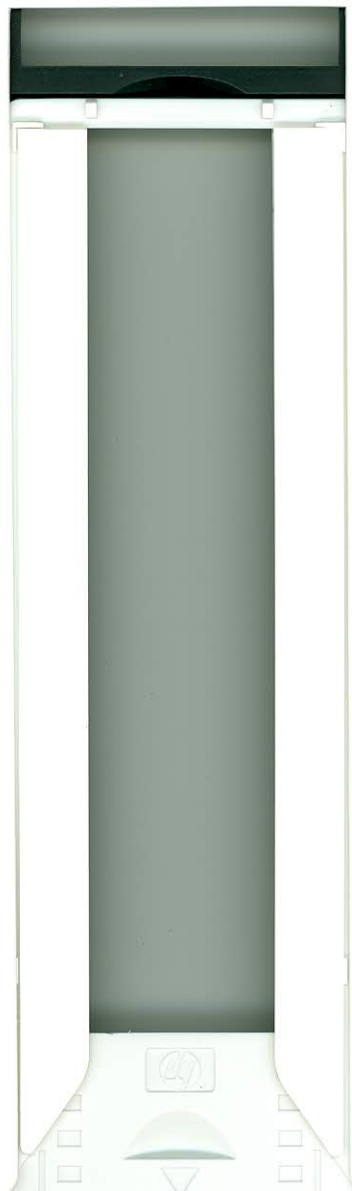
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*Chapter I*  
*Introduction*

# Chapter – I

## INTRODUCTION

The tribal people of Dinajpur of Bangladesh are known as Santals. Most of them are engaged in agriculture oriented works. Their works and living patterns are so simple that mental retardation is not perceived as a problem to them unless the degree of retardation is severe or profound. It seems that the Santals do not bother with the Mental Retardation of their family members. It is not exactly known how many severe or profound mentally retarded children are born every year in the Santal families who die either during infancy period or during babyhood. In recent years, due to Extended Immunization Programs, the severe and profound mentally retarded persons of this tribe are also experiencing longer life spans. During last few years, it is observed that many severe mentally retarded children survived in this tribe who will soon become adults. Now the Headmen and Decision Makers of different sub-tribes as well as the family heads have started thinking about the future of these tribal mentally retarded children. Their major anxieties are:

1. These mentally retarded persons are unable to engage themselves in any economic activity.
2. They depend on others for simple Daily Living Activities which are very unusual among the tribal communities.
3. The overall future of these handicapped persons.

The researcher works in a college that is surrounded by many tribal villages. During informal interactions, the Headmen of the tribal communities informed the researcher that the growth and development of these severely retarded children are creating new problems to their families. The families did not have experience of such persons few years ago and now worried how they would handle such family members. The Headmen also informed the researcher that most of

these retarded children are burden to the families as they are not being able to work.

The researcher personally observed the situation visiting the tribal villages few years ago and discussed his observations with his supervisor at Rajshahi University. The researcher also observed that the tribal people got married within their own communities and mostly among close relations. Their food habits are different and include many animals which are not recommended by the biological scientists. They also frequently consume many crude wines, which are not manufactured in hygienic conditions. The treatment pattern during illness and diseases are yet far away from modern scientific treatments available in the country. They also marry in relatively earlier ages when sometimes the reproductive organs of the mothers are not mature.

When the researcher opened discussion with the Headmen and concerned parents about Mental Retardation he found that not only the term Mental Retardation, they possess many faulty ideas about mental abilities, intelligence and basic biology.

All these created interest to the researcher and he planned to study the life of the tribal mentally retarded persons surrounding his college, specially the factors of mental retardation.

## MENTAL RETARDATION

World Health Organization (1968) reported that at least 3% of the total world population is mentally retarded. In general, Mental Retardation means less intellectual capacity. Mild, moderate and severe mental retardation are defined on the basis of less intellectual capacity. Severely retarded persons can not wear clothes, keep themselves clean, perceive danger, perform daily living works without the help of others, move properly in the roads and sometimes they can not return home. It is assumed that their brain functions slowly compared to the general people. It is sometimes difficult to assess the speaking, movements, physical activities and behaviour of the mentally retarded children.

Educationists consider the mentally retarded persons as slow learners. Psychologists view Mental Retardation as sub-normal intellectual capacity and psychosocial immaturity that lead to maladaptive behaviour. However, all of them are interested to know the nature and causes of mental retardation from scientific viewpoints.

Genetic chromosomal factors, infections, toxic agents, prematurity, trauma, ionizing radiation, malnutrition and other biological factors are well known causes of mental retardation.

Workers in the field of mental retardation have been unable to agree how mental retardation should be defined. The problem of definition is by no means superficial. Different definitions have reflected opposing theoretical views of etiology and prognosis. These views have definite implications for the management and education of the mentally retarded persons.

Diagnosis is defined as (1) identification of disease or abnormality from symptoms presented and from a study of its origin and course (2) any classification of an individual on the basis of observed characters (English and English, 1958).

In relation to diagnosis in mental retardation the accepted definition of mental retardation is the nature of the disease or abnormality that is

identified. One must also decide whether diagnosis of mental retardation should be assessed or origins and course should emphasize classification of observed characters. Classification is the process of grouping objects into mutually exclusive classes, ranks or categories or the group so classified (English and English, 1958). If the second definition of diagnosis is used with respect to mental retardation, diagnosis and classification are synonymous terms. This is prevailing view of diagnosis in the field of mental retardation. However, in terms of their particular usage in the field, classification usually refers to the assignment of individuals to subgroup within the more inclusive group of mentally retarded individuals. Diagnosis is often reserved for the initial determination of whether an individual is mentally retarded.

### **DEFINITION OF MENTAL RETARDATION**

The basic definition of mental retardation adopted by the American Association on Mental Deficiency in May, 1966, is:

Mental retardation refers to sub-average general intellectual functioning, which originate during the developmental period and is associated with impairment in adaptive behavior (Heber, 1961).

The sub-average general intellectual functioning group includes all individuals whose performance on suitable objective tests of general intellectual ability is more than one Standard Deviation below the population Mean. The upper limit of the developmental period is considered to be at approximately sixteen years.

Adaptive behavior is manifested in three principal manners: (1) maturation, (2) learning and (3) social adjustment. Each of these three factors assumes primary importance during a certain stage of the developmental period. Thus, maturation which refers to the rate of development of sensory motor skills such as sitting, walking, talking, etc. They are important criterion of adaptive behavior during babyhood. Learning, which is defined as the ability to acquire academic skills, is important during childhood. Social adjustment assumes primary importance on the adult level. The principal indicators of social adjustment at the adult level are: the degree to which the individual is able to maintain himself independently in the community and in gainful employment. As well as by his ability to



meet and to conform to other personal and social responsibilities and standards set by the community (Heber, 1959).

However, the quality of interpersonal relationship is also an important manifestation of adaptive behavior during babyhood and childhood. Social adjustment is considered as the primary criterion of adaptive behavior only at the adult level. And considering all these criteria, Mental Retardation can be defined in many ways.

With the change of attitude towards the mentally retarded persons throughout the world, the definition of mental retardation also changed. In a recent definition, given in the 7th World Congress of the International Association for the Scientific Study on Mental deficiency, Sen and Dutta (1985) mentioned that

Mental retardation is not a disease or single entity, rather a term applied to a condition of retarded mental development present at birth or in early childhood and is characterized mainly by limited intelligence combined with difficulty in adaptation. Hence mental retardation is impaired mental ability. A retarded child learns more slowly and at maturity his capacity to understand will be less than normal. He finds difficulty in learning, social adjustment and economic productivity.

Perhaps the most important characteristics of this definition is the emphasis on the deficits in both adaptive behavior and general intellectual functioning. Historically, reliance has shifted between measured intelligence and adaptive behaviour as the basis for determining mental retardation. In one sense the principal indicator of mental retardation is still sub average intellectual functioning. If an individual is sub average in general intellectual ability but not impaired in adaptive behavior reflects a higher level of intelligence and create doubt on tests of the individual's intellectual functioning. This definition provides a double check on impaired intellectual functioning.

Another important feature of the definition is its inclusion of both the cause and probable course of the behavioral disorder. The emphasis is on symptoms, not on etiology or prognosis. The diagnosticians, at least in theory, relies neither on case history nor his best predictions of the eventual outcome when he decides if an individual is classified in the broad category of the mentally retarded. The diagnosis of mental retardation does not indicate that the retarded person will always be incapable of either average intellectual functioning or impaired

adaptive behavior. In other words, the condition is not defined as irreversible.

The establishment of minus one standard deviation as the point indicating sub average intellectual performance means that 16 percent of the total population could be classified as mentally retarded. However, since measured intelligence has to be considered in conjunction with impaired adaptive behavior, the total percentage of the population diagnosed as retarded would never actually reach sixteen percent. But the percentage is higher than in most other classification systems that have stipulated Intelligence Quotients for the diagnosis of mental retardation (Gelof, 1963). This attempt to raise the IQ level for indicating suspected retardation has been questioned by some critics (Blatt, 1961; Garfield, 1980).

### **IQ AS THE SOLE CRITERION OF MENTAL RETARDATION**

In 1904 Binet was commissioned by the French Ministry of Public Instruction to devise methods to differentiate between school children who could profit from public school instruction and those who needed special instruction. He published with Simon his first Intelligence Scale in 1905, revising it in 1908 and in 1911. Since that early date, Binet scales and their subsequent revisions including adoptions in both the United States and England have been used periodically by Psychologists as the sole criterion for mental retardation. As Clarke and Clarke (1958) and Gelof (1963) point out, different classification systems have established varying intelligence levels as cut off points for the mentally retarded. Terman's commonly used system classified those who scored IQ below 70 as definitely retarded.

Criticisms of measured intelligence as the sole criterion of mental retardation are.

1. The intelligence test may not give an adequate sample of those problem solving task involved in some areas of social competence (Sarason, 1959). Therefore, Social competence does not always correspond to the level of measured intelligence (Clarke and Clarke, 1958).

2. Intelligence test scores, though relatively constant, show some fluctuation. This criticism was important for those who thought

mental retardation was irreversible. If the condition was defined as irreversible, then IQ, which varied, could not be used as the sole diagnostic criterion.

3. Low scores on intelligence tests can result from such various causes as sensory deprivation, injury to the central nervous system, and emotional problems. Depending on which factor is involved, the prognosis will be different.

Recent research has repudiated IQ, as the sole criterion of mental retardation primarily because measured intelligence does not always correspond to social competence or adaptive behaviour. Other criticisms are based on the assumption that mental retardation is irreversible or that different causes lead to a different prognosis.

## **MENTAL ILLNESS AND MENTAL RETARDATION**

Many people confuse mental retardation with mental illness. Mental illness is a quite different condition. A person who is mentally ill may have normal or high intelligence and may even be very well educated. But as a result of unhappy experiences, or because of some physical illness that affects the brain, his or her behaviour become strange, even though he/she knows how to behave normally. When a mentally retarded person behaves in a strange way it is usual because he has not learnt the correct way to behave. The mentally retarded person needs to be taught how to behave normally. The mentally ill person needs help from a Psychiatrist to overcome his illness that he can return to normal life and behaviour (Mills, 1989).

## **CHARACTERISTICS OF THE PERSONS WITH MENTAL RETARDATION**

Describing the characteristics of a person with mental retardation is difficult because all the retarded individuals do not have the same characteristics and no single child has all the characteristics. However, it is important that parents and professionals should know the characteristics that they can plan the life of the concerned mentally retarded persons.

## PHYSICAL CHARACTERISTICS

1. Generally they have a marked delay in their developmental milestones when compared to normal children, such as their sitting, standing, walking, talking and so on. Mildly retarded children usually have their physical characteristics close to their normal peers. Some of the moderately retarded and severely retarded ones might have clumsy gait and poor motor co-ordination. The profoundly retarded individuals usually have associated physical handicaps and many a time they are non-ambulatory.

2. The physical characteristics also depend on the causes and the clinical features of the individual. For instance, the one with microcephaly has a very small head with receding chin and forehead. While the one with hydrocephalus has a very large head. A child with Downs syndrome has very distinct features such as slanting eyes, flat nose bridge, flabby skin, little finger, turned in words, wide gap between big toe and the next toe and fissured tongue. Those with mental retardation with cerebral palsy will have spasticity or stiffness of the limb or limbs and may have drooling of saliva.

3. The mentally retarded persons have problems in language and communication, which are found more with severely and profoundly retarded and less with mildly retarded persons.

4. A small number of mentally retarded persons has dual or multiple handicap such as impairment in visual, hearing or motor abilities.

## **SOCIAL CHARACTERISTICS**

The social characteristics stand out in a retarded child because of the discrepancy between his abilities and the expectation of the society from him.

1. One commonly found characteristic is short attention, and lack of concentration among many retarded children. They will switch from one activity to another without completing any of them.

2. There are also those retarded persons who are lethargic, do not get motivated to do any task or continue to do the same task or have difficulty in changing from one activity to another.

3. Some of them exhibit problematic behaviour which are either self injurious or harmful to others. Self injurious behaviour include hand biting, pulling own hair, nail biting, eye poking, beating on the face, banging head on wall or floor and so on. Those that harm others or destructive are the ones such as beating and pinching others, throwing things, tearing clothes and breaking articles, throwing things, tearing clothes and breaking articles, other problematic behaviours include running away from home, sealing and so on. Most of such behaviour can be controlled by systematic intervention.

4. There are some retarded persons who are indifferent to their surroundings and not responding when communicated with, though they may not have hearing problems. Irrelevant laughing or talking are also found with some retarded persons.

5. While the mild and some of the moderately retarded one can perform regular jobs they are trained in, their problem solving ability will be poor and are found incompetent in taking decisions independently. Even if their work skills are good, many tend to lose their jobs due to poor social competence.

It is essential for the teachers of the special schools to keep in mind that the characteristics of every child she teaches as she is required to plan teaching programme based on the child's all-round profile. To quote an example, there may be a child in her class with epileptic fits who would exhibit certain behaviour just before or after an attack of the fit. Only if the teacher is aware of it, would she be able to take appropriate actions in the right time. She should work in close coordination with medical personnel and the other therapists to help the child in total. (Jayanthi Narayan & A.T. Thressia Kutty, 1995)

## VIEWS ABOUT MENTAL RETARDATION

General views: It is assumed that human settlement in Bangladesh is approximately 5000 years old and the mentally retarded people were present in the population of this country from the very beginning of its human settlement. In the old literatures we find many references related to the existence of intellectually handicapped persons in the society. They were projected sometimes as laughing stocks and sometimes as helpless persons. In many books they were shown as a burden and source of anxiety to the family. In Bengali language they were termed as *Boka*, *Haba*, *Adha Pagla*, etc. Yet large majority of the people in this country do not know what mental retardation is. Many people identify them as *lunatics*. They are perceived as useless human beings, burden to the families. The common people also consider the condition as a disease which is to be dealt with by the medical people (Sufi, 1992).

Ayurvedic Medicine: It is the oldest medical philosophy in Bangladesh. In the old Ayurvedic literatures, most of which are written in Sanskrit language, there are descriptions of mentally retarded children to a significant extent. Terms such as *Jada*, *Buddhimandyam*, *Manasammandhyam*, *Mudha Budhi*, *Manasikadurblyam*, etc. were used to explain mental retardation (Kapila, 1964).

According to old Sanskrit texts, disease and health are explained on the basis of *Tridosha*, the theory of three humors. Deficiency or excess in any one or all the three humors (supporting elements) of personality (*prokriti*) results in the *discordance* which is called *Roga* or disease. Similarly, anything that afflicts the body or cell self (living personality) or both is called disease. Mental retardation, which is a deficiency (*Mandata*) in cognitive plane (*Manasika*), is therefore a disease according to the ancient Sanskrit literature. According to these literatures a *Jada* or mentally retarded child is born due to the morbid humours that are provoked by the difcites of supermoplasm (*Vijat mokadosh*), the condition of the uterus (*Ashaya*), season (*Kala*) and the defects of the mother's diet and behaviour (*Maturahara Viharedoshahaith*) during gestation. It was postulated that a child is born out of some of the following factors:

1. Prenatal seeds (Matraja & Pitraja),
2. Spirit (Atmaja),
3. Nourishment (Rasaja), and
4. Mind (Sattvaupapadaka).

The sperm cells (Vija) of the parents contain minute elements derived from each of its organs and tissues. Questions were raised as to why the *Jada*, *Kubja* (hunch backed), *Muka* (mute), *Vyanga* (deformed) and *Unmatta* (insane) are unlike their parents. The answer is that a child is not developed according to the organs of the parents with their idiosyncrasies or acquired character (Charka, 1995). Rather it can be said that derangement in the *Vata* (wind) humour of pregnant mother is mainly responsible for the birth of mentally retarded children (Shastry, 1938).

Balodhi (1985) mentions that according to these ancient texts, the factors that are considered important in mental retardation are (1) Heredity, (2) Defective fetus, (3) Inappropriate child rearing, (4) Malnutrition, and (5) Divine influence. Except divine influence all the four other factors bear similarities with the modern outlooks.

From the above discussion of the Sanskrit literature it becomes evident that existence of mentally retarded persons are not new in this part of the world. Today, the English words *fool*, *imbecile*, or *idiot* are no longer in use, rather the term mental retardation is used to describe various forms of mental deficiency. The term "Person with learning disability" is used in some countries, for example in the United Kingdom.

Homeopathic treatment is relatively popular among the rural people because of lower cost and easy availability. To the poor people it is sometimes the only treatment for all disease. Homeopaths, both educated and uneducated, practice treatment of the mentally retarded persons since hundred of years in this country. To most of the homeopaths, mentally retarded persons are mentally weak persons. They use a number of homeopathic medicines mainly for improving the memory and thought process of the mentally retarded persons.

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## **MODERN SCIENTIFIC VIEWS**

In Bangladesh, Psychiatrists often use the terms Hypophrenia or Oligophrenia to identify the mentally retarded persons. The scientists concentrated their attention to the concept of mental retardation mainly during the decade of sixties of last century.

They understood that mental retardation refers to sub-average general intellectual functioning which originate during prenatal and early postnatal period of a child and is associated with impairment in adaptive behaviour.

The sub-average general intellectual functioning group includes all individuals whose performance on suitable objective tests of general intellectual ability is more than one standard deviation below the population mean. The upper limit of the developmental period is considered to be approximately sixteen years.

## **VIEWS OF SOCIAL SCIENTISTS**

Adaptive behaviour is manifested in three principal areas: (1) Maturation, (2) Learning, and (3) Social adjustment. Each of these three factors assumes primary importance during a certain stage of developmental period. Thus maturation, which refers to the rate of development of the sensory motor skills such as sitting, walking, talking, is the important criterion of adaptive behaviour during the preschool years. Learning as ability to acquire academic skills, is important during the school age. Social adjustment assumes primary importance at the adult level. The major indicators of social adjustment at the adult level are:

The degree to which the individual is able to maintain himself independently in the community and in gainful employment as well as his ability to meet and to conform to other personal and social responsibilities and standards set by the community (Heber, 1959).

The quality of interpersonal relationship is an important manifestation of adaptive behaviour during the preschool and school periods. However, social adjustment is considered as the primary criterion of adaptive behaviour only at the adult level.



Kolb (1962), writing the preface to *Mental Retardation* has the following pertinent comment to make: "We are concerned here with a consideration of those conditions given innately through genetic determinants or as they occur in the early developmental process of the growing fetus or infant which lead to arrest or limitation of cerebral development so as to preclude the successful evolution of an intellectual adequate for an independent social existence".

Such broadly based statement will not only include conditions that produce chemical and anatomical disturbances of the nervous systems which limit the capacity of the brain to respond to environmental stimuli and to integrate such stimuli, but also those conditions resulting from environmental deprivations that impair the full functioning of the otherwise well developed and intact central nervous system.

## **TYPES OF MENTAL RETARDATION**

APA (American Psychological Association), in 1968 classifies mental retardation into the following five categories considering to the degree of retardation:

1. Borderline mental retardation: IQ 68 through 83, corresponding to a maximum adult mental age of about 11 to 13 years. This category numbers roughly 15 percent of the general population.
2. Mild mental retardation: IQ 50 through 67, corresponding to a maximum adult mental age of about 8 to 11 years.

Mild retarded children usually look normal and show no signs of congenital malformations or physical handicaps. Such factors combine to make it unlikely that mild retardation will be not recognised until after the child starts school and is identified as a slow learner. The absence of brain pathology has led mild retardation being described in such terms as physiological, clinical, residual, primary, endogenous and cultural familial.

During the age of 0 to 5 years they can acquire, to a certain extent, social and communication skills and they are rarely distinguished from the normal intelligent people until later age. They can learn academic skills to approximately 6th grade level by late teens. Mildly retarded children are also educable and at the age of 18 years and over, they are capable of social and vocational adequacy with proper education and training. But they frequently need supervision and guidance under serious social or economic stress.

3. Moderate mental retardation: IQ 38 through 51, corresponding to a maximum adult mental age of about 7 years.

In adult life, individuals classified as moderately retarded attain intellectual levels similar to that of the average 7 year old child. With early intervention, special education and proper training they can learn the self-help activities and the social adaptive behavior. Under sheltered workshops they can become semi-skilled workers.

4. Severe mental retardation: IQ 20 through 35, corresponding to a maximum adult mental age of about 3 to 5 years.

Usually their motor and speech developments are severely retarded. Sensory defects and motor handicaps are common among them. They can develop very limited skills for maintaining personal hygiene and self-help. Throughout their whole lives they will be dependent on others for care.

5. Profound mental retardation: IQ under 20, corresponding to an adult mental age no greater than that of the average 3 year old child. The profoundly retarded are totally dependent.

During 0 to 5 years, they have gross retardation and minimal capacity for functioning in sensor motor areas. They need extensive nursing care. During age 6 to 18 years, some motor developments occur they can not profit from training in self help.

Thus they remain totally incapable of self-maintenance and need complete care and supervision (Sufi and Yamashita, 1996).

Apart from these five categories of mental retardation in general, we find some specific clinical types of mental retardation. Each of these clinical types, discussed below, has its own distinctive symptoms and etiological patterns.

### **DOWN'S SYNDROME**

Langdon Down in 1866 first described this type of clinical condition associated with moderate and severe mental retardation. The term mongolism is often used in referring to this syndrome. Afflicted persons frequently have almond shaped eyes (Golden & Davis, 1974).

In addition to almond shaped eyes, the skin of the eyelids tends to be abnormally thick; the face and the nose are often flat and broad, as is the back of the head; and the tongue, which seems too large for the mouth, may show deep fissures. The iris of the eye is frequently speckled. The neck is often short and broad, as are the hands, which tend to have creases across the palms. The fingers are stubby and the little finger is often more noticeably curved than the other fingers.

Well over 50% of these persons have cataracts, which are not congenital but tend to make their appearance when the child is about 7 or 8 (Falls, 1970).

Majorities of the Down's Syndrome cases have trisomy of chromosome 21 in group G, which results in a total of 47 chromosomes. A small proportion of cases have been attributed to mosaicism or to translocation. Down's Syndrome is the only common form of mental retardation due to autosomal abnormality (Gregory and Smeltzer, 1977)

### **CRANIAL ANOMALIES**

Mental retardation is associated with a number of conditions in which there are relatively gross alternation in head size and shape, and for which the causal factors have not been definitely established (Wortis, 1973).

In "Macrocephaly"; there is an increase in the size and weight of the brain, an enlargement of the skull, and visual impairment, convulsions, and other neurological symptoms resulting from the abnormal growth of glia cell that form the supporting structure for brain tissues. Other cranial anomalies include "Microcephaly" and "Hydrocephaly".

The term "Microcephaly" means small headedness. It refers to a type of mental retardation resulting from impaired development of the brain and consequent failure of the cranium to attain normal size. In an early study of the postmortem examinations of brains of microcephalic individuals, Greenfield and Wolfson, (1935) reported that practically all cases examined showed development to have been arrested at the fourth or fifth month of fetal life. Fortunately, this condition is extremely rare. The circumference of the head of the microcephalic child rarely exceeds 17 inches, as compared with the normal size of approximately 22 inches. Penrose (1963) also described microcephalic youngsters as being invariably short in stature but having relatively normal musculature and sex organs. Beyond these characteristics, they differ considerably from one another in appearance, although there is a tendency for the skull to be cone shaped, with a receding chin and forehead.

Microcephalic children fall within the moderate, severe and profound categories of mental retardation, but the majority show little language development and are extremely limited in mental capacity.

Microcephaly may result from a wide range of factors that impair the brain development, including intrauterine infections and pelvic irradiation of the mother during the early months of pregnancy (Koch, 1967).

Miller (1970) noted a number of microcephaly in Hiroshima and Nagasaki that apparently resulted from atomic bomb explosions during World War II. The role of genetic factors is not yet clear. Treatment is ineffective once faulty development has occurred and at present, preventive measures focus on the avoidance of infection and radiation during pregnancy.

"Hydrocephalus" is a relatively rare condition in which the accumulation of an abnormal amount of Cerebro-Spinal Fluid (CSF) within the cranium causes damage to the brain tissues and enlargement of the cranium. In congenital cases of hydrocephalus, the head is either already enlarged at birth or begins to enlarge soon thereafter, presumably as a result of disturbance in the formation, absorption, or circulation of the cerebrospinal fluid (Wortis, 1973).

The disorder can also develop in infancy or early childhood following the development of a brain tumor, subdural haematoma, meningitis, or other such conditions. Hence the condition appears to result from a blockage of the cerebrospinal pathways and an accumulation of fluid in certain brain areas.

The clinical picture in hydrocephalus depends on the extent of neural damage, which in turn depends on the age of onset and the duration and severity of the disorder. While the expansion of the skull helps minimize destructive pressure on the brain, serious brain damage occurs nonetheless, leading to intellectual impairment and such other effects as convulsions and impairment or loss of sight and hearing. The degree of intellectual impairment varies, being severe or profound in advanced cases. A good deal of attention has been directed to the surgical treatment of hydrocephalus, and with early diagnosis and treatment, this condition can usually be arrested before severe brain damage has occurred (Geisz & Steinhausen, 1974).

### Cretinism

Cretinism provides a dramatic illustration of mental retardation resulting from endocrine imbalance. In this condition, the thyroid either has failed to develop properly or has undergone degeneration or injury; in either case, the infant suffers from a deficiency in thyroid secretion. Brain damage resulting from this insufficiency is most marked when the deficiency occurs during the prenatal and early postnatal periods of rapid growth.

In severe cases of cretinism the individual has a dwarf like, thickset body and short, stubby extremities. Height is usually just a little over 3 feet, the shortness is accentuated by slightly bent legs and a curvature of the spine. The individual walks with a shuffling gait that is easily recognizable and has a large head; thick eyelids give the person a sleepy appearance. Other pronounced physical symptoms include a broad, flat nose, large and floppy ears, a protruding abdomen, and failure to mature sexually. Most individuals with cretinism fall within the moderate and severe categories of mental retardation. Early treatment of cretinism with thyroid gland extract is considered essential; infants not treated until after the first year of life may have permanently impaired intelligence.

As a result of public health measures on both national and international levels with respect to the use of iodized salt and the early detection and correction of thyroid deficiency, severe cases of cretinism has become practically non-existent in all the developed and in many developing countries.

### **PHENYLKETANURIA (PKU)**

Phenylketanuria is a rare metabolic disorder, occurring in about 1 in 20,000 births; retarded individuals in institutions who suffer from PKU number about 1 in 100 (Holmes, 1972; Schild, 1972).

In PKU the baby appears normal at birth but lacks an enzyme needed to break down phenylalanine, an amino acid found in many foods. The genetic error manifests itself in pathology only when this condition, not being detected, lead to the accumulation of phenylalanine in the

blood that eventually produces brain damage. The disorder usually becomes apparent between 6 and 12 month after birth, although such symptoms as vomiting, a peculiar odor, infantile eczema and seizures may occur during the early weeks of life. Often the first symptoms noticed are signs of mental retardation, which may be moderate to severe depending on the degree to which the disease has progressed. Motor in coordination and other neurological manifestations relation to the severity of brain damage are also common, and often the eyes, skin, and hair of untreated PKU patients become very pale.

Most order PKU patients show severe to profound mental retardation, with the median IQ of untreated adult phenylketonuries being about 20. Perry (1970) has reported the cases of two untreated PKU patients with superior intelligence. These findings have made PKU something of an enigma. It results from a liver enzyme deficiency involving one or more recessive genes (Burns, 1972). For a baby to inherit PKU, it appears that both parents must carry recessive genes.

#### **CULTURAL- FAMILIAL MENTAL RETARDATION**

Children who fall under this category are usually mildly retarded. They make up the majority of persons labeled as mentally retarded. These children show no identifiable brain pathology and are usually not diagnosed as mentally retarded until they enter school and have serious difficulties in their studies. As a number of investigators have pointed out that most of these children come from poverty stricken, unstable, and often disrupted family backgrounds characterized by a lack of intellectual stimulation, an inferior quality of interaction with others, and general environmental deprivation (Birns & Bridger, 1977; Braginsky & Braginsky, 1974; Feurstein, 1977; Heber, 1970).

They are raised in homes with absent fathers and physically or emotionally unavailable mothers. During infancy they are not exposed to the same quality and quantity of tactile and kinesthetic stimulation as are found in case of other children. Often they are left unattended in a crib or on the floor of the dwelling. Although there are noises, odors, and colors in the environment, the stimuli are not as organized as those found in the middle-class and upper class environments. For example, the number of words they hear is limited, with sentences

brief and most commands carrying a negative connotation (Tarjan & Eisenberg, 1972).

Among the clinical Types (1) Down's Syndrome (2) Cranial Anomalies, (3) Cretinism and (4) Cultural familial types are found in Dinajpur district. Cases of (i) Phenylketonuria (ii) Lesch Nuyham syndrome, and (iii) Williams syndrome were not found by the researcher.



## **BIOLOGICAL CAUSES OF MENTAL RETARDATION**

There are many well-known Biological causes of mental retardation. These can be classified in many ways. In the following pages, the researcher attempts to explain the factors before conception, during conception, prenatal stages, perinatal stages and post-natal stages.

### **BEFORE CONCEPTION**

The causes of mental retardation are most conveniently grouped according to the time frame in which they occur in relation to the development of the embryo. The period of time is often neglected in the consideration of causation of mental retardation. Several events, which may happen years before conception related to the parents, are important.

#### **Health of the mother**

The use of drugs capable of altering fertility and fetal viability are important factors. Many young people are being treated for, and "cured" of malignant disease, especially with the use of very potent drugs which interfere with genetic biochemistry. Individuals with childhood acute leukemia have a five-year survival rate in excess of 50 percent. The treatment of this disease involves the use of those potent drugs continuously for a least two years. The ultimate effect of this treatment possesses effect on reproductive system. Data indicate that women so treated seem to be able to have children with a surprisingly low rate of obvious congenital defects. Whether these children will be able to be competitive in intellectual abilities will not be known until they arrive in the classroom. Mothers with juvenile diabetes face difficulty of becoming pregnant and staying pregnant, and their infants may have serious difficulties during the newborn period, which place them at great risk. The pregnancies of mothers with chronic kidney disease or high blood pressure frequently give birth of babies with obvious evidence of undernourishment during pregnancy, or placental insufficiency (Adams & Neel, 1975).

## GENETIC-CHROMOSOMAL FACTORS

Mental retardation tends to run in families. This is particularly true of mild retardation. However, poverty and socio-cultural deprivation also tend to run in families. So it is difficult to discern accurately the role exactly played by hereditary factors in causing such mild mental retardation.

Genetic and chromosomal factors play a much clearer role in the etiology of relatively rare types of mental retardation such as Down's Syndrome. Specific chromosomal defects are responsible for metabolic alternations that adversely affect development of the brain. Genetic defects leading to metabolic alternations may, of course, involve many other developmental anomalies besides mental retardation. In general, the mental retardation most often associated with known genetic- chromosomal defects are moderate to severe in degree.

Technical developments in recent years have permitted an accurate and detailed study of the individual chromosome of man. In 1956 it was demonstrated that a normal human being possesses 46 chromosomes. But individuals affected with Down's syndrome have 47 chromosomes. This trisomy condition is the consequence of meiotic non-disjunction, or failure of proper separation of a pair of homologous chromosomes during the maturation stage of the egg. Down's syndrome appears with increasingly higher frequencies among children of mothers of advancing age. The ovum of older women is apparently prone to the abnormal process of non-disjunction. In rare instances, Down's syndrome is not caused by non-disjunction, but by other chromosomal abnormalities.

Researcher has long believed that the extra chromosome in Down's syndrome is in some way contributed by the mother. But in 1973 it was understood that in certain instances the infection is contributed by the father (Sasaki & Hara, 1973; Uchida, 1973)

It was known for many years that the incidence of Down's Syndrome increases in regular fashion with the age of the mother. A woman in her 20s has about 1 chance in 2000 of having a Down's Syndrome baby. Whereas the risk for a woman in her 40s is 1 in 50 (Holvey & Talbot, 1972). Evidence of this type led normally to the speculation

that the capacity of the older woman to produce a normal chromosomal fetus was somehow impaired by the aging process.

In recent year researchers, however, strongly suggest that age of the fathers at conception is also important, particularly at the higher ranges of parental age (Stene et al, 1977). In one study involving 1,279 cases of Down's Syndrome in Japan, Matsunaga and associates (1978) demonstrated an overall increase in incidence of the syndrome with advancing paternal age when maternal age was controlled. The risk related to the fathers aged 55 years and over is double than for fathers in their early 20s. It seems that advancing age in either parent increases the risk of the Trisomy 21 anomaly. As yet we don't understand how aging produces this effect; a reasonable guess is that aging is related to cumulative exposure to varied environmental hazards, such as radiation, that might have adverse effects on the process involved in zygote formation and its development.

But whatever the causes of the chromosomal anomaly, the end result is the distortion in the growth process characteristic of this clinical syndrome. There is no known effective treatment. When parents have had a child with Down's syndrome, they are usually quite concerned about having further children. In such cases genetic counseling may provide some indication of the risk of abnormality. In recent years, the technique known as "Amniocentesis" has made it possible to diagnose most cases of Down's Syndrome in 'utero' thus permitting parents to make a rational choice concerning termination of pregnancy if the fetus is abnormal.

Deletion: Sometimes a piece of chromosome breaks off, resulting delation of genetic materials. The effects of the loss of a portion of chromosome depend on the particular genes lost. A large deletion, with the loss of many genes, is incompatible with life.

Dr. Jerme Lejeue and his colleagues at the University of Paris, described in 1963 the peculiar effects in an infant due to the loss of a portion of the number 5 chromosome of group B. Affected infants have a rounded, moonlike face and utter feeble, plaintive cries described as similar to the newing of a cat. In fact, the disorder has been named the *cri du chat* or 'cat cry' syndrome. Such unfortunate infants are mentally and physically retarded. However, such case are rare, at least 70 cases of this disorder have been reported since the initial discovery (Volpe, 1975).

The 'cri du chat' syndrome, are traceable to a loss, or deletion, of a portion of a chromosome. A type of cancer (chronic myeloid leukaemia) has been associated with a specific aberrant chromosome (Philadelphia chromosome). A large proportion, as many as 25 percent, of early aborted human fetuses have been found to possess abnormal chromosome complements (Volpe, 1980).

### **At conception**

The time of fertilization of the ovum, with subsequent implantation on the uterine wall, is another point at which the embryo is sensitive to damaging events. Exposure to drugs or chemicals at this time may be detrimental not only to the ovum but also to the male sperm. Many evidence indicates that females are born with their lifelong complement of ova, no new ones will be made. Hence a 25-year-old woman who conceives is fertilizing an ovum which is 25 years old and has been exposed to an unknown number of potentially hazardous environmental effects. Therefore, the maternal age is very important. The risk of congenital anomalies rises significantly after a maternal age of 35 and it rises sharply after age 50. A 40 year old woman's chances of having a child with Down's syndrome are about 10 times greater than those of a 25 year old woman. Paternal age does not appear to have a similar effect. Males continue to make new sperm cells almost daily. Hence they would be most vulnerable if exposed to unfavorable events in the environment during the few days before conception.

At time of conception it is also determined whether the genes of the parents will come together in such proportion as to produce genetic disease in the offspring. All humans carry four or five abnormal genes in their genetic material. In the case of recessive genes, if an individual marries a partner with the same abnormal gene, the stage is set for having children with a genetic disease. If both parents are carriers of sickle-cell anemia, their children have a chance of being born with the disease.

When a multiple pregnancy is determined at the time of conception, in 1 out of 90 pregnancies, twinning will occur. Approximately 1 out of 9,000 will result in triplets. Multiple pregnancies are considered high-risk pregnancies. Good prenatal care, careful monitoring during labor and attention to the mother and infants during delivery and post-natal

period may reduce the chance of birth of handicapped children. Births involving four or more infants still present considerable medical problems. These problems, if not intensively controlled, may lead to brain damage. Such births are becoming more common because of the use of certain therapeutic agents to increase fertility.

### **During Gestation**

Pregnancy period, if not given proper care, many incidence can damage the fetus. It is important to stress that nearly all the well-know hazards during pregnancy can be, and usually are, associated with damage to the brain or spinal cord, resulting in mental retardation.

#### **Maternal disease:**

The presence of chronic, serious disease in the mother usually has an unfavorable effect on the fetus. Diabetes mellitus is a very common problem in Bangladesh. Millions of individuals have diabetes, and huge number has early or mild diabetes that has not yet attracted or required medical attention. Woman with mild diabetes (diabetes of pregnancy or “prediabetes”) where the only abnormality is the occasional presence of sugar in the urine may have difficult pregnancies. The infant however may have a very stormy neonatal course. There are two common problems with the infant of the diabetic (or prediabetic) mother. The first one is related to growth. The infant may gain a great deal of weight. Birth weights in excess of 10 pounds are common (large-for-gestational-age infants). This makes labor and delivery hazardous and cesarean sections are frequently necessary. The second problem relates to the infant’s ability to control its own blood sugar. During gestation this appears to be a minimal problem. After birth, the infant may have great difficulty in controlling Blood sugar because of excess insulin secreted by the pancreas in response to the mother’s high blood sugar. The less controlled the diabetes in the mother is, the more the infant’s pancreas will react and the higher the insulin level in the baby will be, driving the blood sugar to dangerously low levels. The brain must have glucose as an energy source; even brief periods (as brief minutes) at a low blood sugar level may result in irreversible brain injury.

The mother with serious kidney disease (for example chronic nephritis) has an infant who shows evidence of in utero undernourishment. The placenta is small, with areas of damage; the

infant may be markedly underweight –e. g, weighing  $4\frac{1}{2}$  pounds at 40 weeks of gestation (a small-for- gestational- age baby). The biological bases for the stunting of growth in the presence of maternal disease is not exactly known. Clearly, there is a marked inadequacy of the placental-fetal unit.

The presence of more than one fetus introduces the problem of assuring that each fetus receives adequate nutrition. Failure to assure this may result in the birth of one twin weighing 6 pounds and the other weighing  $4\frac{1}{2}$  pounds (“discordant” twins). Occasionally the second placental-fetal unit fails to be established; the fetus never develops and is born as a nonviable infant.

### **INFECTIONS AND TOXIC AGENTS**

Mental retardation may be associated with a wide range of conditions due to infection. If a pregnant woman has syphilis or is afflicted with German Measles, her child may suffer brain damage. Brain damage may also result from infections occurring after birth, such as viral encephalitis.

A number of toxic agents, such as carbonmonoxide and lead, may cause brain damage during fetal development or after birth. Immunological agents, such as anti-tetanus serum or typhoid vaccine, taken by mother, may lead to brain damage of the fetus. Similarly, certain drugs taken by the mother during pregnancy may lead to congenital malformations. An overdose of drugs administered to the infant may result in toxicity and brain damage. In rare cases, brain damage results from incompatibility in blood types between mother and fetus-conditions known as Rh, or ABO, system incompatibility. Fortunately early diagnosis and blood transfusions can now minimize the effects of such incompatibility.

It was observed by the researches that where are many cases in the study area of Dinajpur who have become handicapped because of infections and toxic agents. Many mothers had severe illness during pregnancy period and used drugs indiscriminately as and when was given by the village quacks. Such drugs include different types of Homeopathic and Ayurvedic medicines, antibiotics with lower molecular weight, etc.

## **BIRTH TRAUMA**

Physical injury at birth can also result in retardation. Isaacson (1970) has estimated that in 1 birth out of 1,000 there is brain damage that will prevent the child from reaching the intelligence level of a 12 year old. Although normally the fetus is well protected by its fluid-filled bag during gestation, and its skull appears designed to resist delivery stressors, accidents do happen during delivery as well as after birth. Difficulties in labour due to mal-position of the fetus or other complications may irreparably damage the infant's brain. Bleeding within the brain is probably the most common results of such birth trauma. Use of forceps during delivery may cause brain damage that may lead to mental retardation. Anoxia or lack of sufficient oxygen to the brain stemming from delayed breathing or other causes is another type of birth trauma that may damage the brain. Anoxia may also occur after birth as a result of cardiac arrest associated with operations, heart attacks, near drowning or severe electric shocks.

Among the living and dead cases the large majority of the handicapped persons, both mental and physical handicapped, are due to birth trauma. Trial and error births, prolonged labour, anoxia is very common in all the villages of the study area as reported the birth attendants.

## **IONIZING RADIATION**

In recent years a good deal of scientific attention has been focused on the damaging effects of ionizing radiation on sex cells and other body cells and tissues. Radiation may act directly on the fertilized ovum or may produce gene mutations in the sex cells of either or both parents, which in turn, may lead to defective offspring. Sources of harmful radiation were once limited primarily to high energy X-rays used in diagnosis. Now the list has grown to include leakages at nuclear power plants and nuclear weapons testing among others (Menolascino, 1966).

## **NUTRITION**

Scientists have seen maternal nutrition and the effect of nutrition on the fetus. Winich (1976) did some experimental work with animals and have seen that inadequate nutrition during pregnancy results in runted animals. It was found that both total body growth and brain growth is markedly retarded. The brain grows in early pregnancy by

means of an increase in cell number. In later pregnancy it grows as a result of both an increase in cell number and an increase in cell size. After birth, the size of the brain is determined only by an increase in the size of the individual cells. No further new cells are formed. This also seems to be the case with humans. Failure of the mother to eat sufficient calories and protein will also deprive the fetus of the biochemical fuels necessary to assure maximal brain growth. The tragedy of this is its irreversibility. The current recommendation is that the pregnant women gain 25 pounds during pregnancy and should be ensured adequate nutrition to the fetus (Chrimshaw, 1969).

Infection of the mother during pregnancy may be catastrophic to the infant. Virtually all of them may result in severe, irreversible injury to the brain. At the present time subtle infections with these agents (especially toxoplasmosis and cytomegalic inclusion virus) may be, after birth trauma, the most common biological cause of mental retardation. Brain damage due to these agents is preventable at the present time. Syphilis is treatable with appropriate antibiotics. Rubella (German measles) is preventable by immunization of women at risk (all women in the childbearing years). This immunization must be done before pregnancy occurs. Hence the spreading practice of giving all women of childbearing age a blood test (rubella titer) to determine whether they have had rubella. Those women with negative rubella titers should be immunized, provided they are not pregnant. Since newborns are thought to acquire the herpes simplex infection during passage through the birth canal, a cesarean section may prevent this in most cases. Genital herpes, like syphilis, is frequently without symptoms. It is part of good prenatal care for both the women and the physician to be aware of this fact. Tuberculosis in the mother is treatable with drugs. Some of the anti-tubercular drugs do not appear to damage the fetus when used during pregnancy.

It is indeed fortunate that all the problems due to Rh disease have decreased so dramatically during the last 20 years in many countries. This has been the result of excellent prenatal and neonatal care, coupled with the development of an agent (RhoGam) which will prevent sensitization of an Rh-negative mother after the birth of her first Rh-positive child. (Firstborn Rh-positive babies are seldom affected.) It is hoped that this disease will disappear completely in the near future. Thirty years ago it was a very common problem. An estimated 50,000 infants each year were at risk throughout the world, and affected infants were at high risk for brain damage.



A gestation that ends with the premature delivery of an infant will expose that infant to a large number of problems associated with being too small and too early births (Hurley, 1969).

### **UNKNOWN PRENATAL INFLUENCE**

Anencephaly and hemi anencephaly are among the most common congenital brain malformations, invariably resulting in death at birth or shortly thereafter due to absence of one or both cerebral hemispheres or even greater portions of the central nervous system.

Malformations of gyri include argyria, macrogyria and microgyria. The later is a relatively common pathological condition found in the severely mentally retarded children.

Congenital porencephaly is characterised by large funnel shaped cavities occurring anywhere in the cerebral hemispheres.

It was not assessed properly by the author, but it is assumed from the birth histories of some babies who have died, that those babies were cases of cerebral malformations and craniofacial anomalies in the tribal communities in Dinajpur.

### **DURING LABOR AND DELIVERY**

Although the period of labor and delivery is only a small fraction of the total gestational period, the risks of damage to the fetus at this time are extremely high. During this period of several hours the infant must go from the uterus to the outside world without significant physical trauma while maintaining an adequate blood and oxygen supply from its mother. The infant must immediately develop its own breathing mechanism. It is not surprising that numerous factors exist for physical damage. A large proportion of children with mental retardation are so damaged probably as a result of events that occurred during labor and delivery which compromised the blood supply and hence oxygen delivery to the brain. This type of damage (compromised oxygen supply or direct damage to brain tissue) may be irreversible. The severity of this damage is dependent on the severity of the physical trauma, the amount of bleeding into brain tissue, and the period of time that the brain is deprived of oxygen.

An inadequately sized pelvis, abnormal fetus presentation, difficult forceps manipulation, or an abnormal position of the placenta or umbilical cord may result in a period of inadequate blood supply to the fetus. In addition there may be direct physical damage to the head. At this time in life, the skull bones are quite soft and easily compressed.

The umbilical cord is a compressible structure, and numerous factors exist for it to be compressed against any part of the fetus or a part of the mother (usually the pelvic bone). Also, it may be wrapped around the neck of the baby. On occasion it may even have a true knot in it. The term "cerebral palsy" has frequently been used to indicate brain damage due to perinatal trauma or asphyxia. This is a wastebasket term, which precludes a precise description of causes and consequences. For example, many children have severe spasticity as a result of such damage but have normal mental ability. The mental ability in such cases is very difficult to measure because of the extreme muscle spasticity. Other individuals have very little muscle involvement but are profoundly retarded. Whenever possible, more precise diagnostic labels should be used to ensure the best therapeutic plan for such children.

Most deliveries in the developed countries occur in hospitals. The mother receives both medications for pain during labor and medication during the actual delivery. The placenta is still responsible for nutrition of the fetus, and all the agents used to relieve maternal pain may cross the placenta to the fetus. High blood levels of such medication result in accumulation in the fetal bloodstream and fetal tissues, and the baby after birth may be significantly depressed. In extreme cases this may result in the failure of the infant to breathe and may necessitate placing a tube into the trachea, the windpipe, to assist respiration. This introduces a whole new set of hazards.

The placenta may be placed anywhere on the uterine wall. If it overlaps the outlet sufficiently, a condition known as placenta previa results and the baby cannot be delivered from below. This necessitates immediate cesarean section because if the placenta becomes detached, the baby and perhaps the mother will bleed to death. Other sites of attachment lead to early separation of the placenta. This is termed partial separation of the placenta and require quick action (Philips, 1967).

During delivery the infant may be exposed to infection. There is the possibility that the newborn may acquire a systemic herpetic infection as a result of a genital herpetic infection of the mother. It is also during delivery that the infant acquires tuberculosis from the mother. Other bacterial infections (especially a type of streptococcus) can also occur during passage through the birth canal. These infections may not be noticeable until later in the neonatal period after they have become firmly established in the infant (Tredgold & Tredgold, 1952).

Pregnancies ending with the delivery of more than one infant always involve high risk. All the above factors are, of course, present, and they may be intensified. Especially important is the factor of physical damage and the compromising of the blood supply to one infant while the other is being delivered. Successful delivery of twins and other multiple pregnancies truly requires extremely skillful obstetrics (Rechardson, 1969).

### **THE NEONATAL PERIOD**

The neonatal period is a time during which the infant must adjust to extrauterine life. Usually this adjustment is made smoothly and without event. A number of the factors mentioned above may contribute to the great risk to the infant during this period.

### **PREMATURITY AND LOW BIRTH WEIGHT**

The most important condition influencing normal mental development is prematurity. Approximately 7 to 9 percent of all infants born are premature by definition; born before 38 weeks of gestation (40 weeks is normal). Infants weighing less than 2,500 grams ( $5\frac{1}{2}$  pounds) are also considered as a biological factor. The earlier the infant is born, the more it is at risk for a number of conditions. Because of advances made in the care of pregnant women at high risk, many fetuses that heretofore would not have survived pregnancy are being born at early gestational ages. In most medical centers, which have a newborn intensive care unit, it is quite usual to have infants born after only 27 to 28 weeks of gestation. The birth weights may be below 2 pounds. The entire subject of prematurity is, of course, a very complicated one (Usher, 1975). In the developed countries, the outlook for premature infants, even those with extremely low birth weights, has improved markedly in the last two decades. Most infants with a birth weight in excess of 1,500 grams have an excellent chance of achieving normal or near normal intellectual and physical potential. Infants weighing

between 1,000 and 1,500 grams still remain at great risk for problems in later life, especially mental retardation. The key factor to the outstanding survival of premature infants has been the maintenance of adequate oxygenation during a very stormy neonatal period. This can be accomplished only in a well-equipped neonatal intensive care unit with superbly trained nurses and physicians utilizing the latest respiratory and other support equipment. These infants usually need to be intensely supported with appropriate antibiotics for infection, to which they are usually prone. They also must receive adequate nutrition in order to maximize physical growth and especially brain growth. All newborn infants, especially premature infants, are extremely sensitive to changes in temperature. They are not able to control their own temperature adequately. Their environment has to be closely controlled not only with respect to oxygen but also with respect to temperature (Knobloch, Rider, Harper & Pasamanick, 1956)

### **BILIRUBIN CONTROL**

A number of problems with the baby's chemistry may appear during the neonatal period. The most common problems have to do with bilirubin, a pigment that is formed by the normal biochemical mechanisms in the liver. Should the liver become ill, as in the case of hepatitis, one of the first clinical signs is a yellow color in the skin and the whites of the eyes, or jaundice. The liver of a newborn infant, and especially the liver of the premature infant, may not be able adequately to handle the normal load of bilirubin that is presented to it for disposition. High blood levels of bilirubin may occur, and the substance may in turn be deposited in certain crucial areas of the brain. If this is permitted to occur, there will be irreversible brain damage. This was a great hazard to those infants born to mothers who were sensitized with the Rh antigen. It is important that the level of bilirubin in infants be monitored closely; if it rises above certain levels, efforts must be made to lower it, or else serious brain injury may occur. Exposing the infant to very bright lights in the nursery may reduce most high levels of bilirubin. When the level is very high, the technique of exchange transfusion is used to replace the baby's blood with fresh donor blood (Shoshone, 1971).

### **BLOOD SUGAR**

To the infant of a diabetic mother, the blood sugar (glucose) for the normal functioning of the brain is very important. This is an absolutely indispensable compound for ensuring chemical integrity of the brain.

Even brief periods of low blood sugar may be catastrophic to the infant. Infants can be identified who are at risk for the development of low blood sugar. These include infants of diabetic mothers, infants born at term but weighing much less than normal small-for-dates infants), and infants who have had a very stormy labor and delivery (Smith, Blizzard & Wilkins, 1957)

#### **DURING CHILDHOOD**

Scientists have been given attention to causes of mental retardation occurring before, during, and shortly after completion of pregnancy. They found that the period of childhood is also very important. About 1.5 million children are injured every year in United States only. Among them head injuries are very common. The chief sources of trauma are drowning and accidents involving automobiles, farm equipment, and firearms. Each year another 1 million children accidentally ingest toxic substances. Any of these accidents may result in direct damage to the brain. Even if the brain is not directly damaged, the intensive hospital therapy may cause other problems to the brain. Hemorrhage, infection, shock, or drug reactions are very common (Penrose, 1963)

Infection still remains a serious threat to children. Meningitis is a serious disease. The mortality rate is as high as 10 percent, and another 10 percent of survivors risk brain injury. The physicians are concerned to the low level of immunization against common infectious diseases that may cause brain damage. Only 25 to 35 percent of the pediatric population in the world is adequately protected against poliomyelitis, measles, diphtheria, whooping cough, and mumps. Treatment of established infections coupled with unremitting immunization campaigns can eliminate these diseases which are causative factors in mental retardation.

All children, even those born with all facilities intact, require an environment full of love, security, and stimulation in order to thrive. Many children are labeled "retarded" whose difficulties are not to be found in any metabolic error, structural defect, or birth trauma. They are deprived individuals. The deprivation may be in terms of food, love, social contact, or sensory stimulation. On the hand a large number of children suffer from child abuse in all the countries of the world.. Physical abuse may be a major factor, but environmental deprivation can be equally important for mental retardation.

The large number of children who are at risk for environmental trauma indicates the importance of the childhood period. Often the teacher may be the first professional individual who can appreciate that the problem of an apparently retarded child (or slow learner) actually has its root in the surrounding environment at home.

## **GENETIC FACTORS RELATED TO MENTAL RETARDATION**

### **CHROMOSOMAL CAUSES**

Since knowledge of gene structure in human beings is limited and not derived from one man's direct observation of several generations, many statements about heredity are based upon experiments with plants, insects, and animals (Knudson, 1965).

The rapid advances made during the last few years are dramatic. The biochemical makeup of the gene has been elucidated and chromosomal knowledge has been expanding. For example, in 1959 the etiology of mongolism was obscure. Through the pioneering work of Lejeune, we know this syndrome is associated with an extra chromosome resulting in 47 chromosomes for each cell of a child with mongolism, in comparison to 46, which is the proper number. This finding occurred at a time when only a small number of people, primarily geneticists working in the field of botany, were familiar with the techniques for working with chromosomes.

We know that there are several different kinds of chromosome abnormalities found in man; (a) trisome, the presence of single additional chromosome; (b) The monosome, the absence of a chromosome that should be there; (c) deletion, the absence of a portion of chromosome; (d) translocation, the moving of a piece of one chromosome from where it ought to be to another chromosome from where it ought not to be, and (e) triploid, a condition in which an individual has half again as many chromosomes as he ought to have..

Man has 22 pairs of chromosomes that are called autosomes, and in normal individuals there are two additional sex chromosomes labeled XX in the female and XY in the male for a total of 23 pairs or 46 chromosomes. The configuration of chromosomes is similar. They are identified by their relative length, by the position of a little constriction called a centromere, and in some cases by the presence of a little appendage called a satellite, which is present in some but not all of the chromosomes. The main reason human chromosomes were not counted properly before was inadequate techniques. Yet scientists claim that they could not study all aspects related to chromosomes.

With the development of cancer and virus research and tissue culture techniques for growing cells in vitro, a system became available in which cells could divide much more rapidly than they do in the human body and thus be studied. Under these conditions, a relatively large number of cells can be obtained. To make an analysis, it is necessary to take a picture of a dividing cell in metaphase, enlarge that picture considerably, cut out all of the chromosomes with scissors, measure them, match them up in the right pairs, and then mount them in a group called a karyotype or ideogram. Sometimes, one chromosome, or perhaps even more than one chromosome, is present too many times. If a single extra chromosome is present, this is called trisomy. Several trisomic types; trisomy for numbers 15, 18 and 21 as well as abnormalities of the X chromosome. Trisomy 21 is the abnormality associated with Down's syndrome.

The other chromosomal disorders include singly or in multiple situations are associated with cases of multiple congenital anomalies. A great deal of evidence exists on how trisomies behave. Chromosomal aberration is apparently tolerated much more readily by plants than animals. In plants, every individual in the trisomic state has a different syndrome of abnormality. We see the same thing in man. Perhaps trisomy for every one of man's chromosomes will be discovered eventually. Nullisomic, the absence of a chromosome, probably produces severe physical and mental difficulty.

Two questions are raised by the discovery of a chromosomal cause for Down's syndrome. The first one is, what causes it? Normal development, which is controlled by genes in every plant and animal, depends not only on the genes being of the right kind, but also to a large extent upon balance between the genes. So that two chromosomes of every kind are required for normal development. An upset of this genetic balance results, in turn, in an upset of metabolism of the cells. The fact that children with Down's syndrome are retarded in physical and mental growth is undoubtedly related to the presence of the extra chromosome.

How the extra chromosome is created is of great interest. In order to discuss this, we should review the events that occur in gamete production. During meiosis, the chromosomes replicate and then separate by migrating to opposite poles as cell division occurs. This results in two cells with 23 chromosomes each, whereas the cell we began with had 46. This is the reduction; division that leads to the



formation of all gametes (meiosis). In nondisjunction, the chromosomes may pair normally and line up on the metaphase plate normally, but if for some reason they fail to disjoin normally, both or one of the chromosomes may go to one pole and neither of that pair to the other pole. This will result in two cells, one having 24 chromosomes and the other having 22, the cell with 24 receiving the extra one donated by the pair that failed to disjoin. A gamete (an egg or sperm) that has such an extra chromosome may be fertilized by one that has the normal number of chromosomes from the other parent. This fertilized egg then develops into an embryo that has an extra chromosome. In the case of man, this results in the presence of 47 chromosomes, with the result that the physical and mental disturbances mentioned earlier ensue. Apparently the gamete with only 22 chromosomes dies, since none as yet have been described (Robinson, 1961).

What factors influence this nondisjunctional event? In plants, and possibly also in man the size of the chromosome is a factor. When the chromosomes are pairing, they are held together by exchanges of material between the homologous chromosome. These exchanges are visible in a structure called a chiasma, a cross. The number of chiasmata that a pair of chromosomes has is related to the length of the chromosomes at least in a general way, so that one might expect, for instance, that smaller chromosomes accidentally might not have any. This might cause them not to stay together, and thus line up independently on the metaphase plate and go accidentally to the same pole. Perhaps there are specific genes that control this pairing together of synapses. We know there are such genes affecting the degree of synapses in plants. Gene abnormalities in man possibly may affect the way the chromosomes pair and the way they come apart (Penrose, 1963).

### **GENE INHERITANCE PATTERNS**

Many human anomalies are unexplained. In certain well-established hereditary diseases, the cause is related to the presence of recessive or dominant genes that are located in the various chromosomes. In these diseases, the presence of the gene not only seems to explain the facts, but predicts quite accurately the conditions under which the symptoms will reappear in the offspring (Cowie, 1960).

For example, let us consider galactosemia (Donnell, Bergren & Cleland, 1960), a condition due to an inherited disorder caused by a recessive gene present in both parents. Both are normal, because the recessive gene cannot gain expression unless it pairs up with another similar gene to form the homozygote recessive state. In the parent, the presence of a normal gene suppresses the one recessive galactosemic gene. This condition is called a heterozygote. When two parents mate, each of whom having a recessive gene for galactosemia, then offspring with the disease are produced. Notice that, of the possible combinations, one is normal, two are heterozygote (carriers of the gene but normal) and one homozygote (carrier of two recessive genes) and has the disease known as galactosemia. This disorder is characterized by mental defect, ocular cataracts, and liver disease and is due to a genetically produced enzyme defect that prevents the conversion of galactose to glucose. Proper treatment consists of dietary management in which the sugar galactose is deleted from all ingested food. If the diagnosis is established in early infancy, mental retardation can be prevented or ameliorated by judicious dietary management (Pauling, 1962).

Several other recessively inherited diseases cause mental retardation. Phenylketonuria (Kretchmar & Etwiler, 1958) is an amino acid disorder in which an inherited defective enzyme system results in failure of conversion of one amino acid (phenylalanine) to another amino acid (tyrosine). The phenylalanine is constantly absorbed from protein nutrients ingested in the diet into the blood and then to other body tissues. Since it is not being utilized normally, it is finally excreted as phenylpyruvic acid by the kidney and is released into the urine. Even so, patients with the disease have a markedly high level of phenylalanine in the blood. Some phenylalanine is even excreted in sweat. Untreated children are usually blond, blue-eyed, and severely mentally retarded. Treatment consists of removing phenylalanine from the diet. If it is diagnosed during early infancy and if proper treatment is instituted, the mental defect can be prevented or significantly ameliorated. Treatment of children over age 5 at the time of diagnosis usually do not benefit significantly by diet treatment. The cause of brain damage in the untreated child is not known. Tay Sachs (Abt, 1911) disease and Hurler's disease (gargolism) (Lahey, Lomans, and worth, 1947) are examples of two metabolic diseases for which we have no specific treatment yet. Both are inherited in a recessive manner.

A dominant gene transmission is one that is able to gain expression even when paired with a normal gene; the heterozygote state. Few such diseases are associated with mental retardation. Some authorities suggest that tuberous sclerosis (Chao, 1959) is transmitted in a dominant pattern. The disease manifests itself by convulsions, mental retardation, and tuberous formations on the face.

## **HEREDITY AND ENVIRONMENT**

Most authorities agree that certain types of mental retardation have a genetic origin, in which we are unaware of the number of genes involved or of the mode of transmission. Most workers feel that the majority of such individuals are but mildly affected mentally. At the other extreme, however, are the families in which three to five children are microcephalic and obviously severely retarded. In the latter case, the inheritance pattern may be due to a single gene in his search for scientific answers in the area inheritance.

The problem involves about the interaction of heredity and environment. Intelligence undoubtedly is the result of multiple gene inheritance interacting with environment. The metabolic diseases such as phenylketonuria are typical examples in which dietary changes allow the affected individuals to develop their intelligence capacities to the fullest (Stimson, 1961).

The difficulties that have faced the geneticist of mental retardation are well known. One must conclude that most of the work done in previous years is unacceptable in view of modern knowledge. Many of the early studies simply are not valid because mental retardation is a symptom of over 100 different disease processes. Only a few of which could be analyzed by genetic methods such as additive gene hypothesis. Most of the studies in the literature suffer from this difficulty. One cannot analyze the meaning of IQ data obtained from parents and siblings of individuals who are retarded for many different reasons. Therefore, until we find some method of accurately identifying individuals who are mentally retarded due to solely genetic means, scientific conclusions must be held in abeyance. It is not too optimistic to think that accurate conclusions can be made within the foreseeable future. The discovery of methods of chromosome analysis has already led to greater validity in our thinking about the cause of mental defect. Gross chromosomal aberrations such as in mongolism are merely the first obvious pathologic states to be identified. When

newer techniques are developed knowledge of etiology again will be increased greatly.

This, of course, does not mean we should all stop, look, and wait for such events, but we must temper our conclusions in terms of social action. For a moment, let us discuss the hypothesis that at the time of conception all fertilized ovum have the potential for superior intelligence just as they do for two hands, two eyes, etc. If this were true, then society would wish to provide the best of everything for the expectant mother in the way of nutrition, health habits, obstetrical facilities, etc, in order for each product of conception to achieve its maximum potential. Even though this hypothesis seems unlikely from the genetic point of view, it is preferable from the social point of view.

Although both have their shortcomings the most useful predictors of intelligence of offspring are the social status of the parents (Doll, 1937) and the average IQ of both parents (Penrose, 1963),

The regression of intelligence toward the mean now seems a well-accepted conclusion (Penrose, 1963, Pevzner, 1961). This means that the children of superiorly endowed parents probably will have Intelligence Quotients midway between superior to normal levels. Whereas the intelligence of children of dull to feebleminded parents will usually fall midway between dull to normal.

The discussion of the importance of heredity and environment is yet controversial (Pevzner, 1961). A middle ground is probably the best place for most of the professionals. Since parents can influence environment more easily than heredity, they should concentrate their efforts to improve this aspect as much as possible.

## **MENTAL RETARDATION IN BANGLADESH**

### **PREVALENCE OF MENTAL RETARDATION**

It was mentioned earlier, WHO (1968) reported that at least 3% of the total world population are mentally retarded. In Bangladesh, prevalence study or survey was never done. Few sample surveys were done in national level. It is difficult to estimate the exact number of mentally retarded person as they are not easily recognized. Those who are mild retarded are well integrated in the society. In rural areas, where many of them do not need go to school, are not identified at all as they are not perceived to be different by the society. The families gradually recognize their shortcomings and train them in such jobs which they are capable of doing. Thus spontaneous integration of them in the society without any stigma are very common in Bangladesh. It is assumed that among the mentally retarded population majority are mildly retarded. The severely handicapped infants who die in their very early age were not well traced during rural surveys.

Two sample survey reports were published on two separate studies done in the rural areas of Bangladesh. The first study done in Nangolkot of Comilla District where 504 persons out of 219, 823 were found mentally retarded. The percentage is 0.2118 (Qamaruzzaman, 1988). In the second study in Bandaikhara village of Naogaon District, 63 person out of 4,166 were found mentally retarded. The percentage is 1.51 (Sufi, Yamashita and Nazneen, 1996). Another door to door survey is being done in Rajshahi City by the students and some teachers of Rajshahi University Psychology Department since 1998 and until today it was found that the percentage of mentally retarded population is 0.089 in Rajshahi Metropolitan areas.

In this country the severe and profound mentally retarded persons have a shorter life span than the mild and moderate categories. The mild mentally retarded persons are relatively well integrated in the society in easy works and are never diagnosed as mentally retarded persons. Only the severe mentally retarded children and moderately retarded adults are considered as handicapped persons in the society.

## CARE, POLICY AND SERVICES

As mental retardation is primarily considered as a medical problem, it is pertinent here to make a short reference to the medical services now available in Bangladesh.

Defining Health, the WHO (World Health Organization) emphasized complete physical social and mental well being for the healthy condition of a person. In Bangladesh, the term "health" means only the physical health. The public health services are under the control of the Directorate of Health, usually headed by a senior physician of the country. There is one ministry of health and population control headed by a minister. The ministry declares policy programmes and allocates funds for the programmes. The present health policy does not segregate the mentally retarded persons from other types of patients. At a public health centre, the mentally retarded persons enjoy equal rights with all other patients.

There are also some qualified psychiatrists who also carry on treatment of mentally retarded persons mostly by using some psychotic drugs. But unfortunately many of these mentally retarded persons develop drug dependence as a consequence of their treatment. Now-a-days, of course, the psychiatrists have become aware of this problem and they are now referring the clients to special schools and Day Centres for the mentally retarded children.

The urban population of Bangladesh is approximately 13% and roughly 500,000 mentally retarded persons live in the urban areas of the country. From the psychological viewpoint, the mentally retarded persons of upper and middle class families of the urban areas live generally in unfavorable conditions than the rural mentally retarded persons. As there are restrictions in their movements and social contacts, they remain confined in their residence and cannot move freely. Those who attend special education classes (negligible percentage) can come out of their residence during school hours and get little opportunity to make social contact with other persons. The life of the adult female mentally retarded persons in the urban areas are far more miserable.

There is a general tendency to hide the mentally retarded children from others in the higher socioeconomic group. They usually try to appoint nurses or servants to attend the mentally retarded children.

These mentally retarded persons in the towns get the least opportunity for social and interpersonal interactions.

The middle class people also possess similar attitudes towards their mentally retarded children like the upper class socio-economic groups. But they can not always afford attendants for their children. Whether mild or moderately retarded, these children are sent to the normal schools at the beginning. And in most cases they become dropouts. On being dropouts these mentally retarded children either loiter around in their neighborhoods or remain confined in their houses.

The mentally retarded persons of lower socio-economic groups enjoy more freedom in loitering during day hours.

Many mentally retarded children of the urban slums beg in the roads, loiter aimlessly or work casually as a day labourer. Many of these children may become involved in delinquency.

Rural mentally retarded persons get enough opportunity of free movements. Since the risks of road accidents are lesser in rural areas, the mentally retarded children of both sexes get enough opportunities of loitering in the agricultural fields and the village markets. They get opportunity of being day labourers in the agricultural works and in cattle mending. The female mentally retarded persons get many job opportunities for household activities. In the villages, if the degree of retardation is of mild nature and the person is male, he gets an opportunity to look after the parental properties, business, household matters, etc.

At present there is no special education school for the mentally retarded children in the rural areas. If the mentally retarded children is capable of speaking and hearing they usually attend the beginning classes of the normal schools, but ultimately they drop out of the school. If they become adult they get married in many cases. Arrangement of such marriage is not a serious problem. In the long run they become absorbed in household works. But for the mentally retarded females, the marriage may not last long. On separation from their husbands these female retarded persons come back to their parental houses.

In the rural areas, most of the profoundly retarded children die in their infancy period owing to diseases, faulty handling, wrong diagnosis,

ignorance, etc. Those who survive infancy period also die in their childhood after a lot of sufferings. In the rural areas, only the mild and some of the moderately retarded persons can expect a longer life span, provided they learn to communicate and acquire some basic skills. Fortunately, in the rural areas the mental retardates get relatively better scope for socialization and enjoy more social acceptance in comparison to urban mental retardates.

The life and daily routine of the villagers differ from those of the people of the town. Marked differences are also seen among the different classes of population. Life style of the rich people differs widely from that of the poor. The slum dwellers live differently from other sections of people. These differences in the living conditions determine the outlook and attitude of the different sections of population towards mental retardation. These things must be kept in view while devising any programme to uplift and rehabilitate mental retardates in Bangladesh.

Marriage of the mentally retarded children is less common among educated group and apparently high among illiterate families. The frequency of marriage is higher among the rural people. Parents usually give a good portion of parental assets to their mentally retarded children. There are many evidences that the parents, usually of the mentally retarded females, offer dowry to the persons who marry their children. Such offers work as a good incentive to the poor persons to marry the rich mentally retarded females.

In Bangladesh, the mentally retarded persons live with their families. There is no residential home as found in Europe and many other countries. They live with their parents when the parents are alive and with some other relation after the death of the parents.

The mental retardates of the low economic group both in rural and urban areas mostly live in the streets or other people's houses, and for their livelihood they mostly depend on the mercy of others.



## RECENT DEVELOPMENTS

In recent years, increased attention has been given to the needs of the handicapped children throughout the world. The United Nations designated 1981 as International Year of Disabled Persons (IYDP). This event focused attention on the fact that large number of disabled children reside in the developing countries. The United Nations Children's Emergency Fund (UNICEF) estimated that by the year 2000 there will be over 150 million disabled children under 15 years of age in developing countries. In Bangladesh their problem is more acute as little attention is being paid to the needs of their handicapped children.

Till 1977, practically, nothing was done for the mentally retarded persons in Bangladesh. In 1977, Dr Sultana Zaman, Professor of Psychology of Dhaka University, first established an NGO (Society for the Care and Education for the Mentally Retarded Children) in Bangladesh for the mentally retarded persons. Mainly a parents organization, this NGO initially started with integrated special education classes for the retarded children in Dhaka City. In 1982, this NGO in collaboration with the Norwegian Association for the Mentally Retarded (NFPU) introduced a vocational education centre and Sheltered Workshop for the adults.

Later this NGO promoted an Institute, published handbooks, promoted public awareness in Bangladesh. At present this NGO is the largest network for the mentally retarded persons in Bangladesh and possess Day Centres in most of the Districts.

In May 1984, Dr Sultana Zaman promoted another NGO known as The Bangladesh Protibandhi Foundation (BPF). The new NGO started functioning for the developmentally disabled children. This NGO also runs one model institute with multidisciplinary professionals in Dhaka city known as Kalyani. The Protibandhi Foundation has a model centre in Dhaka city. This organization has published several important books, journals, health education guides, etc.

In 1992, the students of Rajshahi University and Rajshahi Medical College organized the SIVUS Institute, a voluntary social welfare agency, to uplift the condition of the mentally retarded persons in rural Bangladesh. This institute now has included about 700 mentally retarded persons under its programme. The philosophies of the SIVUS

Institute are to promote awareness about the handicapped persons in the society, provide such training that will help them to obtain easy jobs in the rural areas, and help the families through medical and professional supports.

The Bangladesh Government, through the Department of Social Services, run the National Centre for Special Education (NCSE) at Mirpur in Dhaka. Here the children with mental retardation, hearing and visual impairments have facilities for special education and residential care. NCSE also conduct B.S.Ed. (Bachelor of Special Education) program for special Teachers.

The Sreepur Shishu Palli, near Dhaka is one of the largest village centre for the homeless children in this country. This village has a residential programme for the mentally retarded children, too. The inhabitants are mainly severe and profoundly retarded children.

Presently, all the services for the mentally retarded persons centre around special education and some vocational training. Little has been done for their integration in the main labour force. However, the clinical services and assessment programmes have developed well and the works of the professionals are commendable.

Whatever may be the services now available, these are located mainly in the urban areas. Little has been done for the rural mentally retarded persons. Yet all the NGOs together could not bring only 1% of the total population of the mentally retarded persons of the country under the care programme. And the large majority of the mentally retarded persons of the country still remain deprived from the facilities of special education, vocational training and other services.

## **SPECIAL EDUCATION IN BANGLADESH**

The concept of special education for the mentally retarded children is relatively new in Bangladesh. Dr. Sultana Zaman of Psychology Department, Dhaka University, first introduced an integrated special education programme in 1977 in Dhaka city. Later, some Voluntary Social Welfare Agencies spread her ideas in some other towns. Yet the Ministry of Education of Bangladesh Government has not included special education for the mentally retarded children in its programme. In 1992 the Ministry of Social Welfare has opened National Center for Special Education in Dhaka. This centre is designed to uplift special education teachers and staff members through different training programmes. In 1995 this centre introduced Bachelor of Special Education course that is affiliated with the National University. The IER (Institute of Education and Research) of Dhaka University earlier introduced Post Graduation courses in special education.

It is assumed that at least 2 million mentally retarded children are in need of some special education in Bangladesh. Of these 2 million, approximately 80% live in the rural areas and yet there is no special education programme in the rural areas including Dinajpur district.

Presently three registered Voluntary Social Welfare organizations are working for the special education of the mentally retarded persons in Bangladesh. These are Society for the Welfare of the Intellectually Disabled (SWID), Bangladesh 'Protibandhi Foundation' (BPF) and the SIVUS Institute. Approximately 3,000 mentally retarded children and adults are affiliated with the day care programmes of these three organizations, mainly in the urban areas. Their total number is yet lesser than 1% of the total mentally retarded population of Bangladesh.

There is no curriculum for the mentally retarded children approved by the Government of Bangladesh. Also there is no national policy for the mentally retarded persons in this country. Therefore all the agencies are doing trials and errors with the mentally retarded children.

The existing special schools for the mentally retarded children are mostly independent day care centres, not the integrated schools. Most of the schools have their own curriculum and own philosophies according to the facilities available with the individual centers. In

some schools it is teacher-centered education and in some schools it is the subject-centered education. Rarely is it child centered.

## **PHILOSOPHIES TO WORK FOR THE HANDICAPPED**

Different philosophies, methods and techniques are used in different countries for rendering services to the mentally retarded persons. Following discussion highlights three important approaches now adopted to deal with this problem of mental retardation.

### **THE SIVUS GROUP DYNAMIC PRINCIPLES**

SIVUS is an abbreviation of Swedish term "Social Individ Via Utveckling i Samvarkan" Which means socio Individual Development Through Co-operation the SIVUS is based on group- dynamic principles, on Knowledge of how all human beings develop both as individuals and at the same time as socially beings. They are developing through their own propelling forces / activities in order (in the Frame of) to achieve a certain goal, to find a certain means that can Satisfy their own needs both materially and culturally. The process of these activities is; from their own needs, desires and interests; through their own efforts, activities or work; to their own experiences, ideas, theories, Knowledge, results and development (Walujo, 1987).

It means the process is from practice, to theory and from theory again backs to the new practice. This process of applying the achieved theory leads to achieving a better result and development in providing for his needs to survive and to live better and better.

The goal of the SIVUS Project is supporting mentally retarded persons to function as independently as possible, both individually and socially, by considering every individual's ability, both within the area of provision and services for the mentally retarded and in the society in co-operation with others.

The work method used in SIVUS is characterized by actively taking part in co-operation with others, organized in small groups having fixed members, supervisors, and principal activity coming from the group members mutual interests, functioning as democratically as possible. With other words through a social integration a achieve normalization.

SIVUS Evaluation scale : The "SIVUS Scale" used in evaluating the development of both individual member and the group as an unit was developed and standardized by Dr. Sophian Walujo and his associates in Sweden during 1974 & 1978. Sweden is the pioneer country to introduce and Practice the theory in all aspects to uplift the mentally retarded persons. Until 1978, the program was administered at NGO levels, Since 1978 up to now, SIVUS is a Swedish National Programme under the control of the Swedish National Board of Health and Welfare. Presently, SIVUS is in practical application in at least 30 countries of the world and its output was proves as the most significant one among all the theories.

### **PORTAGE PROGRAMME**

This is the home based programme where parents teach mentally retarded children according to structured, step-by-step package (Hoel, Mathias and Rahman 1988).

Generally the service involves a home teacher visiting an individual family at regular intervals, assessing the child periodically and deciding with the parent or developmentally appropriate activities for the parent to carry out with the child. The portage system (which originated in Wisconsin, USA, but which has been adopted internationally) the home teacher has a resource of activity cards linked to a developmental check list. The teacher uses the cards to devise up to three or four instruction and recording sheets for the parent to follow and fill in during the week before the next visit.

There are some standard packages developed in English language. In many countries the portage programme is adopted in their own languages. In Bangladesh, Dr. Sultana Zaman and her associates of the Protibandhe Foundation have developed and standardized the Bengali version of the package which is widely being used, mainly in the rural areas. The output is commendable.

### **CBR (COMMUNITY BASED REHABILITATION)**

This is a house based programme where field workers with basic training teach families and their disabled members the basic rehabilitation techniques (Hoel, Mathias and Rahman, 1988).

CBR is recognized by increasing number of national and international authorities to be the most realistic and desirable approach to the enormous scale of disability in the developing world. WHO estimates 500 million people in the world, (or approximately one in ten) are disabled as a consequence of mental, physical or sensory impairment (Jones, 1988).

The CBR priority is simply expressed as "Rehabilitation reaching the majority of the disabled people in their own home and communities". And the CBR worker's role is to "mobilize people and to see what their needs are". CBR should provide the needed alternative to journeying to a large, probable distant, and institution for treatment. This could enable disabled people to become self-reliant and trusted by their communities. Families also benefit when the disabled children become useful. They are appreciated and it releases pressure on the family as a whole.

Though not recognized as a formal and official programme of the NGOs and Government, there are some programmes of some NGOs in the villages of Bangladesh which we can say somewhat like the CBR programme. These NGOs have trained their field workers at BIMR Dhaka and SIVUS Institute Rajshahi about the basic concepts of mental Retardation in addition to their main training on rural development. These field workers have enlisted the mentally handicapped children and assessed their problems and prospects. The handicapped persons and their families were given specific programmes of training which will enable the disabled persons to engage in the family trade in their adulthood. In the informal way such attempts were always present in this country but now it is being supervised and appraised by the field works of the NGOs. And the progress is satisfactory. The concerned families are now trying to train their children in the agricultural works, agro-based cottage industries, handicraft, pottery, poultry, etc. Before the advent of the field workers, these families know that it is possible to make the handicapped children self-sufficient.

## PREVENTION

Scientists all over the world are serious to find suitable preventive measure against mental retardation. As there are many known causes of mental retardation, it is not possible to pin point a single factor. SWID Bangladesh is working to uplift the condition of the mentally retarded persons since 1977. This NGO has published several booklets towards awareness development in Bangladesh. SWID in a booklet has strongly recommended the following 12 points for consideration towards prevention of mental retardation in Bangladesh.

1. The primary steps towards prevention of mental retardation are to have regular medical check up during pregnancy.
2. Intake of healthy and nutritious food.
3. Being careful to avoid contact with people who have infections such as measles and chicken pox.
4. Avoiding physical trauma or accidents such as carrying heavy weights or reaching for objects that are at a height.
5. If the parents choose to have an abortion experienced medical personnel should conduct it.
6. If the elder child is retarded, it is better to get medical advice before having another child.
7. It is advisable to restrict the maternal age of conception between 20 and 30 years.
8. The delivery should be attended by trained persons and ideally conducted in the hospitals where facilities are available in case of emergency.

9. The mother should make it a point to have the delivery in a hospital especially if her other baby is already mentally retarded due to birth trauma.
10. After the birth of the child, the infant should be duly immunized against tuberculosis, poliomyelitis, diphtheria, whooping cough and tetanus.
11. Care must be taken to see that the infant does not develop high fever leading to convulsion. Prompt medical attention should be given in case of high fever and convulsion.
12. If there is a delay in the development of the child such as sitting, standing, walking, talking, etc. immediate professional attention should be sought.



## THE TRIBAL PEOPLE OF DINAJPUR

There are many tribes in Bangladesh. Generally they live in rural areas. Culturally they can be classified into two groups. The Chakmas of Chittagong Hill Tracts and the Santals live in the district of Dinajpur and Rajshahi (Moeed, 1990).

Among these tribes, only the Santals live in Dinajpur district. They live in the rural areas. The Santal communities are very united among themselves. Now a day they have promoted clubs and organizations of their own and they are valued as reserve voters during political elections.

According to 1991 census, the population of Dinajpur district is 23,71,183 (Male 12,21,941 and Female 11,49,244) persons. It is assumed that 5% of the population belongs to Santal tribes and the number is approximately 1,18,000. If 3% of them are mentally retarded, there are about 3500 mentally retarded cases among the Santal tribes of Dinajpur district. The lives of the Santals are different from the others. Following are the major cultural familial differences:

1. Limited movements in the society and country.
2. Limited social interaction.
3. Limited profession, mainly agriculture oriented jobs.
4. The living condition is different. They live in clay houses. The roofs are of plant leaves, no electricity, poor sanitation, safe drinking water is not available to large majority.
5. Most of them sleep on the floor.
6. Daily life is very simple.
7. Modern electronic media is absent in their amusement.
8. Do not wear shoes.
9. They get married relatively earlier and within their own communities.
10. They prefer faith healing compared to modern treatment, during illness and diseases.
11. Food habit is different. They sometimes live with too little food and water. Most of them intake home made rice wine. They eat pork, rats, snakes and other lizards.
12. In general, the level of intelligence is lower compared to the general population of the country.
13. They work for prolonged period. They go out from their residence in the early morning in search of food or work and come back in the evening or at night.
14. They do not eat mid day lunch like other Bangladeshi people.

15. The Santals are far away from the modern treatment facilities. They are not properly immunized. The attitude is not yet positive towards immunization of their children.

According to Skrefsrud (1871), Dalton (1873), Risley (1891), Champbell (1916), Bodding (1972) and many other anthropologists Santals are divided into twelve groups. The researcher also found twelve different groups among the Santal tribes in Dinajpur. Following table shows the names and major activities of different tribes.

Serial No.	Groups	Major activities
1	Kisku	Administration of the tribe and agriculture
2	Murmu	Religious activities and agriculture.
3	Toodu	Involved in Education and handicrafts manufacturing.
4	Baski	Involved mainly in small business within the community.
5	Merandee	Landlords
6	Soren	Hunter, agriculture, day labours.
7	Hembrom	Higher caste, wealthy sub-tribe
8	Hasda	Agricultural works and Day labours.
9	Kore	Agriculture works and Day labours.
10	Badia	Agriculture works and Day labours.
11	Pauria	Agriculture works and Day labours.
12	Besra	Agriculture works and Day labours.

### **SOCIAL IDENTITY OF THE SANTALS**

Santals are in a majority among the tribals in Northwestern Bangladesh. They live in Rajshahi division and are mostly concentrated in Godagari, Nachole, Rohanpur, Bagmara, Atrai, Tanore areas of Rajshahi region; and in Bochaganj, Khansama, Birganj, Kaharole, Birol, Nawabganj, Ghoraghat areas of Dinajpur region. Originally, the Santals are tribes of Choto Nagpur and Santal Pargana of India and they have drifted away eastwards from their original home in recent times. According to Bessaignet (1960) Santals are grouped under the category of pre-Dravidian or Proto-Australoid group of people and they were the largest tribe in the past who lived in Bengal, Bihar and Orissa. Originally they were hunters but they have

migrated to the Northern part of Bangladesh during British period and adopted agricultural occupation. After accepting the agricultural profession, they dispersed from their original home in search of land and reached as far as North-Western part of East Bengal which is now within the area of Bangladesh (Hossain and Sadeque, 1984).

Bessaignet (1960) observed that Santals are subjected to the process of Hinduanization has resulted in the transformation of the tribe into a caste which is called the scheduled caste. Thus a religio-cultural fusion is found in santal identity and it has great reflection on their socio-economic and political life. However, the partition of India in 1947 has hampered this process for members of this tribe living in former East Pakistan and now Bangladesh. In Bangladesh this transformation has turned into Christianization mostly because of the efforts and influences of the Christian Missionaries.

Hassan and Sadeque (1984) concluded a sociological study on the Santals of Rajshahi. They found social and cultural change in Santal community. According to them, Santals are divided into eleven patrilineal exogamous Sibs. Each sib is again divided into a number of sub-sibs. Patrilineal characteristics are found in the social organization. Marriage and sex selections are strictly prohibited within the same Sib and are regarded as incest and are tabooed. This was the original hierarchical distribution of Santal tribe. But this status differentiation among sibs no longer exists. With the disappearance of status differentiation of Sibs, occupation differentiation has also ceased to exist.

The Santal population are largely illiterate. Most of them are sharecroppers and landless labourers. The sharecroppers take land from Muslim landowners of the locality and cultivate it on a 50-50 share of the crops.

Santal women equally participate with their main counter parts in agriculture. The women are mostly engaged in planting, sowing, weeding and threshing of rice as part of their professional involvements. Hunting has become a rare occasion for the Santals in these days. It is due to the non-availability of game reserve and forest areas. However, they set out for hunting at times which represent their festive mood. Usually all the able bodied males join the hunting expedition. Hares, rates, turtle, pig and various birds are their favorite hunting items in Dinajpur.

The Santals are backward socially, economically and politically. They remain uneducated and appear sunk in traditional darkness. In a general sense, it can be said that they are a defeated group for thousands of years. The majority groups have oppressed them. Even now, the majority group is depriving them from education, services and various social privileges and they are mainly used as labourers.

The Santal have their distinct cultural identity. They use a special set of clothes called panchi, panchatal and matha. Now-a-days males wear dhuti like Hindus and women use a sharee. Some of them use lungi and pants also. The women use ornaments on their hands, legs, ears, noses and necks. The Santal women put flowers in their hair. They use sindur after marriage and cannot use it before marriage. All the males know the use of bow and arrow and are hunter minded. The males, females and children also work in the open field. The women work in the field binding down their baby on the back. They have their own festival times. During festival both males, females, boys and girls drink domestically made wine and they take part in dances and songs. They use madol, a special type of drum during festival. It produces special type of rhythm, which is distinct from other tribal music. These dances and songs of Santal tribe are traditional. They are not interested in bringing changes in them and do not try to popularize them. They think that the songs and dances are part of their worship (Moeed, 1990).

The chief trait differentiating Santals from their predominantly Muslim neighbours is their concept of pleasure that has primary bearing upon their way of life. Culshaw (1949) holds that the word "raska" meaning pleasure is often on the lips of the Santals and it is dear to their hearts. The sense of the word pleasure is synonymous with dancing, singing, eating and drinking which are characteristics of a Santal festival. Participation of community members in festivals and rituals make it essentially social denying any status and wealth differentiation and discrimination.

It is a general practice of the festival that all male and female members of the community assemble together. Then they form a large circle, men and women alternating, hands joined together, amidst drum beats and flute sounds. Faith in deities and their worship is manifested in these festivities and rites.

It may be relevant to point out that in all these occasions they have some common practices of drinking locally made liquor. The celebration of festivals and rituals occupies a central position in the Santal life. These reflect their primitive worldview and social organization.

This is a short description of socio-cultural aspects of Santal community. Historical evidence shows that the Santals as a tribe have always shunned the outsiders and rejected their influence and way of life (Culshaw and Archer, 1945). Barring a few exceptions of wealthy Santals aspiring for Hindu titles and emulation of Hindu religious practices, the majority of Santal masses have always rejected such an effort and clung to their original way of life and faith upon their deities. This was clearly manifested in their historic rebellion against local Hindu moneylenders and authority in the period 1855 to 1857. This socio-cultural solidarity of Santal community is now on the decline.

In Bangladesh the Santals are facing tremendous pressure for assimilation and acculturation as they come closer to the dominant society. It is true that marginal cultures are assimilated with dominant surrounding society. These cultural contacts of the Santals with the outside society have created a new social reality. In fact surrounding culture and political system have tended to create pressures for greater assimilation on the part of the Santals. Hence the crucial determinants of group cohesiveness for the Santal life in the conscious efforts to create cultural creativity and to resist these forces for assimilation. Viewed from this perspective, it is argued that the Santal as a tribe are definitely distinct as a social group but they are gradually coming into greater cultural contact with the dominant culture of Bangladesh. As a result, their social identity is facing increasing pressure for assimilation. Orans (1965) have rightly observed that the characteristically primitive worldview and social organization of Santal community is confronting the impact of market economy and political system. One inevitable consequence would be the acceptance of other cultures that would enable the acculturation process resulting in assimilation. An increasing conversion of the Santal into Christianity is an example for search of positive social identify.

## REVIEW OF LITERATURE

Many scientists studied the factors of mental retardation. In Bangladesh many researcher studied the prevalence, etiology and other aspects of mental retardation. Following are some important findings related to mental retardation.

Pornswan Wasant at the Faculty of Medicine, Siriraj Medical School, Mahidol University of Thailand did the work on the etiology of mental retardation. Wasant (1989) found that the etiologies of mental retardation could be divided into genetic and non-genetic categories. The genetic causes are chromosomal. Nongenetic etiologies are those that occur in prenatal, perinatal and postnatal period. The clinical evaluation of a child with mental retardation includes detailed pregnancy history, development and family history and the clinical examination of the child. Thus the multidisciplinary approach is often necessary. The outstanding recent advances in the field of molecular biology, biochemistry and molecular genetics (gene-mapping, recombinant DNA technology) and prenatal diagnosis of chromosomal and biochemical genetic disorders give much hope in the prevention and treatment of mental retardation.

Daniel and Frederick (1977) of IOWA State University studied prevalence of retardation. In their study entitled Ethnicity, geographic local, age, sex, urban-rural residence as variables in the prevalence of mild retardation, they found that ethnicity and geographic locale are significantly related with the prevalence of mental retardation.

Marfo, Walker and Charles (1986) have concluded that children in developing countries are extremely vulnerable to many adverse biological and environmental factors that cause handicapped conditions. The principal causes of childhood disability in these countries are related to such factors as malnutrition, poor medical care and preventive measure that adversely affect children and pregnant mothers.

Oura, T. (1989) of the Osaka city Rehabilitation Centre of Japan in his study entitled 'Early diagnosis and treatment' said that chorionic villi sampling offers several advantages over amniocentesis in terms of early diagnosis at nine gestational weeks in comparison to 16 weeks in amniocentesis, chromosome analysis without culture, sufficient amount of samples for DNA analysis. Indication of prenatal diagnosis

still is a centre of hot debates, because positive result leads to artificial termination of pregnancy in most cases.

Social factors of Mental Retardation attracted interest of many researchers in the western countries. Baratz and Baratz (1970), Herzog and Lewis (1970) and Herley (1969) have investigated the relationship between poverty and Mental Retardation. The American Presidents committee on Mental Retardation (1970) pointed out the existence of a large number of Mentally Retarded children who live in the slums of USA. Eisenberg (1969) observed the effects of poor environment, lack of stimulation, etc. on Mental Retardation.

Zaman and Afroge (1979) studied the Risk Factors related to Mental Retardation among children in Bangladesh. The research was a pilot study to find out prenatal and postnatal physical and socio- cultural causes of mental retardation among a small sample of children in Bangladesh. A total of 30 cases of mental retardates were examined. Analysis of the data revealed that 56% of the subjects were moderately retarded. Genetic factors and prolonged labour were found as the main causes of retardation among the subjects. The higher educational level and higher socio- economic status of parents of the sample indicated that the study used a biased sample. It was concluded that survey studies need to be done with larger representative samples of children to find out the prevalence of mental retardation in Bangladesh.

Zaman and Ferial (1985) studied the etiological factors of Mental Retardation in rural areas of Bangladesh. In this study 978 children and their mothers were interviewed belonging to 8 villages of Dhamrai Union of Dhaka district (24 miles from Dhaka city ). Total number of household visited was 590. The study revealed that a number of disabilities and diseases such as night blindness, hearing problems, seizures, etc. were associated with mental retardation and there was a significant relation between levels of intelligence and nutritional status of the children in the rural areas of Bangladesh.

Zaman and Munir (1988) mentioned that birth asphyxia causes multiple disabilities among a large number of children in Bangladesh. In another study development of early intervention programme for the handicapped in Bangladesh, Zaman and Munir (1987) concluded that early intervention is, in fact, effective. The authors also recommended for the developments of clinics for early diagnosis, early intervention

programmes, portage guide to early education, HWO training manual for the disabled, self help group in rural area, distance training package for the outreach, etc. in Bangladesh.

Zaman Akhtar (1990) in their study entitled A comparative study of attitudes of mothers of MR children who have been working as special education teachers and those who have not been working found that the mothers who were involved in teaching, taking care and management of retarded children in special education classes had more positive attitude towards their own child by being more caring, loving, accepting and adhering to discipline etc. as compared to mothers who were not teachers. This study reveals a significant fact that mothers of retarded children if involved in the management of other retarded children understand mental retardation better and this help them in accepting their own child as well. This study also revealed that the teachers who were not mothers were slightly better in taking care, following curriculum, adhering to discipline and acquiring knowledge on mental retardation thus displaying more positive attitude as compared to teachers who were mothers. This study thus proves that counseling of the parents of mentally retarded children will be more effective, if the parents become involved in the management of other retarded children.

Professor Peter Mittler (1989) Ex president of the International League of Societies for Persons with Mental Handicap (ILSMH), in his research paper entitled meeting the needs of adolescents and young adults with learning difficulties concluded that. There are no simple prescriptions for meeting the needs of adults. It is not enough to advocate that all services should be community based or they should be based on principles of normalization or social role valorization. People can be isolated and lonely in the community, even more than in an institution. They can also be victimised and discriminated against. Above all, they, like all of us, need human companionship and support.



**OBJECTIVES OF THE STUDY**

Many research works were done to study the life and culture of the tribal people in Bangladesh, but nothing was done to study the prevalence, problems and prospects of the mentally retarded persons of the tribal communities in Bangladesh. The present study is an attempt to see the factors of mental retardation among the tribal population only in Dinajpur. And the major objectives of the study are as follows:

1. Identify the biological factors of mental retardation among the tribal population in Dinajpur.
2. Identify the biological factors of mental retardation among the non-tribal population adjacent to the tribal areas.
3. Compare the biological factors among the tribal and non-tribal subjects.
4. Study the degree and severity of the problems of the mentally retarded persons of the study areas.
5. Suggest ways and means to prevent mental retardation in the study areas in general and among the tribal areas in particular.

**SIGNIFICANCE OF THE STUDY**

Though the study is designed to survey a small geographical area of the country, the findings will help the medical scientists, concerned professionals, policy makers to plan and implement appropriate steps to prevent birth of mentally retarded children in Bangladesh.

Secondly, the findings will help facilitate formulation of a National Policy for the mentally retarded persons in Bangladesh.

*Chapter II*  
*Method and Procedure*

## Chapter- II

### **METHOD AND PROCEDURE**

If methodology is considered, this study did not strictly follow any single method. In this study survey, interview, case-study and observation methods were used. The researcher observed many cases of mental retardation among the tribal and non-tribal population in Dinajpur who were observed but not included as subjects of this study. But while the researcher evaluated any particular factor he remembered the cases that were observed but not included. The impressions he had about them influenced his perception and decision. The particular subjects whom the researcher observed and studied were observed in their natural living conditions. Most of these mentally retarded subjects were unable to answer the questions of the researcher. Therefore, the parents/guardians were asked different questions by the researcher to trace the possible factors of mental retardation, specially the biological factors.

#### **STUDY AREA**

The main objective of the study was to identify the biological factors of mental retardation among the tribal population of Dinajpur area. Though named Dinajpur, the researcher included some cases of Thakurgaon District as the tribal villages are concentrated in the border areas of these two Districts. Dinajpur District is situated in the north-western part of Bangladesh. The tribal inhabitants of this district mainly live in the rural areas of different Unions of the District. The upazillas and unions covered under this research are shown in the following table:

**Table 2.1. Upazillas and Unions of the Study area**

Sl. No.	District	Upazilla	Union
1	Dinajpur	Bochaganj	Nafanagar, Rangaon, Dawlatpur.
		Birganj	Nijpara, Vognagar.
		Kaharole	Dabar, Mukundapur, Rasulpur.
2	Thakurgaon	Pirganj	Bhomradaha, Kusaraniganj, Khongaon, Pirganj, Hajipur, Bairchuna, Jabarhat, Sengaon.
		Ranisankoil	Lehemba, Hossaingaon, Bachore.
		Haripur	Vaturia.

### SELECTION OF THE STUDY AREA

The greater Dinajpur District including Thakurgaon is the place of Bangladesh where maximum number of tribal people, especially the Santal population lives. The areas covered are easily accessible by the researcher from his college. The easy availability and abundance of the targeted subjects are the main reasons of selection of the study area.

The researcher was born in this area. He had the opportunities to observe the subjects and their families closely. The researcher has many friends and known persons among the tribal people. And as it is very important to establish rapport with the family members of the subjects in such a study, the researcher selected greater Dinajpur District as study area of this research.

There are many Santals who live in Dinajpur sadar Upazilla were excluded from this study because the researcher mainly wanted to study the Santals living in the rural areas. The Santals living inside Sadar Upazilla enjoy some facilities which are absent in the real tribal communities living in the rural areas. These facilities include electricity, Government hospitals, sanitation system, etc. The researcher observed that a large majority of the Santals like to live in rural areas, not in urban areas. Therefore, the researcher selected only those Unions of different Upazillas of Dinajpur and Thakurgaon Districts which are really rural areas.

## SELECTION OF THE SUBJECTS

At the beginning of the study, the researcher had a plan only to study about 100 tribal cases of mental retardation. But when he started his field work, he observed that some of the habits and daily living patterns of the pregnant mothers are widely different from the non-tribal pregnant mothers. The works, jobs, diet, daily routine of the tribal people were also found different from the non-tribal people. Therefore, the researcher after discussion with his supervisor, planned to study another 100 cases of mental retardation among the non-tribal population in the same study areas. Then the researcher had discussion with the Headmen of different tribes and Village Maatbars of different villages of the study area. He explained to the Headmen and the Village Maatbars what he wants to study. Then the Headmen and Maatbars supplied him names and addresses of all possible cases of mental retardation of their respective areas. Within few weeks the researcher prepared a list of 173 tribal cases of mental retardation and 139 non-tribal cases of mental retardation. Then he visited some cases together with the Headmen, local school teachers, Maatbars, college and high school students, etc. and found some cases where parents could not answer many of his questions. These questions were mainly related to the prenatal and perinatal period of the subjects. Secondly, the researcher found that the list supplied by the Headmen and Maatbars include many cases of Mental illness and cases of Physical handicapped conditions, not mental retardation. Therefore, the researcher first prepared a short screening instrument, a checklist to identify the real cases of mental retardation. On preparation of this checklist he once again visited the study areas and this time only with the help of local school teachers and college teachers he identified only 83 tribal and 78 non-tribal cases of mental retardation whose parents can answer his questions. Following tables show the Degree of retardation, clinical Types, prevalence in sub-tribes and other disabilities of the subjects.

**Table 2.2. Levels of mental Retardation of the subjects**

Levels	Tribal cases		Non tribal Cases		Remarks
	N	%	N	%	
Mild	00	00.00	00	00	Well adjusted in their own community. Because of the simple life style they are not identified as mentally retarded
Moderate	56	67.47	67	85.90	Having some problems to work
Severe	25	30.12	09	11.54	Requiring support of others for Daily Living Activities
Profound	02	2.40	02	2.56	Small babies
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	

In the table above it is seen that not a single case was identified who are mildly retarded. But many mildly retarded cases are there both among the tribal and non-tribal population. They are well adjusted in their own communities. Some of these mild mentally retarded persons are married and have children. The researcher did not take any initiative to identify them as mentally retarded and disturb their present social adjustment.

It is also seen in the above table that only 2 profound cases were identified among the tribal and 2 cases among the non-tribal population. All these 4 cases are Down's syndrome cases. It is assumed by the researcher that there are many other cases of profound retardation in both the communities who are small children. But the family members considered them as physically sick babies. Therefore, the researcher did not take any initiative to classify them as profoundly retarded cases of mental retardation, too.

**Table 2.3. Clinical types of Mental Retardation of the subjects**

Clinical types	Tribal cases		Non-tribal cases		Remarks
	N	%	N	%	
Down's Syndrome	04	4.82	07	8.97	Trisomy 21 cases
Cranial Anomalies	02	2.41	12	15.38	Hydrocephalic, microcephalic cases
Cretinism	02	2.41	03	3.85	
Cultural familial	75	90.36	56	71.79	
PKU (Phenylketonurea)	00	00	00	00	
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	

**Table 2.4. Cases of the Mental Retardation in different sub-tribes**

Sub-Tribes	Number	%
Hasda	15	18.07
Murmu	17	20.48
Kisku	06	7.23
Hembron	05	6.02
Merandee	16	19.28
Soren	14	16.87
Toodu	05	6.02
Baski	03	3.61
Kore	01	1.02
Bodia	00	00
Puria	00	00
Besra	01	1.02
<b>Total</b>	<b>83</b>	<b>100</b>



**Table 2.5. Mental retardation and other disabilities of the subjects**

(multiple answers)

Other disabilities associated with mental retardation	Groups	
	Tribal cases	Non-tribal cases
	N	N
Only mental retardation, no other problems.	09	06
Hearing impairment	73	65
Speech impairment	75	63
Vision problem	67	59
Motor and hearing problem	46	31
Speech and motor disabilities	39	25
Hearing and speech problem	52	31
Motor and vision problem	34	17
Hearing and vision problem	63	38
Speech and vision problem	69	29
Physical problem	63	34
Speech, hearing and motor problem	57	27
Hearing, speech and vision problem	65	41
Multiple problems	71	53

From the findings shown in the table above it is seen that many mentally retarded persons have other disabilities associated with mental retardation.

**Table 2.6. Age range of the subjects**

Age Range in years	Tribal		Non-tribal		Total	
	N	%	N	%	N	%
0-2	02	2.41	02	2.56	05	3.11
3-6	29	34.94	05	6.41	33	20.50
7-14	26	31.33	18	23.08	44	27.33
15-20	11	13.25	20	25.64	31	19.25
20+	15	18.08	33	42.31	48	29.81
<b>Total</b>	<b>83</b>	<b>100</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

**Table 2.7. Sex of the subjects**

Sex	Tribal		Non-tribal		Total	
	N	%	N	%	N	%
Male	50	60.24	55	70.51	105	65.22
Female	33	39.76	23	29.49	56	34.78
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

## **MATERIALS USED**

The researcher mainly used one checklist and one questionnaire in this research. Besides he studied medical papers, prescriptions, diagnostic reports (only in some non-tribal cases) wherever these were available. He observed all the cases at their own houses, in fields, in roads, inside village markets, etc. The researcher talked to the parents / guardians of all the subjects. Therefore, this research is a combination of survey method, case study method, interview method and observation method. Following are short description of the materials used.

### **THE CHECKLIST**

It is very difficult to identify a mentally retarded person if the level of retardation is not severe or profound. During field work, when the researcher visited any new village he asked to the Headmen or the Maatbars to help him prepare a list of the mentally retarded persons. They were very confused what mental retardation is. They sometimes mixed-up mental illness, spasticity or other physical handicapped conditions with mental retardation. To help them, the researcher used a checklist.

The checklist is shown in Appendix-II of this thesis. The original checklist was earlier developed by his research supervisor in 1987 to identify cases in Rajshahi City. Finally it was used to study about 3000 cases of mental retardation in different places of Bangladesh during 1988-1992. The researcher, for the convenience of this study and considering the answering abilities of the tribal parents reduced the number of items of the checklist.

The checklist that was used in this study contained only 15 items related to different conditions and ability level of the subjects. These are:

1. Toilet Training
2. Clothing
3. Personal Hygiene
4. Eating
5. Mathematical reasoning
6. Linguistic abilities
7. Memory
8. Visual sensation
9. Auditory Sensation
10. Cutaneous Sensation
11. Olfactory sensation
12. Gustatory sensation
13. Developmental aspects
14. Emotion
15. Drug dependence

For each item there were five given answers. The answers were arranged gradually from 1 to 5. The answers given in 5 indicate very high level of functioning and 1 indicate profound level of handicapped condition.

## **2.4.2. THE QUESTIONNAIRE**

The questionnaire that was used in this study had several sections. These sections are as follows:

1. Information related to the subject.
2. Father of the subject.
3. Mother of the subject.
4. Prenatal period
5. Perinatal period
6. Postnatal period
7. General question.

### **INFORMATION RELATED TO THE SUBJECT**

This section included questions related to name, age, sex, address, socio-economic conditions of the family, siblings, parents, guardians, handicapped conditions, clinical types, etc. of the subjects studied.

### **FATHER OF THE SUBJECT**

This section of the questionnaire included items related to the father of the subjects. Items included name, present age, age when the handicapped child was born, education, profession, health condition when the child was born, immunization, smoking habits, alcohol intake habits, mental illness in family, blood group, body structure, functional levels of the sense organs, diseases and illness, etc.

### **MOTHER OF THE SUBJECT**

This section of the questionnaire included items related to the mother of the subjects. Items included name, present age, age when the handicapped child was born, education, profession, health condition when the child was born, immunization, smoking habits, alcohol intake habits, mental illness in family, blood group, body structure, functional levels of the sense organs, diseases and illness, etc.

**PRENATAL PERIOD**

This section included questions related to condition of the mother during prenatal period of the handicapped child and some aspects related to health of the mother just before conception of the handicapped child. The items included food, nutrition, illness and diseases, workloads, treatment, maternity care, etc.

**PERINATAL PERIOD**

This section included questions related to the perinatal period of the handicapped child. The major items included situation of birth, labour pain, medical attention, availability and non-availability of trained midwives, environment, types of birth, respiration, excretion, eating, etc. of the new born.

**POSTNATAL PERIOD**

This section included questions mainly related to infancy period and some questions related to babyhood and early childhood of the handicapped subjects. Items included adjustment of the infant in outside environment. Different developmental aspects, abilities and disabilities, etc.

**GENERAL QUESTIONS**

This section included questions related to different developmental tasks performed by the subjects during babyhood and early childhood. Diseases suffered by the subjects, Treatments given to them, Types and standard of treatment, Different habits, abnormalities observed, etc. In total there are 19 questions on different aspects.

## 2.5. PROCEDURE

When everything was ready (list of the selected subjects, the checklist and the questionnaire) the researcher went to different villages and started visiting the houses of the subjects. In some villages there were mentally retarded subject of both the tribal and non-tribal groups. Local school or college teachers mostly accompanied the researcher. Inside the tribal communities he was always accompanied either by the headman or persons assigned by the headman.

The researcher asked questions mainly to the parents. The fathers replied the questions asked to the fathers. The mothers replied the questions asked to the mothers. The mothers mostly answered the questions related to the children; some times the fathers seconded the replies given by the mothers. In some tribal families, the elderly neighbors helped the mothers to answers the questions. In the tribal communities, the researcher observed that the respondents were relatively frank to answer his questions compared to the non-tribal families. In non-tribal families the way of asking questions by the researcher were similar like the tribal families. But he observed that the mothers were relatively shy to answer some questions. In non-tribal families, where the families are joint families, the mother-in-laws and other elderly family members helped the parents to answer the questions asked by the researcher.

In addition to his selected questions, the researcher allowed parents to narrate anything they wanted to tell about their handicapped children. It was found that many parents possess many faulty ideas related to the birth of the mentally retarded children. They blamed different conditions like bad winds, evil powers, etc. It was also found that large majority of the parents believe that their child was not mentally retarded when they were born. Later, the babies gradually became mentally retarded because of illness, wrong treatment, bad winds, evil powers, etc.

The researcher also closely observed all the 161 subjects of this study. He studied them in their own houses, inside the villages during different interactions, during different interpersonal relations. In most cases the subjects were observed on the same day and time while interviewing the parents / guardians. In few cases the handicapped subjects were not available at home during interview sessions of the parents. Again in some cases the handicapped subjects were present at home but the parents were away from homes. In such cases the researcher again visited them.

## 2.6. DATA ANALYSIS

The information obtained by the researcher was converted to numerical figures for tabulation. Legends for different answers were prepared earlier by the researcher for different answers. In some questions the answers were simply Yes or No. In such cases 'Yes' were recorded as 1 and 'No' as 2.

While tabulation was done for the ability or performance levels of the subjects related to different Daily Living Activities, 5 was recorded for very good performance, 4 for above average performance, 3 for average performance, 2 for poor performance and 1 for very poor performance or conditions. The researcher personally observed all the cases and recorded ability levels of the subjects as measured by the behaviour checklist. Mainly Mean and Percentage of all the responses were found out. Then Chi-square tests were done to assess the level of significance of the findings. In the following chapter each question and answers are shown in different tables including the Chi-square values below the tables.



*Chapter III*  
*Results and*  
*interpretations*

## Chapter – III

### RESULTS AND INTERPRETATIONS

This research was designed mainly to identify the biological factors of mental retardation among the tribal population of Dinajpur district in Bangladesh. During field study it was decided to study a similar sample of mentally retarded persons of the non-tribal population living around the tribal communities. Finally 83 tribal and 78 non-tribal mentally retarded cases were studied. The following tables show the prevalence of different factors of both the groups.

**Table 3.1. Age of the mother at the time of conception of the children**

Age group (in years)	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
12-14	00	00	00	00	00	00
15-18	11	13.25	05	6.41	16	9.94
19-22	20	24.10	13	16.67	33	20.5
23-26	27	32.53	25	32.05	52	32.3
27-30	19	22.89	27	34.62	46	28.57
31-34	06	7.23	07	8.97	13	8.07
35-40	00	00	01	1.28	01	0.62
40+	00	00	00	00	00	00
<b>Total</b>	<b>83</b>	<b>100</b>	<b>78</b>	<b>100</b>	<b>161</b>	<b>103.00</b>

$$X^2=5.16, \delta f=7, p > 0.05$$

Age of the mothers when they conceived the mentally retarded children are shown in the above table. It is seen that 13.25% tribal and 6.41% non-tribal mothers conceived before their 19 years age. 24.10% tribal mothers were in the age range of 19-22 years. Whereas 16.67% of the non-tribal mothers were in that age range.

Chi-square test was done and it was found that the findings are not significant. However, observing the findings, it can be said that the age-range of the mothers are more or less normally distributed. A large majority of the mothers conceived mentally retarded children during their age range of 19-34 years which is normal age range to conceive a baby. However, the tribal mothers conceived more in younger ages compared to non-tribal mothers.

**Table 3.2. Health of the mother during pregnancy**

Health Condition	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
Very good	00	00	04	5.13	04	2.48
Good	01	1.20	17	21.79	18	11.18
Average	07	8.43	53	67.95	60	37.27
Poor	29	34.94	03	3.85	32	19.88
Very poor	46	55.42	01	1.28	47	29.18
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>99.99</b>

$$X^2=112.95, df=4, p < 0.01$$

In the table above, the health condition of the mothers during pregnancy period of the mentally retarded children is shown. The mothers themselves assessed their own health conditions as very good, good, average, poor and very poor. It is seen that most of the tribal mothers assessed their health as poor or very poor during the pregnancy period of the mentally retarded children. Large majority of the non-tribal mothers assessed their health as average. The self-assessment shows that the condition was better among the non-tribal cases compared to the tribal cases.

**Table 3.3. Smoking habit of the mothers**

Habit	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
Smoked regularly	15	18.07	00	00.00	15	9.32
Smoked irregularly	57	68.67	02	2.56	59	36.65
Did not smoke	11	13.25	76	97.44	87	54.04
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.01</b>

$$X^2=114.79, df=2, p < 0.01$$

The table above shows the smoking habit of the mothers of the mentally retarded cases just before conception and during the prenatal period of the mentally retarded children. It is seen that 97.44% of non-tribal mothers and 13.25% of tribal mothers do not smoke. Among the tribal mothers, 18.07% were habitual smokers, whereas none of the non-tribal mothers are habitual smoker. During interview all the 15 tribal mothers, who smoke regularly, informed the researcher that during their pregnancy period they smoked more than their usual habit. They also informed that they were feeling unwell during pregnancy period. Smoking was a form of relaxation during such unwell conditions and they do not know that smoking is harmful for the fetus. It was also found that they mostly smoked raw tobacco leaf or hand made Biri. From the findings shown in the above table, it is assumed that smoking habit of the mothers is a factor of mental retardation among the tribal communities but not significant factor for non-tribal communities.

**Table 3.4. Wine intake of the mother**

Rate of wine intake	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
Addicted	01	1.20	00	00	01	0.62
Intake regularly	34	40.96	00	00	34	21.12
Moderate	25	30.12	00	00	26	16.15
Occasionally	22	26.51	00	00	24	14.91
Never	01	1.20	78	100.00	76	47.20
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2=151.23, df=4, p < 0.01$$

In the table above, it is seen that none of the non-tribal mothers take wine. About 40.96% of tribal mothers had wine regularly. From the findings as shown in the above table it is understood that wine intake of the mothers is not at all a factor for mental retardation among the non-tribal cases. But it is an important factor for mental retardation among the tribal cases.

It was mentioned earlier that the wine consumed by the tribal people in Dinajpur is mainly indigenous rice wine. The production process of this wine is not scientific. Presence of many harmful bacteria is easily traced in this wine, which may cause serious damage to the health of the mothers as well as to the fetus.

**Table 3.5. Immunization and Vaccination of the mothers**

Immunization Status	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
Vaccinated	01	1.20	25	32.05	26	16.15
Not vaccinated	82	98.80	53	67.95	135	83.85
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2=28.25, df=1, p < 0.01$$

The immunization status of the mothers of the subjects is shown in the above table. It is seen that 67.95% of non-tribal mothers were not vaccinated or immunized, whereas 98.80% of tribal mothers were not vaccinated. It is clearly seen that the rate of immunization / vaccination was higher among the non-tribal mothers though not adequate. The chi-square test of contingency table of the responses is highly significant. Therefore, it is understood that the non-immunization of the tribal mothers is a significant biological factor for the birth of mentally retarded babies among the tribal communities.

**Table 3.7. Illness of the mother before conception**

Major illnesses like jaundice, chicken pox, measles, meningitis, typhoid, etc. usually cause some damage to different organs of the body or at least weaken the organs, including reproductive organs.

Response	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
Major illnesses	07	8.43	05	6.41	12	7.45
Minor but acute illnesses	31	37.35	53	67.95	84	52.17
Chronic illnesses	45	54.22	19	24.36	64	39.75
No illness	00	00	01	1.28	01	0.62
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>99.99</b>

$$X^2=17.54, df=3, p < 0.01$$

The illnesses of the mothers before conception have indirect effects on the fetus. It is seen in the table above that almost all the mothers had illnesses of different degrees. The chi-square test of contingency table is highly significant for the findings related to illnesses of the mothers. Therefore, it can be said that the illnesses of the mother before conception is one of the important biological factors for mental retardation of the subjects of both the categories.



**Table 3.8. History of Miscarriage of the mothers**

Number of miscarriage	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
Nil	55	66.27	49	62.82	104	64.60
One	26	31.33	20	25.64	46	28.57
Two	02	2.41	09	11.54	11	6.83
Three	00	00	00	00	00	00
Four and above	00	00	00	00	00	00
<b>Total</b>	<b>83</b>	<b>100.01</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2=5.44, df=4, p > 0.05$$

The history of miscarriages of both the tribal and non-tribal mothers before the conception of the subjects is shown in the table above. It is seen that a large majority of the mothers do not have the records of any miscarriage. Only about 31% of tribal and 28% of non-tribal mothers had one miscarriage. On the other hand, 2.41% of tribal and 11.54% of non-tribal mothers had two miscarriages. Therefore, it is understood that the history of miscarriage as a factor is slightly more among the non-tribal cases. However, it is also understood that history of miscarriages is not an exclusive factor for the tribal cases.

**Table 3.9. Age of the father at the time of birth of the children**

Age group (in years)	Tribal fathers		Non-tribal fathers		Total	
	N	%	N	%	N	%
15-18	02	2.41	01	1.28	03	1.86
19-22	07	8.43	03	3.85	10	6.21
23-26	25	30.12	21	26.92	46	28.51
27-30	28	33.73	28	35.90	56	34.78
31-35	13	15.66	17	21.79	30	18.63
35-40	02	2.41	03	3.85	05	3.11
41-50	01	1.20	01	1.28	02	1.24
50 +	05	6.02	04	5.13	09	5.59
<b>Total</b>	<b>83</b>	<b>98.98</b>	<b>78</b>	<b>99.93</b>	<b>161</b>	<b>99.93</b>

$$X^2 = 2.97, df = 7, p > 0.05$$

Age of fathers at the time of conception of the Mentally Retarded children by the mothers are shown in the above table. It is seen that the trend is similar among the tribal and the non-tribal fathers. However, the average age of the tribal fathers is relatively lesser compared to the non-tribal fathers.

**Table 3.10. Immunization of the fathers**

The immunizations are different in different persons. Again within the same person the capacity changes with the health condition. Persons immunized are expected develop better resistance against diseases. Fathers who were immunized against different diseases during their early ages are expected to possess spermatozoa with resistance to different diseases and virus. The immunization status of the fathers of the subjects of this study is shown in the following table.

Immunization status	Tribal fathers		Non-Tribal fathers		Total	
	N	%	N	%	N	%
Vaccinated	05	6.02	23	29.49	28	17.39
Not vaccinated	78	93.98	55	70.51	133	82.61
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2=15.41, df = 1, p < 0.01$$

All the fathers were asked whether they were given different vaccine during their childhood. It was found that only 6.02% of tribal and 17.39% of non-tribal fathers were immunized. It seems that this non-immunization status of the fathers is a factor of birth of the mentally retarded children.

**Table 3.11. Smoking habit of the fathers**

Response	Tribal fathers		Non-Tribal fathers		Total	
	N	%	N	%	N	%
Heavy smoker	17	20.48	00	00	17	10.56
Smoked regularly	59	71.08	02	3.85	62	38.51
Smoked Occasionally	05	6.02	25	30.77	29	18.01
Non Smoker	02	2.41	51	65.38	53	32.92
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2=128.63, df = 3, p < 0.01$$

All the fathers had been asked to rate their own smoking habits before their wives conceived the mentally retarded children. They rated their smoking habits as heavy smokers, regular smokers, occasional smokers and non-smokers before the subjects were conceived by their wives. The table above shows that there are differences of smoking habits between the tribal and non-tribal fathers. It is seen that 71.08% of tribal fathers smoked regularly. On the other hand, only 3.85% of non-tribal fathers were regular smokers. It seems that this factor is also a significant factor for mental retardation among the tribal population and not significant for the non-tribal population. The researcher also enquired what they smoked. It was found that rarely it was cigarette. Mostly they smoked hand made Biri or folded raw tobacco leaves. As these locally made tobacco leaves are not processed, cigarettes the smoking sharply increases nicotine level in the body and jeopardize normal functioning of the central nervous system. Some fathers reported that they also smoked grasses which are now considered as harmful drugs.

**Table 3.12. Wine intake of the fathers**

Rate	Tribal fathers		Non-tribal fathers		Total	
	N	%	N	%	N	%
Addicted	05	6.02	00	00	05	3.11
Intake regularly	67	80.72	00	00	67	41.61
Moderate	11	13.25	02	2.56	13	8.07
Occasionally	00	00	05	6.41	05	3.11
Never	00	00	71	91.02	71	44.09
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>99.99</b>	<b>161</b>	<b>99.99</b>

$$X^2=154.21, df = 4, p < 0.01$$

In the table above, it is seen that there are differences among the tribal and non-tribal fathers related to wine intake before the birth of their mentally retarded children. It is seen that 80.72% of tribal fathers consumed wine regularly, whereas none of the non-tribal fathers consumed wine regularly. Wine intake may be a factor for mental retardation among tribal population.

**Table 3.13. Illness of the father**

Response	Tribal fathers		Non-tribal fathers		Total	
	N	%	N	%	N	%
Had major illnesses	29	34.94	11	14.10	40	24.84
Had chronic illnesses	51	61.45	48	61.54	99	61.49
No illnesses	03	3.61	19	24.36	22	13.66
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>99.99</b>

$$X^2=16.43, df = 2, p < 0.01$$

The severe illness of the fathers before the conception of their wives may lead to the birth of handicapped children. The researcher asked all the fathers to mention their illnesses before the conception of their wives. In the table above, it is seen that the tribal fathers suffered more from major illnesses compared to the non-tribal fathers. However, most of the tribal and non-tribal fathers had chronic illnesses. Therefore, it is assumed that the illnesses of the fathers before prenatal period of the subjects are one of the factors for mental retardation of the tribal subjects as well as the non-tribal subjects.

**Table 3.14. Close Family relationship of the parents**

The biologists observed that the chances of chromosomal anomalies in the fetus are more when the parents are close relations or possess certain similarities in the blood groups.

Relationship	Tribal parents		Non-tribal parents		Total	
	N	%	N	%	N	%
Cousin	02	2.41	01	1.28	03	1.86
Close relation	11	13.25	03	3.85	14	8.70
Relation	48	57.83	05	6.41	117	72.67
No-relation	22	26.51	69	88.46	27	16.77
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2=19.24, df = 3, p < 0.01$$

In the table above, it is seen that 88.46% of non-tribal parents of the mentally retarded children had no previous relationships, whereas about 50% of tribal parents of the mentally retarded children were close relations. This factor is significant for tribal cases rather than non-tribal cases.

**Table 3.15. Blood Group of the parents**

Response	Tribal parents		Non-tribal parents		Total	
	N	%	N	%	N	%
Blood grouping was done	00	00	21	26.93	21	13.04
Blood grouping was not done	83	100	57	73.08	140	84.96
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.01</b>	<b>161</b>	<b>98.00</b>

$$X^2=25.71, df = 1, p < 0.01$$

In the table above, it is seen that none of the tribal parents was subjects of investigation for determining blood groups, whereas 26.93% of non-tribal parents had pathological tests of blood grouping. During interview they informed that the blood grouping was done not with the objective to investigate whether the fetus is handicapped or not. They were completely unknown about the importance of blood groupings before conception. Therefore, it is difficult to conclude from this finding whether blood relationship was a significant factor for mental retardation of the subjects.



**Table 3.16. Prenatal duration**

The scientists have observed that the premature infants take longer time to adjust with the external environment and in most cases the survival is very difficult without medical aids. The growth and development of the brain cells are relatively poor among the premature infants and the chances are higher for mental retardation.

Duration	Tribal cases		Non-tribal cases		Total	
	N	%	N	%	N	%
Full time	19	22.89	47	60.25	66	40.99
Pre-mature	63	75.90	24	30.77	87	54.04
Excess period	01	1.20	07	8.97	08	4.97
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>99.99</b>	<b>161</b>	<b>100.00</b>

$$X^2 = 34.71, df = 2, p < 0.01$$

It was found that none of the tribal mothers maintain any record of their menstrual cycle. The calculations of excess period are an approximate estimate of the mothers. However, the self-assessment of pre-maturity seems to be more or less correct. In the table above it is seen that there are differences among the tribal and non-tribal cases in relation to pre-natal periods. Premature duration is higher among the tribal than non-tribal cases. Premature duration is 75.90% among the tribal cases and 30.77% among non-tribal cases. The chi-square test is highly significant. Therefore, it is assumed that premature birth is a significant factor for mental retardation among the tribal subjects.

**Table 3. 17. Birth weight**

An infant is classified as premature if his birth weight is less than 2500 gm (6 pounds and 8 ounces). Premature births are of greater risk because they are more often associated with significant maternal illness such as the Rh incompatibility, toxemia of pregnancy, maternal diabetes, etc. Frequent pregnancies often lead to premature delivery and underweight infants.

Weight at Birth	Tribal		Non-tribal		Total	
	N	%	N	%	N	%
Over-weight	01	1.20	02	2.56	03	1.86
Normal	31	37.35	57	73.08	88	54.65
Under-weight	51	61.45	19	24.36	70	43.48
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>99.99</b>

$$X^2=22.51, df=2, p < 0.01$$

In the table above, it is seen that 61.45% of tribal infants were born as under weight. On the other hand, 24.36% of non-tribal infants were born under-weight. As a large majority of the tribal subjects were born as underweight infants, it may be a significant factor for their mentally retarded conditions.

It was found that the birth weight of none of the new born were measured with an appropriate balance or standard weight measuring instrument as all the subjects were born at homes, not at clinics or hospitals. The assessment of over-weight, normal and underweight is the assessment of the family members.

**Table 3.18. Nutrition of the mothers**

Nutrition Standard	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
Very high	00	00	15	19.23	15	9.32
High	00	00	09	11.54	09	5.59
Average	02	2.41	46	58.97	48	29.81
Poor	11	13.25	07	8.97	18	11.18
Very poor	70	84.34	01	1.28	71	44.10
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2=132.27, df=4, p < 0.01$$

All the mothers were requested to assess their nutrition standard during pregnancy period of the subjects. They rated the foods as very high, high, average, poor and very poor. It is seen that there are differences in nutrition between the tribal and non-tribal mothers of the mentally retarded children. Majority of the non-tribal cases reported average diet. On the other hand, majority of the tribal mothers reported very poor diets. Almost 98% of tribal mothers had poor or very poor diets. The chi-square test of contingency table is very high for the findings. Therefore, it can be said that the poor nutrition of the tribal mothers during their pregnancy period can be considered as a significant biological factor for the birth of the mentally retarded infants.

**Table 3.19. Illness of the mothers during pregnancy period**

Major illness of the mother during pregnancy period is always a risk for the fetus. The virus of the diseases and the chemicals taken as medicine, both can affect the mental development of the baby. The severe illnesses are jaundice, high fever, diarrhea, typhoid, respiratory problems, etc. The common chronic minor illnesses were severe headache, loss of appetite, sleep disturbances, mild fever, burning and itching of the body, etc.

Response	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
Had major illnesses	22	26.51	07	8.97	29	18.01
Had chronic minor illnesses	58	69.88	34	43.59	92	57.15
No illness	03	3.61	37	47.44	40	24.84
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2=42.81, df=2, p < 0.01$$

In the table above, it is seen that 26.51% of tribal mothers suffered from major illnesses. Again 69.88% of tribal mothers suffered from chronic minor illnesses. The rate of illnesses was more among the tribal mothers during the pregnancy period of the subjects compared to non-tribal mothers. It is assumed that these illnesses and related treatments may be a significant factor for mental retardation of the subjects.

**Table 3.20. Antibiotic consumed by the pregnant mothers**

Nearly all antibiotics are of lower molecular weight. So, it is to be expected that majority can cross the placenta. On the other hand, a hypnotic drug called Thalidomide, when administered to mothers in the early stages of pregnancy, cause numerous abnormalities in fetal growth (Keele and Neil, 1978).

Response	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
Had to take antibiotics or some other strong medicine	05	6.02	11	14.10	16	9.94
Did not take antibiotics but consumed other medicines	07	8.43	17	21.79	24	14.91
Did not consume any medicine	71	85.54	50	64.10	121	75.16
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>99.99</b>	<b>161</b>	<b>100.01</b>

$$X^2=9.91, df=2, p < 0.01$$

In the table above, it is seen that 85.54% of tribal and 64.10% of non-tribal mothers did not take any strong allopathic medicine during pregnancy period. 6.02% of tribal and 14.10% of non-tribal mothers consumed antibiotics or some others medicines during pregnancy. It was not possible for the researcher to study the effect of these medicines on the fetus. But these medicines may cause some harm to the fetus. However, the rate is lower among the tribal cases.

**Table 3.21. X- Ray used on the mother during pregnancy period**

Pregnant women in contact with X-Rays or radioactive materials must also be extremely cautious. With all the cell division occurring in the zygote, embryo, fetus, and disruption by ionizing radiation can be especially hazardous. Radiation is harmful when the fetus is less than three months old (Segal, 1974).

Response	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
X-ray was done	00	00	03	3.85	03	1.86
Ultra-sonography was done	00	00	02	2.56	02	1.24
Nothing was done	83	100	73	93.69	165	96.89
<b>Total</b>	<b>83</b>	<b>100</b>	<b>78</b>	<b>100.10</b>	<b>161</b>	<b>99.99</b>

$$X^2=8.28, df=2, p > 0.05$$

In the table above, it is seen that none of the tribal mothers had any X-Ray during the pregnancy period of the subjects. Approximately 6% of non-tribal mothers had X-Ray or Ultra-sonography for other medical reasons. However, it is difficult to conclude from the findings shown in the table above that that X-Ray done to the pregnant mothers was a factor for mental retardation of the concerned subjects of this study.

**Table 3.22. Physical injury of the mother during pregnancy**

Response	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
Had serious injury	02	2.41	01	1.28	03	1.86
Had minor injury	14	16.87	15	19.23	29	18.01
No injury	67	80.72	62	79.49	129	80.12
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>99.99</b>

$$X^2=.29, df=2, p > 0.05$$

When the pregnant mother is injured or hurt, the fetus may have brain damages. In the table above, it is seen that 2.41% of tribal and 1.28% of non-tribal mothers had serious injury during the pregnancy period of the subjects. Again 16.87% of tribal and 19.23% of non-tribal mothers experienced minor injury. The mothers could not narrate well what really happened to the fetus and it is very difficult from these findings to conclude whether these injuries caused mental retardation or not.

**Table 3. 23. Duration of labour pain**

When the duration of labour pain is excessive or prolonged the cortical region of the baby is affected due to pressure. And if there is lack of oxygen, the chances of mental retardation are higher.

Duration	Tribal mothers		Non-tribal mothers		Total	
	N	%	N	%	N	%
For about 2 days	02	2.41	01	1.28	03	1.86
Prolonged	05	6.02	25	32.05	30	18.63
Long	35	42.17	19	24.36	54	33.54
Short	39	46.99	22	28.21	61	37.89
No pain	02	2.41	11	14.10	13	8.07
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>99.99</b>

$$X^2=29.24, df=4, p < 0.01$$

In the above table, it is seen that two tribal mothers experienced excessively prolonged labour pain for about 2 days. On the other hand, one mother of the non-tribal group had similar duration of labour pain. In 6.02% of tribal cases the labour pain was prolonged, whereas 32.05% of non-tribal cases had prolonged labour pain. However, from the findings it is assumed that the overall labour pain of the tribal cases was relatively shorter compared to the non-tribal cases. From the description given by the mothers, and seconded by the family members, the researcher assumes that not only oxygen deprivation, but injuries to the brain of the newborns happened during birth to most of the cases with prolonged labour.



**3.24. Birth Attendants**

Birth Attendants	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Trained Midwives	3	3.61	59	75.64	62	38.51
Experienced women	44	53.01	13	16.67	57	35.40
Untrained persons	36	43.37	6	7.69	42	26.09
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>100</b>	<b>161</b>	<b>100.00</b>

$$X^2=88.79, df=2, p < 0.01$$

From the findings shown in the table above, it is seen that among the tribal areas 3.61% were attended by trained midwives, 53.01% by experienced women and 43.37% by untrained persons. Whereas, among the non-tribal cases 38.51% were attended by trained midwives, 35.40% by experienced women and 26.09% by untrained persons. The findings clearly show that the birth attendants were better among the non-tribal cases compared to the tribal cases.

**3.25. Place of birth**

Birth places	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Residence	83	100	77	98.72	160	99.38
Clinic	00	00	01	1.28	01	0.62
Hospital	00	00	00	00	00	00
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>83</b>	<b>100.00</b>	<b>100.00</b>

$$X^2=0.012, df=2, p < 0.01$$

When complication arises related to difficult birth and skilled midwives are not available, the newborn may suffer from brain injury, asphyxia, etc.

In the table above, the places of birth of the subjects are shown. It is seen that none of the tribal cases was born at clinic or hospital. It is also seen that only one non-tribal case was born at a clinic. From these findings and interviews it is understood that the pregnant mothers did not get any modern medical assistance during the difficult birth of the babies.

**3.26. Types of Birth process.**

Types of Birth	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Spontaneous	32	38.55	23	29.49	55	34.16
Normal but very difficult	51	61.45	54	69.23	105	65.22
Caesarean	00	00	01	1.28	01	.62
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>83</b>	<b>100.00</b>	<b>100.00</b>

$$X^2=2.42, df=2, p > .05$$

Scientists have observed that if the infant is injured during normal but difficult births, his future development is affected from within himself because of the injury.

In the table above, the types of birth are shown. It is seen that 61.45% of tribal and 69.23% of non-tribal cases were normal but difficult births. None of the tribal cases is caesarean birth. Only one non-tribal case is caesarean birth at private clinic. None of the tribal or non-tribal subjects were born at hospitals.

**3.27. Diseases and Illnesses during infancy**

Diseases	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very high fever with convulsion	27	32.53	23	29.49	50	31.06
High fever	45	54.22	36	46.15	81	50.31
Several diseases but not severe.	11	13.25	19	24.36	30	18.63
Mild Diseases	00	00	00	00	00	0
Nil	00	00	00	00	00	0
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2=3.31, df=4, p > 0.05$$

The infancy period was considered the first two weeks from birth. It is seen that all the subjects had some diseases, illnesses or problems during their infancy period.

In the table above, it is seen that 54.22% of tribal cases had high fever during their infancy period. And 32.53% of tribal cases had very high fever associated with convulsions. On the other hand, 46.15% of non-tribal cases had high fever and 29.49% had very high fever associated with convulsions. The parents were asked about the treatments done to the infants. Surprisingly it was found that none were treated by qualified medical doctors.

**3.28. Disease and Illness during babyhood.**

Condition	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
High fever	52	62.65	49	62.82	101	62.73
Typhoid	65	78.31	53	67.95	118	73.29
Diarhoea	62	74.70	48	61.54	110	68.32
Disentry	70	84.38	55	70.51	125	77.64
Pneumnea	15	18.07	12	15.38	27	16.77
Several	12	14.46	08	10.26	20	12.42

Babyhood was considered as the first two years from infancy period. All the parents/guardians were asked to think and narrate the diseases and illnesses suffered by the subjects until their babyhood.

In the table above, diseases and illness during the babyhood of the mentally retarded persons are shown. It is seen that different diseases or illness are common among them.

## Performance level of the subjects

**Table 3.29. Toilet training**

Toilet training	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	00	00	00	00	00	00
Good	02	2.41	03	3.85	05	3.11
Moderate	37	44.58	45	57.69	82	50.93
Bad	25	30.12	21	26.92	46	28.57
Very Bad	19	22.89	09	11.54	28	17.39
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>83</b>	<b>100.00</b>	<b>100.00</b>

$$X^2=4.69, df= 4, P > 0.05$$

In the table above, the toilet training of the subjects are shown. It is seen that the pattern of toilet training is more or less similar among the two groups of subjects. None are very good and most of the subjects are either moderate or bad in toilet training. Among the tribal subjects 22.89% and among the non-tribal cases 11.54% are very bad in toilet training. The above findings are also related to the degree of mental retardation of the subjects. The degree of retardation is positively correlated with inferior toilet training.

**Table 3.30. Dress wearing abilities**

Ability level	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	03	3.61	04	5.13	07	4.35
Good	15	18.07	19	24.36	34	21.12
Moderate	46	55.42	31	39.74	77	47.83
Bad	17	20.48	22	28.21	39	24.22
Very Bad	02	2.41	02	2.56	04	2.48
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2 = 4.03, df = 4, P > 0.05$$

In the table above, the dress wearing abilities of the subjects are shown. It is seen that the level of dress wearing abilities is more or less similar among the two groups of subjects. It is seen that a very small number of the two groups of subjects are very good in dress wearing. A large majority of the subjects are moderate in dress wearing. Among the tribes 20.48% are bad and 2.41% are very bad in this ability. Among the non-tribal 28.21% are bad and 2.56% are very bad in dress wearing ability.

Like toilet training, inability to wear dress is also positively co-related with the degree of mental retardation. It was observed by the professionals all over the world that mild mentally retarded persons can wear dress more accurately than moderately retarded persons. Severe and profoundly retarded persons cannot wear dress by themselves.

**Table 3.31. Personal hygiene and cleanliness**

Ability level	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	00	00	00	00	00	0.00
Good	00	00	00	00	00	0.00
Moderate	23	27.71	37	28.21	60	37.27
Bad	27	32.53	22	47.44	49	30.43
Very Bad	33	39.76	19	24.36	52	32.30
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.01</b>	<b>161</b>	<b>100.00</b>

$$X^2=7.39, df=4, P > 0.05$$

Like toilet training and dress wearing abilities the ability to take care of personal hygiene and cleanliness is positively co-related with the degree of mental retardation. More severe the degree of mental retardation, more inability to take care of personal hygiene is observed.

In the table above, the personal hygiene and cleanliness abilities of the tribal and non-tribal subjects are shown. It is seen that none is very good or good in personal hygiene. It is also seen that 39.76% of tribal cases and 24.36% of non-tribal cases are very bad in personal hygiene.



**Table 3.32. Self eating abilities**

Ability	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	00	00	00	00	00	00
Good	07	8.43	15	19.23	22	13.66
Moderate	53	63.86	44	56.41	97	60.25
Bad	21	25.30	17	21.79	38	23.60
Very Bad	02	2.41	2	2.56	04	2.48
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>99.99</b>	<b>161</b>	<b>99.99</b>

$$X^2=4.01, df = 4, P > 0.05$$

In the table above, self-eating abilities of the subjects are shown. It is seen that none is very good in self-eating abilities. A large majority of both groups of subjects are moderate in self-eating abilities. Among the non-tribal subjects, 21.79% and among the tribals, 25.30% are bad in self-eating abilities. Among the tribal cases, 2.41% and among the non-tribal cases, 2.56% are very bad in self-eating abilities. The researcher personally observed two tribal mentally retarded children who cannot distinguish foods which are harmful and which are not harmful. It was also observed that many tribal mentally retarded children have no idea how much food they can really eat. And most of them have chronic diarrhea diseases.

It is mentionable, all the subjects, both tribal and non-tribal, eat their food in very simple ways and do not need to know any table manners which are necessary for urban mentally retarded children.

**Table 3.33. Mathematical reasoning**

Ability level	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	00	00	00	00	00	00
Good	00	00	00	00	00	00
Moderate	07	8.43	09	11.54	16	9.94
Bad	27	32.53	31	39.74	58	36.02
Very Bad	49	59.04	38	48.72	87	54.04
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2=1.76, df = 4, P > 0.05$$

In the table above, the mathematical reasoning of the subjects is shown. It is seen that most of the subjects are either bad or very bad in mathematical abilities. 59.04% of tribal and 48.72% of non-tribal subjects are very bad in mathematical abilities. None is very good or good in mathematical abilities. The abilities included counting of pet animals, simple counting concepts, etc. None of the subjects was found who know the value of money. They cannot buy things from shops by themselves. Getting back the exchanges after buying something from a shop or village market is practically impossible for all of them. But some of them were found who bring small household commodities or grocery items from village shops. In such cases they do not make any transaction of money, simply bring the goods when given by the village shopkeepers.

**Table 3.34. Linguistic abilities**

Ability	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	00	00	00	00	00	00
Good	00	00	00	00	00	00
Moderate	04	4.82	08	10.25	12	7.45
Bad	47	56.63	43	55.13	90	55.90
Very Bad	32	38.55	27	34.62	59	36.65
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2=1.77, df=4, P > 0.05$$

In the table above, linguistic abilities of the subjects are shown. It is seen that none are very good or good in linguistic abilities. Majority of the subjects are either bad or very bad in linguistic abilities. 38.55 % of tribal and 34.62% of non-tribal subjects are very bad in linguistic abilities. Linguistic abilities included communication with family members and informing others about personal problems.

Verbal communication is very important for the survival of a mentally retarded person. Sometimes they cannot express well about their real physical problems to their parents. Many mentally retarded persons were observed by the researcher who could not explain their stomach pain to their guardians. Instead they showed irritation or aggressive behaviour. Sometimes they were found they could not inform about a physical injury they had. Verbal communication problems sometimes lead to wrong diagnosis and wrong treatments for the mentally retarded persons.

**Table 3.35. Memory**

Memory	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	00	00	00	00	00	00
Good	01	1.20	01	1.28	02	1.24
Moderate	07	8.43	08	10.26	15	9.32
Bad	47	56.63	43	55.13	90	55.90
Very Bad	28	33.73	26	33.33	54	33.54
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>100.00</b>

$$X^2 = 0.14, df = 4, P > 0.05$$

In the table above, it is seen that none is very good in memory. Only one tribal and one non-tribal case have good memory. A large majority of the subjects are either bad or very bad in memory. 33.73% of tribal cases and 33.33% of non-tribal cases are very bad in memory. It is seen that memory power are more or less similar among the two groups of subjects. They poor memory of the mentally retarded persons leads them to many problems. They forget important Daily Living Activities. Since all the subjects of this study live in the rural areas, it is not a serious problem for them in loitering inside their neighborhood. But for the urban mentally retarded children poor memory is sometimes a very serious problem, specially if the memory is related to their own identity, home number, road number, residential area, etc. However, the researcher also observed some mentally retarded subjects inside the study area who can not read or write but remember many social events and social interactions very well like normal children.

**Table 3.36. Visual sensation**

Sensory Level	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	03	3.61	04	5.13	07	4.35
Good	21	25.30	26	33.33	47	29.19
Moderate	32	35.55	35	44.87	67	41.61
Bad	18	21.69	11	14.10	29	18.01
Very Bad	09	10.84	02	2.56	11	6.83
<b>Total</b>	<b>83</b>	<b>100.00</b>	<b>78</b>	<b>99.99</b>	<b>161</b>	<b>99.99</b>

$$X^2=6.81, df=4, P > 0.05$$

In the table above, visual sensory levels of the subjects are shown. It is seen that the visual sensation of the subjects is more or less similar among the two groups of subjects. 25.30% of tribal cases and 33.33 % of non-tribal cases are good in visual sensation. On the other hand, 10.84% of tribal cases and 2.56% of non-tribal cases are very bad in visual sensation.

It was found that those who are bad or very bad in visual sensation mainly possess night blindness. Those who are moderate also possess some visual impairment. During interview the researcher came to know that distribution of vitamin A capsule was not done properly by the health directorate in the study areas. The foods eaten by the large majority of the subject are not balanced diet. The researcher also observed many mentally retarded subjects having other Opthamological diseases.

**Table 3.37. Auditory sensation**

Sensory level	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	09	10.84	07	8.97	16	9.94
Good	15	18.07	17	21.79	32	19.88
Moderate	34	40.96	34	43.59	68	42.24
Bad	18	21.69	15	19.23	33	20.50
Very Bad	07	8.43	05	6.41	12	7.45
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>99.99</b>	<b>161</b>	<b>100.01</b>

$$X^2=.82, df=4, P > 0.05$$

In the table above, level of auditory sensation of the subjects is shown. It is seen that auditory sensations are more or less similar among the two groups of subjects. 40.96% of tribal subjects have moderate auditory sensation. It is also seen that 8.43% of tribal cases and 6.41% of non-tribal cases are very bad in auditory sensation. The findings project that a large majority of the tribal and non-tribal subjects have some hearing impairments.

It was also observed that most of the hearing impaired cases have speech impairments. Many of them know only few words and mostly communicate through different sounds. These sounds are not treated as normal languages of the tribal as well as the non-tribal population. The researcher observed that many mentally retarded subjects have chronic diseases inside their ear canal, mainly infections.

**Table 3.38. Cutaneous Sensation**

Sensory level	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	07	8.43	11	14.10	18	11.18
Good	15	18.07	23	29.49	38	23.60
Moderate	51	61.45	42	53.65	93	57.76
Bad	09	10.84	02	2.56	11	6.83
Very Bad	01	1.20	00	00	01	0.62
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>100.00</b>	<b>161</b>	<b>99.99</b>

$$X^2=8.76, df = 4, P > 0.05$$

In the table above, the level of cutaneous sensation of the subjects is shown. It is seen that 8.43% of tribal cases and 14.10% of non-tribal cases are very good in cutaneous sensation. That is, they respond properly to pressure, pain, warm and cold. The ratings shown in the table above is the assessment of the parents. It is also seen that majority of the two groups of subjects are moderate in cutaneous sensation. It was also found that only one tribal case is very bad in cutaneous sensation. None of the non-tribal cases are very bad in cutaneous sensation. One subject who is very bad does not feel cold in winter and do not want to wear any cloth. This subject even does not respond when someone touches the hand to get his attention.

**Table 3.39. Olfactory Sensation**

Sensory level	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	11	13.25	19	24.36	30	18.63
Good	19	22.89	20	25.64	39	24.22
Moderate	44	53.01	31	39.74	75	46.58
Bad	07	8.43	07	7.69	13	8.07
Very Bad	02	2.41	02	2.56	04	2.48
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>99.99</b>	<b>161</b>	<b>99.98</b>

$$X^2=5.73, df=4, P > 0.05$$

In the table above, olfactory sensation of the subjects is shown. It is seen that olfactory sensation abilities are more or less similar among the two groups of subjects. 13.25% of tribal cases and 24.36% of non-tribal cases are very good in olfactory sensation. It is also seen that 53.01% of tribal cases and 39.74% of non-tribal cases are moderate in olfactory sensation.

The ratings shown in the above table is also the assessment of the parents. They rated very well when the subjects respond properly to pleasant and unpleasant odors. The four persons who are very bad in olfactory sensation do not bother to play or remain close to places with unpleasant odors.



**Table 3.40. Gustatory sensation**

Sensory level	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	04	4.82	05	6.41	09	5.59
Good	18	21.69	17	21.79	35	21.74
Moderate	56	67.46	49	62.82	105	65.22
Bad	03	3.61	05	6.41	08	4.97
Very Bad	02	2.41	02	2.56	04	2.48
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>99.99</b>	<b>161</b>	<b>100.00</b>

$$X^2=.88, df=4, P > 0.05$$

In the table above, gustatory sensation of the subjects is shown. It is seen that more than 62% of the two groups of subject have moderate gustatory sensation. This sensation ability is more or less similar among the two groups of subject. It is also seen that 4.82% of tribal cases and 6.41% of non-tribal cases are very good in gustatory sensation.

**Table 3.41. Developmental tasks**

Level	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	01	1.20	03	3.84	04	2.48
Good	21	25.30	25	32.0	46	28.87
Moderate	32	38.55	33	42.30	65	40.34
Bad	27	32.53	15	19.23	42	26.09
Very Bad	02	2.41	02	2.44	04	2.48
<b>Total</b>	<b>83</b>	<b>99.99</b>	<b>78</b>	<b>99.87</b>	<b>161</b>	<b>100</b>

$$X^2=4.64, df=4, P > 0.05$$

All the parents were asked whether their children could perform different developmental tasks at appropriate ages. That is whether they could turn, sit, walk, and speak, etc. at their appropriate ages. The parents thought, consulted among themselves and rated the performance levels.

In the table above, the developmental condition of the tribal and non-tribal subjects are shown. It is seen that none was very good in developmental aspects. It is also seen that the developmental stages of the non-tribal cases are comparatively better than that of tribal cases.

**Table 3.42. Emotional condition of the subjects**

Emotion	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Very Good	00	00	02	2.56	02	1.24
Good	08	9.64	11	14.10	19	11.80
Moderate	48	57.83	52	66.67	100	62.11
Bad	25	30.12	11	14.10	36	22.36
Very Bad	02	1.20	02	2.56	04	2.48
<b>Total</b>	<b>83</b>	<b>98.79</b>	<b>78</b>	<b>99.99</b>	<b>161</b>	<b>99.99</b>

$$X^2=7.73, df=4, P > 0.05$$

All the parents and guardians were asked to evaluate emotional aspects of their children. They were asked to evaluate whether the children laugh, cry, become angry, show appropriate emotion during different situations. The evaluations of the parents/guardians are shown in the table above.

None of the tribal cases are very good in emotion and only two non-tribal cases are very good in emotion. That is, they can show appropriate emotion and behave properly in different situations. It is also seen that 57.83% of tribal cases and 66.67% of non-tribal cases are moderate in emotion. Among the tribal cases, 30.12% are bad and 1.20% is very bad in emotional expressions. Among the non-tribal cases, 14.10% are bad and 2.56% are very bad in their expression of different emotions.

**Table 3.43. Drug dependency of the subjects**

Drug dependency level	Tribal Cases		Non-tribal Cases		Total	
	N	%	N	%	N	%
Nil	78	92.98	00	00	78	48.45
Negligible	03	3.61	55	70.51	58	36.02
Moderate	02	2.41	16	20.51	18	11.18
Frequent	00	00	05	6.41	05	3.11
Completely dependant	00	00	02	2.56	02	1.24
<b>Total</b>	<b>83</b>	<b>99.00</b>	<b>78</b>	<b>99.99</b>	<b>161</b>	<b>100.00</b>

$$X^2=98.38, df=4, P < 0.01$$

Drugs are medicines given during different illnesses and diseases. Among the urban middle class and upper class families, there is a tendency to use psycho-tropic drugs on the mentally retarded children in simple problems. There are many cases of complete psycho-tropic drug dependence in the urban areas.

In the table above the drug dependent condition of the tribal and non-tribal subjects are shown. It is seen that none of the tribal cases are completely dependent on drugs. Only two non-tribal cases are moderately dependent on drugs. In the non-tribal category, 2.56% cases were found who are completely dependent on drugs. The parents told that if the drugs are not given regularly, they experience convulsion or other problems.

From the findings shown in the table above, it is also seen that the pattern of drug dependence is different among the tribal and non-tribal subjects.

*Chapter IV*  
*Discussion*

## Chapter - IV

### DISCUSSION

The main objective of the study was to identify the factors of mental retardation among the tribal population of Dinajpur in Bangladesh. Therefore, primarily a sample of the mentally retarded persons of the tribal population was selected. Later, purposively another sample was drawn from the non-tribal population living in the adjoining areas of the tribes. The researcher used the same case study form to investigate the cases of both the tribal and non-tribal mentally retarded population. The comparative findings are shown in different tables of Chapter-III of this thesis. The findings project the factors of mental retardation in the study areas. The findings also project the degree and severity of the problems and performance levels of the subjects in Daily Living Activities.

The following section of this chapter is a discussion on the factors including important comments and reviews related to the factors. This discussion is based on the findings categorized under different sub-sections like prenatal factors, perinatal factors, postnatal factors, activity levels of the subjects, etc.

#### FACTORS BEFORE CONCEPTION

**Age of the mothers:** Age of the mother at the time of conception is considered as a significant factor for the birth of a handicapped child. The scientists have seen that if the mother is below 18 and above 35 years in age, the chances of giving birth of a child with chromosomal anomalies are relatively higher. Therefore, in many countries the physicians recommend prenatal diagnosis, especially Amniocentesis, when the mother is too young or too old. Through Amniocentesis it is possible to know whether the fetus has any chromosomal anomalies or not. And mothers can ultimately come to a decision whether she will choose an abortion or not.

In this study, it was found that 13.25% of the tribal mothers conceived when they were below 18 years old and none of the tribal mothers conceived after 35 years old. From these findings, it is assumed that early marriage of the tribal population may be a significant biological

factor for mental retardation among the tribal population. But it is not a single factor. There are other factors.

**Health of the mothers:** The health of the mother is a precondition for the birth of a healthy child. In other words, a healthy mother can give birth of a healthy child. The health condition of the mothers at the time of conception of the mentally retarded children was shown in table 3.2 of the preceding chapter. It was found that 55.42% of tribal mothers rated their health as very poor and 34.94% rated their health as poor before they conceived the mentally retarded children. Such poor and very poor health condition of the mothers can be considered as a significant biological factor for mental retardation among the tribal population in Dinajpur.

The researcher observed in the study area that mothers of the non-tribal population are more aware of their health compared to the tribal mothers. But poverty and financial stringency of the families in both the categories play an important role on the health of the mothers.

The researcher also observed that the tribal mothers do not have any savings of their own. They are mostly day labourers. It was found that some women of the non-tribal population now have little money of their own as savings because of the micro-credit programs. The tribal women do not participate in the micro-credit program and do not have any money of their own. Therefore, the tribal mothers are unable to spend money during medical emergency.

The researcher observed that tribal people are very poor people. Most of them are Day labourers. It was also observed that most of the pregnant tribal women continue hard work in the fields with their men to earn money. Sometimes they become too weak to continue work in the advanced stages of pregnancy. In such conditions they cannot go with men to work. Naturally the daily income of the family reduces in those days, which ultimately reduces the food and other necessary supplies needed by the pregnant mothers.

The chi-square test is significant at 0.05 level and it is assumed that poor and very poor diet of the pregnant tribal mothers are important factors of birth of the handicapped babies among the tribal families.

**Smoking habit of the mothers:** By smoking, the mother can create a dangerous environment for her unborn child. When a mother smokes, carbon monoxide levels in her blood increase rapidly and the unborn child may begin to suffocate. This lack of oxygen may result in cell damage. In addition, the nicotine, an extremely powerful stimulant, may harm the unborn child. It was found that many tribal mothers possess the habit of smoking tobacco. In this study in table 3.3 it is seen that 18.07% of tribal mothers used to smoke regularly and 68.67% smoked irregularly. On the other hand it is seen that non-tribal mothers do not smoke. From this finding it is assumed that smoking habit of the tribal mothers may be a factor for mental retardation among the tribal children.

During field study the researcher observed that the tribal mothers not only smoke indigenous tobacco leaves, but also they smoke other grasses which are considered as drugs now a days. The researcher also observed that many tribal women smoke frequently. The relatively older women smoke more frequently compared to the younger women. The women smoke more during scarcity of food compared to the period when they have sufficient food.

From the findings of this study it is assumed that smoking habits of the tribal mothers may be a factor of mental retardation of their children. But this habit cannot be claimed to be a single and leading factor, as many tribal women have the smoking habit but no mentally retarded child.

**Wine intake by the mothers:** Evidence collected over has been shown that even a relatively small intake of wine can endanger the embryo or fetus. Wine intake is very common among the tribal mothers. It was found that 1.20% of tribal mothers are addicted to wine, 40.96% intake wine regularly, 30.12% moderately and 26.51% occasionally. This wine intake is a factor among the tribal population.

**Immunization /Vaccination of the mothers:** It is assumed that lack of immunization or vaccination of the mother may lead to weak resistance of fetus against certain viral diseases and these diseases may cause irreparable damage to the fetus. It was found that the large majority of the mother, both the tribal and the non-tribal was not vaccinated or immunized during their childhood. The number of non-vaccinated tribal mothers is more than non-tribal mothers and this is



considered as a significant biological factor for mental retardation among the tribal population.

The researcher asked the tribal people why they were not immunized when EPI Program is so extensive in the country. The tribal people said that such immunization camps are usually arranged in schools or centres inside the villages during their working hours when they are at distant places from the villages. Secondly, the immunization programs were not extensive like recent programs when the mothers were children.

**Gynecological problem of the mothers:** Excessive acidity of the vaginal secretions, presence of cytomegalovirus in the female genital tract, and other unknown virus is cause fatal brain damage of the fetus. In this study it was found that most of the mothers in both categories did not have any gynecological problem before pregnancy of the mentally retarded children. So, this factor is not considered as a significant factor.

**Illness of the mothers:** Mothers who have experienced several severe illnesses during their childhood and the life before pregnancy are believed to have relatively weaker reproductive organs compared to the mothers who did not suffer major illnesses or diseases. In table 3.7 of the preceding chapter, it is seen that 8.43% of tribal mothers had major illnesses, 37.35% had minor acute illnesses and 54.22% had chronic illnesses before conceiving the mentally retarded children. Such illness of the mothers can be considered as important factors of birth of the mentally retarded children.

During interview it was found that a large majority of the mothers experienced different types of diseases and illnesses since their own childhood until conception of the handicapped babies. All the mothers experienced fever of different degrees including very high fever. Sometimes these fevers were associated with diseases like typhoid, pox, jaundice, etc. When asked the mothers told that in most cases the treatment was poor. Some mothers did not get any allopathic treatment. They also mentioned that their diet during such illnesses were also very poor.

One tribal mother informed the researcher that she was unconscious for two days with very high fever without any treatment. Most of the tribal mothers informed that whenever they experience any illness or

attacked by disease, first treatment is given by the tribal faith healer, Secondly the herbal medicine. Next the homeopathy and if not cured or improved, then the village quack physician is consulted. Whereas, the non-tribal women first consult the village quack physician and if he fails they try for qualified physicians.

**Miscarriage:** It is popularly believed that falls, emotional shocks, malnutrition, glandular disturbances, etc. may dislodge the embryo from its place in the uterine wall, thus resulting miscarriage, or spontaneous abortion. An amount of progesterone insufficient to keep the uterine walls from contacting and thus dislodging the embryo before it is firmly implanted to be the most common and most serious. Biologists have observed that the mothers who have previous records of several miscarriages possess thyroid deficiency, vitamin E deficiency, pronounced malnutrition or starvation and serious diseases such as pneumonia, small pox, diphtheria, German measles and diabetes. It is assumed that the live fetus of these mothers has chances to become mentally and physically handicapped.

Biologists have observed that the mothers who have previous records of several miscarriages possess thyroid deficiency, vitamin E deficiency, pronounced malnutrition or starvation, and serious diseases such as pneumonia, small pox, diphtheria, German measles and diabetes. It is assumed that the live fetus of these mothers have chances to become mentally and physically handicap. The history of miscarriage of the mothers of the subjects is shown in table 3.8 of the preceding chapter. It is seen that most of the mothers do not have records of miscarriage. It seems that the history of miscarriage is not a factor for mental retardation among the tribal population in Dinajpur District.

**Age of the fathers:** Father shares the chromosomes through the spermatozoa to conceive the baby by the mother. An unfavorable condition of the spermatozoa due to old age, vitamin or glandular deficiency of the father causes difficulties in fertilization and healthy growth of the fetus. In table 3.9 it is seen that large majority of the tribal fathers were aged between 23 to 35 years at the time of birth of mentally retarded children. Therefore, the age of the father is not a factor for mental retardation among the tribal population.

**Immunization of the fathers:** The fathers who were not immunized cannot resist the viral diseases and ultimately may cause some damage to the fetus. Lack of immunization or vaccination of the father may lead to weak resistance of the fetus against certain viral diseases and these viral diseases may cause irreparable damage to the fetus. In table 3.10 of the preceding chapter it was found that 93.98% of tribal fathers were not vaccinated or immunized. Such cases are more than non-tribal fathers. It can be said that non-vaccination of the tribal fathers is a factor for mental retardation among the tribal population.

When asked why they were not immunized, the fathers said that when they were children, the immunization programs were not extensive as it is now. Secondly, they used to go to the fields to work with their parents and it was not convenient to come to the village centre during day hours to get the vaccine. They had lack of motivation, too.

**Smoking habit of the fathers:** In table 3.11 of the preceding chapter, it was found that 71.08% of tribal fathers smoke regularly. They are habituate smokers. This smoking is harmful for their unborn children. Regular smokers among the non-tribal fathers are lesser in number than tribal fathers. It is not considered as a significant factor for mental retardation among the non-tribal population. But it may be a significant factor for mental retardation among the tribal population.

**Wine intake of the fathers:** It was found in table 3.12 that 80.72% of tribal fathers take wine regularly. It seems that wine intake of the fathers is a factor for mental retardation among the tribal population in Dinajpur. On the other hand, there is none among the non-tribal fathers who take wine regularly. It seems that it is not a factor for mental retardation among the general population.

**Illness of the fathers:** History of illnesses of the fathers was shown in table 3.13. It is seen that 34.94% of tribal fathers and 14.10% of non-tribal fathers suffered major illnesses before the birth of their mentally retarded children. The diseases they suffered are typhoid, measles, diarrhea, high fever, visual impairment, etc. The rate of diseases suffered by the tribal fathers was more compared to the non-tribal fathers. It seems that these previous illnesses of the fathers are factors for mental retardation among the tribal population in Dinajpur. But it is not a significant factor for mental retardation among the non-tribal children.

**Close family relationship of the parents:** Marriage between cousins is considered as a very important biological factor. This factor is found more in the tribal cases. It was observed that all the children of such parents are severely retarded and possess multiple physical handicapped conditions. Some of these families have more than one mentally retarded child. In table 3.14, it was found that 13.25% of tribal parents are very close relations. It seems that it is a significant factor for mental retardation among the tribal population in Dinajpur.

### PRENATAL PERIOD

**Prenatal duration:** The normal prenatal period is 10 lunar months or 9 calendar months in length. However there is great variation in this length, ranging from 180 days, the shortest known time preceding the birth of a life fetus, 334 days, is the legal time of post maturity. There are approximately three times as many babies born prematurely as post maturely (Charmichael, 1954). In table 3.16, it is seen that 75.90% of tribal infants are born premature. Whereas, only 30.77% non-tribal cases are born pre-mature. It seems that lesser prenatal duration among the tribal categories is a factor for mental retardation.

**Birth weight:** An infant is classified as premature if his birth weight is less those 2500 grams. Premature births are of greater risk because they are more often associated with significant illnesses such as the Rh incompatibility, Toxemia of pregnancy, maternal diabetes etc. Frequent pregnancies often lead to premature delivery. In table 3.17, it is seen that 61.45% of tribal infants are born underweight compared to 24.36% of non-tribal infants. As these cases are more among tribes compared to non-tribal cases, it seems that it is a factor among the non-tribal cases.

During interview the researcher found that the birth weight of none of the newborns were measured by any instrument. The birth weights mentioned by the parents are simple assessment of the birth attendants.

**Nutrition of the mothers:** Since growth is most rapid during the period of the fetus, proteins are needed for the tissue building and repair, fats for the formation of fat tissues and fuel for the body, and carbohydrates for the strength and energy. If the mother suffers from serious malnutrition due to poverty, ignorance or improper diet, etc., serious damage may be done to the fetus in the form of general

physical weakness, rickets, nervous instability or mental deficiency (Burke, Stevenson, Worchester & Stuart, 1949). Malnourishment, as a single variable, is quite difficult to separate from generally poor prenatal care, poor sanitation and lack of adequate shelter. Nonetheless, it appears to have a deleterious effect on a developing embryo or fetus (Dobbing, 1970). It seems conceivable that a deficiency of vitamin B-12 in utero damage the central nervous system of the fetus. From the result shown in table 3.18, it is understood that all the tribal people live on very poor nutrients. Even they do not eat balanced food for proper living. Therefore, malnutrition is a major cause of mental retardation among the tribal population.

**Illness of the mothers during pregnancy:** If the mothers experience serious illnesses during pregnancy, it affects the fetus. Major illnesses like typhoid, pox, jaundice, meningitis, etc., during pregnancy period cause very serious damage to the fetus. It is seen in table 3.19 that 26.51% tribal mothers during pregnancy had major illnesses. Most of them did not go to qualified doctors for medicine. Sometimes they took Ayurvedic medicines. It seems that illnesses of the tribal mothers during pregnancy are a serious factor for mental retardation among the tribal population in this district. On the other hand, some chronic minor illness such as low fever, burning and itching of the body are very common among the tribal mothers during pregnancy. It is assumed that this is also the factor for mental retardation among the tribal population.

**Antibiotic consumed by the pregnant mothers:** Use of antibiotics and other strong medicine is hazardous for the pregnant mothers as the molecules of these drugs may cross through the placenta and damage the nervous system of the fetus. It was found during interviews that the tribal mothers did not take antibiotics and stronger medicines. It seems that it is not a factor for mental retardation among the tribal population. But most of them consumed different unknown herbal or indigenous medicines given by the tribal physicians. It is not exactly known what chemicals they consumed during pregnancy period. On the other hand, it was found that many non-tribal mothers consumed antibiotics and stronger medicines given by the village physicians for different problems during pregnancy period. During interview some mothers told that sometimes they were given two different types of antibiotics at a time. It was also understood that the doses of such medicines were not properly assessed.

**Physical injury of the pregnant mothers:** Physical injury of the mother during pregnancy may cause mental retardation of the babies. 2.41% tribal mothers and 1.28% of non-tribal mothers reported serious injury. On the other hand, 16.87% of tribal mothers and 19.23% of non-tribal mothers reported minor injury. All of them informed that they had some troubles followed by the injuries. All the mothers informed that they were given medicines for such injuries. But none of them could name the medicines.

## PERINATAL PERIOD

**Duration of labour pain:** Women giving birth for the first time, labour will usually last an average of 14 hours. However, for women who have given birth before, labour usually averages only six hours (Dworetzky, 1981). With each uterine contraction the mother experiences considerable pain. The pain in early labour is probably caused mainly by hypoxia of the uterine muscle resulting from compression of the blood vessels to the uterus (Guyton, 1986). In table 3.23 it is seen that 2.41% tribal mothers had labour pain for about 2 days. 6.02% tribal cases experienced prolonged and 42.17% tribal cases experienced long labour pain. Prolonged cases were of 1-2 days and the long cases were maximum of 14 hours. During this prolonged labour pain if the cortical region of the baby is affected due to pressure and if there is lack of oxygen, the chances of mental retardation are higher. It seems that it is a serious factor for mental retardation among the tribal population, as they did not go to the hospitals. The births were done at home mostly through trials and errors in the hands of nonqualified midwives.

**Place of Birth:** The researcher was informed by the respondents that there are not enough trained nurses and midwives in the rural areas of Dinajpur. They also informed that the neighboring women come to help at the time of birth. Practically lot of trials and errors take place in such cases and the newborns are mostly seriously affected. In table 3.25, it is seen that none of the tribal cases was born at clinic. And only one of the non-tribal cases was born at clinic.

**Types of birth:** The effects of birth on the infant may be inconsequential and transitory or they may greatly affect the course of subsequent development (Pratt, 1954). The affects may be direct, in that some part of the body of the infant is damaged in birth and thus the pattern of his future development will be affected, or they may be

indirect, in that they affect the attitude of his parents toward him and this in turn, will be reflected in his emotional social and personality development.

A comparison of IQ's of children in their early teens who were born spontaneously with those who were assisted in to the world by instrumental or other operative methods has led to the conclusion that instrumental delivery has not had a devastating effect upon the mentality of children who survive (Wile and Davis, 1941). However, these children reveal more unfavorable personality characteristics, such as general hyperactivity, restlessness, irritability, distractibility, anxiety, speech defects- especially stuttering and poor concentration, than those who were born spontaneously (Boland, 1951).

Caesarian babies, by contrast are quietest, crying less and making better adjustment to their postnatal environment than those who are born either spontaneously or with the aid of instruments (Ruja, 1948), however, because they have more difficulty in establishing respiration, their brains may be temporarily or permanently affect by anoxia. Thus it is apparent that the type of birth may have a temporary or permanent effect, of slight or major consequence, which in turn will affect the pattern of future development. In table 3.26 it is seen that only one non-tribal case is caesarean and none of the tribal cases is caesarean.

## **POSTNATAL PERIOD**

**Infantile illnesses:** Severe illnesses like meningitis, very high fever and diarrhea are most common and important diseases leading to mental retardation. During interviews of tribal cases it was found that the tribal parents do not take enough medical care of their infants. The infants also sleep on the ground. Almost all the cases were found suffered from high fever associated with convulsion. The parents mostly tried Ayurvedic medicine for the seriously ill infants. They believed in faith healers for these diseases. There are many cases of strong diarrhea of the infants in the tribal areas in this district. Sometimes they do not get pure drinking water. They have no sanitation facility. It is quite possible that severe dehydration might have caused damage to the brain cells of those children. Some cases are found who had meningitis but were not properly diagnosed. All these may have caused mental retardation.

## CHILDHOOD & ADOLESCENCE

Childhood and adolescence of the tribal people are little different from the non-tribal from the view points of their activities, perceptual patterns, daily routines, aspirations, expectations, enjoyment patterns, etc. The non-tribals are mostly the believers of Islam and Hindu religions. They follow many social and religious norms which are not followed by the tribal people.

Like the non-mentally retarded persons, the mentally retarded persons of the tribal and the non-tribal communities spend their childhood and adolescence differently. The daily routines of the tribal and the non-tribal children are different. With the difference in life styles and livings, the treatment patterns of the tribal and non-tribal are different, too.

The researcher found that most of the tribal mentally retarded persons experienced severe illnesses and diseases during their childhood. These diseases include very high fever, severe diarrhea, small pox, typhoid, meningitis, cold and cough, etc. From the descriptions given by the parents, the researcher understood that in majority cases the parents gave up hope that their children will survive. But somehow the children survived. Most of the parents said to the researcher that they believe that the children were not mentally retarded before the severe diseases. They believe that the children were born as normal and have become mentally retarded after the severe illnesses.

May be the beliefs of the parents are true. Because none of the tribal parents measured the temperature of their babies when they had very high fever. From the given descriptions and the narrated symptoms the researcher assumes that in most cases the body temperature of the babies crossed 104<sup>0</sup> F or more.

Many parents told the researcher that their babies experienced convulsion during such high fevers. And in most cases the parents did not run sufficient water on the head of the sick babies or sponge the bodies with wet clothes. Rather in many cases the parents covered the babies with more clothes or blankets. Possibly these measures jeopardized the conditions.

The researcher, on the other hand found a little different picture among the non-tribals related to diseases and treatments of the babies.



In many cases, the non-tribal mothers said that they measured the body temperature of their babies during high fever. They also reported that they gave water to the head of the babies during high fever. They tried to take the babies to the qualified medical people for treatment. But from given descriptions it is understood that the approach to real treatment was always delayed.

## CONCLUSION

On completion of analyzing the data obtained through case studies, observation and interviews, the researcher comes to the following conclusions.

1. It is not possible to identify a single factor, or few factors which are exclusively related to the birth of mentally retarded children among the tribal population in Dinajpur area. It was found that many well known factors prevail among the tribal population. All these factors work together for birth of the mentally retarded children.
  
2. There are many biological factors, which are responsible for the birth of mentally retarded children among the tribal population in Dinajpur. Among these factors the following are very important factors.
  - a) Marriage among close relations.
  - b) Illness and diseases of the mothers
  - c) Nutrition of the mothers
  - d) Difficult birth processes, and
  - e) Severe illnesses of the infants.
  
3. There are many factors, which are common biological factors for both the tribal and non-tribal cases of mental retardation. These are-
  - a) Age of the mothers before pregnancy
  - b) Diseases and illness of the parents, specially the mothers
  - c) Nutrition of the pregnant mothers
  - d) Difficult births after prolonged labour pain
  - e) Faulty treatment and indiscriminate use of chemicals by the pregnant mothers.
  - f) Illness and diseases of the infants

## RECOMMENDATIONS

It has become essential to promote awareness about mental retardation among the tribal population in Dinajpur. It is recommended that the Christian Missionary Groups can undertake a programme to promote the awareness. If the Health Directorate of Bangladesh Government insists or motivate the Christian Missionary Groups, they will definitely undertake the awareness development programs and it will be more effective than the programs of other NGOs. It is recommended that the awareness development program can be divided into two phases.

- a) Short-term programs
- b) Long-term programs

The short-term programs may include-

- 1) Awareness development among the tribal people not to get married in early ages and among close relations.
- 2) Give birth of babies at Christian Missionary Hospitals instead of their own homes.

The long term programs may include -

- 1. Provide Scientific Midwifery training to at least one woman in each sub-tribe.
- 2) Awareness development to avoid indigenous wine and other liquors.
- 3) Motivate the tribal people to avoid indiscriminate use of herbal medicines, at least during pregnancy period.
- 4) Motivate them towards primary education. At least to ensure that from now on they send their children to primary schools. And some special stipend programs can be introduced by the government.
- 5) Introduce community level evening training courses on General Knowledge and Primary Health Care.

Finally, the researcher wants to mention that the tribal people of Dinajpur are also the citizen of this country. They pay taxes, they cast

vote, and they are hard working honest people. But they are deprived from many socioeconomic development programs sponsored by the Government. It seems that the livings of these people are more controlled by the Christian Missionary Groups than the Government Machineries. In Dinajpur, the Christian Missionary Groups could not promote appropriate health care facilities, clinics and hospitals. Therefore, it has become necessary for the Government to promote some specialized health care program for the tribal people of Dinajpur District, which will also help prevention of further birth of the mentally retarded children.

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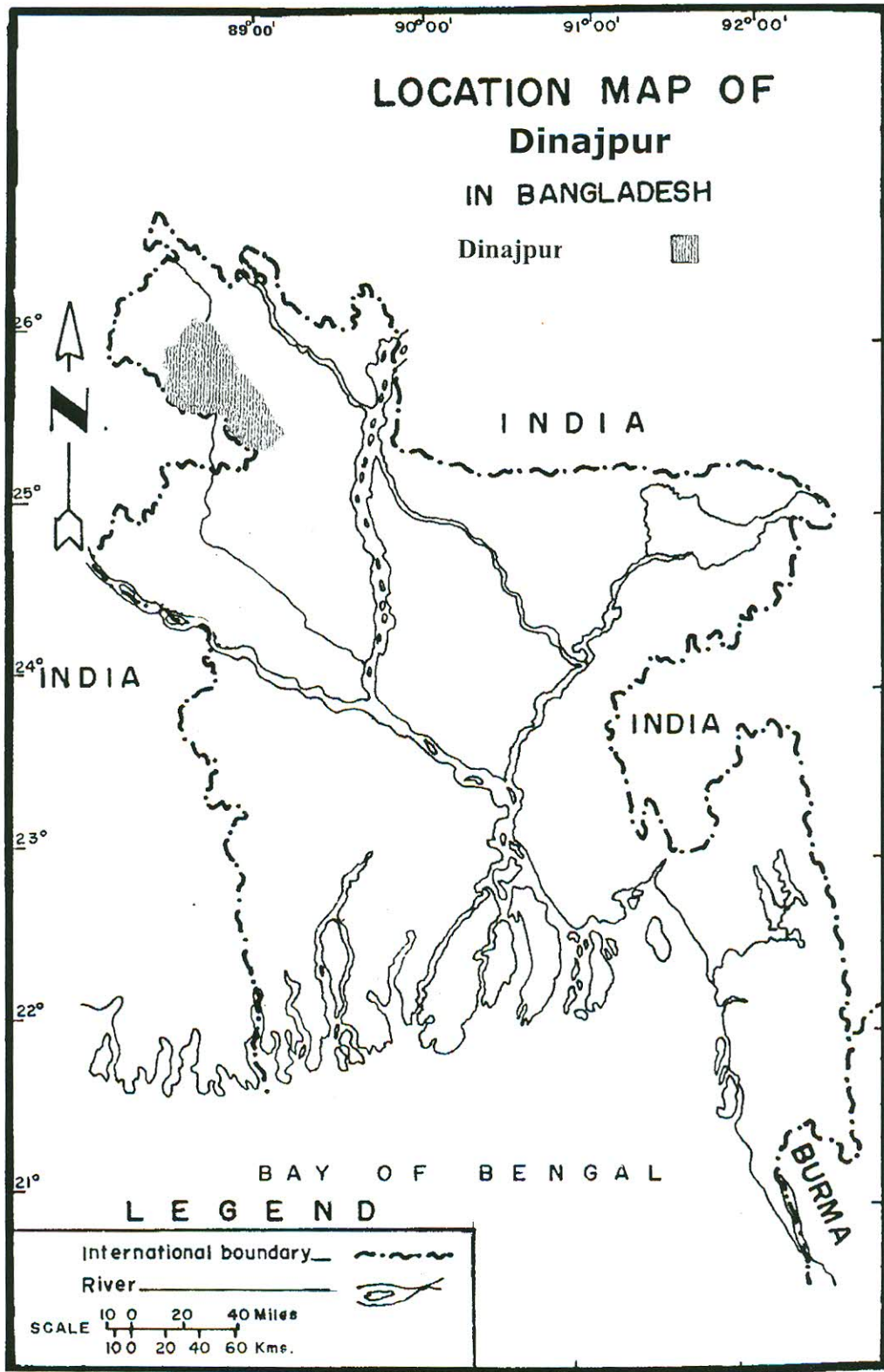
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# *Appendices*

APPENDIX-I



## APPENDIX-II

## প্রতিবন্ধী শ্রেণী বিভাগ করণের আচরন চেক লিষ্ট

	আচরন	১	২	৩	৪	৫
		খুবই ভাল	ভাল	মোটামুটি	খারাপ	খুবই খারাপ
১	টয়লেট ট্রেনিং					
২	পোশাক পরিধান ক্ষমতা					
৩	ব্যক্তিগত পরিচ্ছন্নতা					
৪	নিজে খাবার খেতে পারার ক্ষমতা					
৫	গাণিতিক দক্ষতা (যেমন-টাকা পয়সা চেনা, কেনাকাটার পর ভাঙ্গতি টাকা ফেরত নেয়া, সাধারণ যোগবিয়োগ করতে পারা ইত্যাদি।					
৬	ভাষাগত দক্ষতা এবং নিজের সমস্যা বলতে পারা					
৭	স্মৃতি শক্তি					
৮	দৃষ্টিগত সংবেদন					
৯	শব্দ সংবেদন					
১০	ত্বক সংবেদন					
১১	স্রাণগত সংবেদন					
১২	স্বাদ সংবেদন					
১৩	উন্নতির পর্যায়					
১৪	আবেগ					
১৫	ঔষধ নির্ভরতা					

**APPENDIX-III****প্রতিবন্ধীর সাধারণ পরিচয়:**

নাম:.....

জন্ম তারিখ ..... বয়স ..... লিঙ্গ .....

ঠিকানা:.....

.....

পিতার নাম.....

বয়স:..... পেশা:..... বাৎসরিক আয় .....

শিক্ষাগত যোগ্যতা..... মোট সন্তান সংখ্যা.....

প্রতিবন্ধী কততম সন্তান.....

প্রতিবন্ধী শিশু যদি পিতামাতার সাথে বসবাস না করে সে ক্ষেত্রে যার সঙ্গে বসবাস করে তার

নাম, ঠিকানা ও সম্পর্ক .....

.....

.....

.....

**প্রতিবন্ধীতার ধরন:**

স্তর ভিত্তিক	চিকিৎসা মূলক
১. সীমা রেখা	১. ডাউস সিনড্রোম
২. মৃদু প্রতিবন্ধী	২. ক্রেনিয়াল এনোমালিস: হাইড্রোসেফালী, মাইক্রোসেফালী
৩. মধ্যম প্রতিবন্ধী	৩. ক্রেন্টনিজম
৪. সাংঘাতিক প্রতিবন্ধী	৪. পি.কে.ইউ.
৫. চরম প্রতিবন্ধী	৫. তেজক্রিয়া প্রতিক্রিয়া
	৬. স্টানটেড বেবি
	৭. অন্য কোন গ্রুপ

প্রতিবন্ধীর প্রধান প্রধান অসুখের বিবরণ:

বয়স	অসুখের বিবরণ
জন্ম - ১৪ দিন	
১৫ দিন - ২ বছর	
২ বছর - ৬ বছর	
৬ বছর - ১২ বছর	
১২ বছর - ১৪ বছর	
১৪ বছর - ১৭ বছর	
১৭ বছর - ২০ বছর	
২০+ বছর	

**প্রতিবন্ধীর পিতা সম্পর্কিত তথ্য:**

নাম:.....

জীবিত/মৃত:..... বয়স..... শিক্ষাগত যোগ্যতা.....

পেশা:..... স্বাস্থ্য: খুবই ভাল / ভাল / মোটামুটি / খারাপ / খুব খারাপ।

প্রতিবন্ধী শিশু জন্মের সময় বয়স কত ছিল?

তখন স্বাস্থ্য কেমন ছিল? খুবই ভাল / ভাল / মোটামুটি / খারাপ / খুব খারাপ।

ছোটবেলায় ডিপিটি, বিসিজি ইত্যাদি টিকা নিয়েছেন কিনা? হ্যাঁ / না।

বিভিন্ন সময় নিয়মিত কলেরা, বসন্ত ইত্যাদির ভ্যাকসিন নিয়েছেন কিনা? হ্যাঁ / না

প্রতিবন্ধী শিশুর জন্মের পূর্বে ধূমপান করতেন কিনা? হ্যাঁ / না যদি হ্যাঁ হয় তবে: নিয়মিত / অনিয়মিত

প্রতিবন্ধী শিশুর জন্মের পূর্বে অ্যালকোহল গ্রহণ করতেন কিনা? হ্যাঁ / না; যদি হ্যাঁ হয় তবে: নিয়মিত / অনিয়মিত

বংশে কেউ কি মানসিক সমস্যাগ্রস্ত ছিলেন? হ্যাঁ / না; যদি হ্যাঁ হয় তবে কে:.....

ব্লাড গ্রুপ: .....

উচ্চতা ওজন বিবেচনায় বর্তমান গড়ন কেমন? মোটা / মাঝারী / পাতলা / খুবই পাতলা

নিম্ন লিখিত ইন্দ্রিয় গুলোর কার্যকারীতা কেমন?

চোখ	খুবই ভাল	ভাল	মোটামুটি	খারাপ	খুব খারাপ
কান	খুবই ভাল	ভাল	মোটামুটি	খারাপ	খুব খারাপ
নাক	খুবই ভাল	ভাল	মোটামুটি	খারাপ	খুব খারাপ
জিহ্বা	খুবই ভাল	ভাল	মোটামুটি	খারাপ	খুব খারাপ
ত্বক	খুবই ভাল	ভাল	মোটামুটি	খারাপ	খুব খারাপ

প্রতিবন্ধীর পিতার প্রধান প্রধান অসুখের বিবরণ:

বয়স	অসুখের বিবরণ
জন্ম - ১৪ দিন	
১৫ দিন - ২ বছর	
২ বছর - ৬ বছর	
৬ বছর - ১২ বছর	
১২ বছর - ১৪ বছর	
১৪ বছর - ১৭ বছর	
১৭ বছর - ২১ বছর	
২১ বছর - ৪০ বছর	
৪০ বছর - ৬০ বছর	
৬০ বছর - মৃত্যু পর্যন্ত	

প্রতিবন্ধীর মাতা সম্পর্কিত তথ্য:

প্রতিবন্ধীর মাতা সম্পর্কিত তথ্য:

নাম:.....

জীবিত/মৃত:..... বয়স..... শিক্ষাগত যোগ্যতা.....

পেশা:.....

স্বাস্থ্য: খুবই ভাল / ভাল / মোটামুটি / খারাপ / খুব খারাপ।

প্রতিবন্ধী শিশু জন্মের সময় বয়স কত ছিল?

তখন স্বাস্থ্য কেমন ছিল? খুবই ভাল / ভাল / মোটামুটি / খারাপ / খুব খারাপ।

ছোটবেলায় ডিপিটি, বিসিজি ইত্যাদি টিকা নিয়েছেন কিনা? হ্যাঁ / না।

বিভিন্ন সময় নিয়মিত কলেরা, বসন্ত ইত্যাদির ভ্যাকসিন নিয়েছেন কিনা? হ্যাঁ / না

প্রতিবন্ধী শিশুর জন্মের পূর্বে ধূমপান করতেন কিনা? হ্যাঁ / না যদি হ্যাঁ হয় তবে: নিয়মিত / অনিয়মিত

প্রতিবন্ধী শিশুর জন্মের পূর্বে অ্যালকোহল গ্রহণ করতেন কিনা? হ্যাঁ / না; যদি হ্যাঁ হয় তবে: নিয়মিত / অনিয়মিত

বংশে কেউ কি মানসিক সমস্যাগ্রস্ত ছিলেন? হ্যাঁ / না; যদি হ্যাঁ হয় তবে কে:.....

ব্লাড গ্রুপ: .....

উচ্চতা ওজন বিবেচনায় বর্তমান গড়ন কেমন? মোটা / মাঝারী / পাতলা / খুবই পাতলা

নিম্ন লিখিত ইন্দ্রিয় গুলোর কার্যকারীতা কেমন?

চোখ	খুবই ভাল	ভাল	মোটামুটি	খারাপ	খুব খারাপ
কান	খুবই ভাল	ভাল	মোটামুটি	খারাপ	খুব খারাপ
নাক	খুবই ভাল	ভাল	মোটামুটি	খারাপ	খুব খারাপ
জিহ্বা	খুবই ভাল	ভাল	মোটামুটি	খারাপ	খুব খারাপ
ত্বক	খুবই ভাল	ভাল	মোটামুটি	খারাপ	খুব খারাপ



প্রতিবন্ধীর মাতার প্রধান প্রধান অসুখের বিবরণ:

বয়স	অসুখের বিবরণ
জন্ম - ১৪ দিন	
১৫ দিন - ২ বছর	
২ বছর - ৬ বছর	
৬ বছর - ১২ বছর	
১২ বছর - ১৪ বছর	
১৪ বছর - ১৭ বছর	
১৭ বছর - ২১ বছর	
২১ বছর - ৪০ বছর	
৪০ বছর - ৬০ বছর	
৬০ বছর - মৃত্যু পর্যন্ত	

প্রশ্ন তালিকা:গর্ভকালীন অবস্থা:

১. গর্ভকালীন সময়ে মায়ের খাদ্য কেমন ছিল? খুব ভাল/ ভাল / মোটামুটি/ খারাপ/ খুব খারাপ
২. গর্ভকালীন সময়ে মা কি গুরুতর অসুস্থতা কিংবা অসুখ যেমন পক্ষ, টাইফয়েড, হাম, সিফিলিস, উচ্চ মাত্রার জ্বর, নিউমোনিয়া, ডায়াবেটিস ইত্যাদিতে ভুগেছিলেন?
৩. গর্ভাবস্থায় মায়ের পুষ্টির অভাব ছিল কিনা? হ্যাঁ / না। হ্যাঁ হলে কি ধরনের অভাব? যেমন: প্রোটিন, ভিটামিন, শর্করা ইত্যাদি।
৪. গর্ভকালীন অবস্থায় মা কি ধূমপান করতেন? হ্যাঁ/ না।
৫. গর্ভকালীন অবস্থায় মা কি এ্যালকোহল অথবা মদ গ্রহণ করতেন? হ্যাঁ/ না। হ্যাঁ হলে নিয়মিত/ অনিয়মিত।
৬. গর্ভাবস্থায় মা কি কোন ভ্যাকসিন/ টিকা নিয়েছেন? হ্যাঁ/ না; হ্যাঁ হলে কি ধরনের.....
৭. গর্ভাবস্থায় মায়ের আবেগ কেমন ছিল? অতি আনন্দ/ আনন্দ / স্বাভাবিক / দুঃখিত/ ভীত।
৮. গর্ভাবস্থায় মা কি X-Ray করেছিলেন? হ্যাঁ / না; যদি করে থাকেন কয়বার?.....
৯. গর্ভাবস্থায় মা কি পচানি খেতেন? হ্যাঁ / না। হ্যাঁ হলে নিয়মিত / অনিয়মিত।
১০. গর্ভাবস্থায় মা কি ছোট খাট অসুখে ভুগেছিলেন? হ্যাঁ / না।
১১. গর্ভাবস্থায় মা কি আঘাত পেয়েছিলেন? হ্যাঁ / না।
১২. গর্ভাবস্থায় মা কি বেশী ভ্রমণ করতেন? হ্যাঁ / না।
১৩. গর্ভাবস্থায় মা কি একধারে বাড়ীর কাজ করতেন? হ্যাঁ / না।
১৪. গর্ভাবস্থায় কিংবা পূর্বক্ষণে মার কি স্ত্রীরোগ সম্পর্কিত কোন অসুখ হয়েছিল? হ্যাঁ / না।
১৫. বাবা-মার রক্তের গ্রুপ কি পরীক্ষা করেছিলেন? হ্যাঁ / না।
১৬. মার গর্ভাবস্থায় শিশুর পিতা কি গুরুতর অসুস্থতায় ভুগেছিলেন? যেমন, জন্ডিস, পক্ষ, ডায়াবেটিস, হাম, টাইফয়েড ইত্যাদি।
১৭. গর্ভাবস্থায় শিশুর পিতা কি নিয়মিত ধূমপান করতেন? হ্যাঁ / না।
১৮. গর্ভাবস্থায় প্রথম তিন মাসের মধ্যে মা কি জন্ডিস, পক্ষ, হাম ইত্যাদি রোগে ভুগেছিলেন? হ্যাঁ / না।
১৯. গর্ভাবস্থায় মার কি কোন প্রকার দুর্ঘটনা ঘটেছিল? হ্যাঁ / না।
২০. গর্ভাবস্থায় মা কি উচ্চ প্রতিষেধক ঔষধ খেয়েছিলেন? হ্যাঁ / না ; হ্যাঁ হলে ইহা কি?
২১. গর্ভাবস্থায় মায়ের স্বাস্থ্য কেমন ছিল? খুব ভাল/ ভাল / মোটামুটি/ খারাপ/ খুব খারাপ
২২. গর্ভাবস্থায় মা কি নিয়মিত শারীরিক চেকআপ করাতেন? হ্যাঁ / না।
২৩. গর্ভাবস্থায় মার কি শরীর চুলকাতো বা জলতো? হ্যাঁ / না।

২৪. গর্ভাবস্থায় মা কি দূষিত পানি পান করতেন? হ্যাঁ / না।
২৫. গর্ভাবস্থায় মা কি মানসিক আঘাত পেয়েছিলেন? হ্যাঁ / না।
২৬. গর্ভাবস্থায় মা কি ভেবেছিলেন যে তার গায়ে খারাপ বাতাস লেগেছিল? হ্যাঁ / না।
২৭. গর্ভাবস্থায় মার কি হাত-পায়ে পানি জমতো? হ্যাঁ / না।

#### পেরিন্যাটাল পিরিয়ড

১. গর্ভবেদনা কতখানি স্থায়ী হয়েছিল?
২. শিশুর জন্ম কোথায় হয়েছিল? বাড়ীতে / হাসপাতালে/ ক্লিনিকে
৩. শিশুর জন্ম কিভাবে হয়েছিল? স্বাভাবিক / সিজারিয়ান / ফরসেপ
৪. নাড়ী কাটার সময় কি ব্যবহার করা হয়েছিল? ফরসেপ না অন্য কিছু?
৫. নাড়ী কখন পড়েছে?
৬. জন্মের কতক্ষণ পর শিশু প্রথম কেঁদেছে?
৭. জন্মের পর শিশুর শারীরিক রং কেমন ছিল?
৮. জন্মের সময় আবহাওয়া কেমন ছিল?
৯. জন্মের পরই শিশুকে কি কি খাওয়ানো হয়েছিল?
১০. জন্মের পরই শিশু কি নিচে পড়ে গিয়েছিল? হ্যাঁ / না।
১১. জন্মের সময় শিশুর মাথাই কি প্রথম বের হয়েছিল? হ্যাঁ / না।
১২. জন্মের পর পরই শিশুর ওজন কত ছিল?
১৩. শিশু কি পরিনত হবার পূর্বেই জন্ম গ্রহণ করেছিল
১৪. জন্মের পর পরই শিশুর মাথা কেমন ছিল? খুব বড় / বড় / স্বাভাবিক / ছোট / খুব ছোট
১৫. জন্মের পর পরই কি শিশুর মাথায় আঘাত লেগেছিল? হ্যাঁ / না; হ্যা হলে এতে কি রক্তপাত ঘটেছিল?
১৬. জন্মের পর পরই কি শিশুর জ্বর হয়েছিল? হ্যাঁ / না। আনুমানিক কত ডিগ্রী জ্বর  $102^{\circ} F$  /  $103^{\circ} F$  /  $108^{\circ} F$  /  $105^{\circ} F$ ? এতে কি ডাক্তারের পরামর্শ নেওয়া হয়েছিল? হ্যাঁ / না।
১৭. জন্মের পর পরই শিশুর কি অতিরিক্ত ঠান্ডা লেগেছিল? হ্যাঁ / না; ঠান্ডা লাগলে কি ডাক্তারের পরামর্শ নেওয়া হয়েছিল? হ্যাঁ / না।
১৮. শীত কালে অতিরিক্ত ঠান্ডার সময় কি ধরনের পরিধেয় বস্ত্র ছিল?

#### পোস্টন্যাটাল পিরিয়ড

১. জন্মের প্রথম ১৫ দিনের মধ্যে শিশু কি নিচে পড়ে গিয়েছিল? হ্যাঁ / না / মনে নেই।
২. জন্মের প্রথম ১৫ দিনের মধ্যে শিশুর কি কোন শারীরিক সমস্যা দেখা দিয়েছিল? হ্যাঁ / না / মনে নেই।
৩. জন্মের প্রথম ১৫ দিন শিশু কি মায়ের দুধ খেয়েছিল? হ্যাঁ / না

৪. জন্মের প্রথম ১৫ দিন শিশু কি ৪/৫ ঘন্টা পরপরই খাবার চেয়ে কেঁদেছে? হ্যাঁ / না / মনে নেই।
৫. জন্মের প্রথম ১৫ দিনের মধ্যে শিশু কি মেনিনজাইটিস, হাম তীব্র জ্বর ইত্যাদি অসুখে ভুগেছিল? হ্যাঁ/ না
৬. জন্মের প্রথম ২ বছরের মধ্যে শিশু কি কোন রকমের ভ্যাকসিন নিয়েছিল? হ্যাঁ/ না।
৭. জন্মের পর পরই শিশুর মাথায় কি আঘাত লেগেছিল? হ্যাঁ / না।
৮. জন্মের প্রথম ১৫ দিন শিশু কি ২/৩ ঘন্টা পর পরই ঘুমে থেকে জেগেছে? হ্যাঁ / না / মনে নেই।
৯. শিশুর ঘুম ভাঙ্গার পর চট করেই আবার ঘুমাতে কি? হ্যাঁ / না / মনে নেই।
১০. শিশু হাত পা ছোড়া-ছুড়ি করতো কি? হ্যাঁ / না / মনে নেই।
১১. চোখের মনি নাড়া চাড়া করতো কি? হ্যাঁ / না / মনে নেই।
১২. জ্বিহ্বা বের করতো কি? হ্যাঁ / না / মনে নেই।
১৩. সারা দিন গড়ে কম পক্ষে ৪৮ মিনিট কেঁদেছে কি? হ্যাঁ / না / মনে নেই।
১৪. শিশু হেচকি তুলতো কি? হ্যাঁ / না / মনে নেই।
১৫. শিশুর প্রথম ১৫ দিনের মধ্যে হেচকি কতক্ষণ স্থায়ী ছিল? হ্যাঁ / না / মনে নেই।
১৬. শিশু শব্দের প্রতি প্রতিক্রিয়া করতো কি? হ্যাঁ / না / মনে নেই।
১৭. শিশু গন্ধের প্রতি প্রতিক্রিয়া করতো কি? হ্যাঁ / না / মনে নেই।
১৮. শিশু স্বাদের (যেমন- মিষ্টি, দুধ) প্রতি প্রতিক্রিয়া করতো কি? হ্যাঁ / না / মনে নেই।
১৯. শিশুর শৈশব কালীন অবস্থায় তার খাদ্যে কি আয়োড়িনের ঘাটতি ছিল? হ্যাঁ / না; এতে চামড়া শুষ্কতা দেখা দিয়েছিল কি হ্যাঁ / না। এজন্য চিকিৎসা করা হয়েছিল কিনা? হলে কি চিকিৎসা?
২০. শিশুর জন্মের পর কি অতিরিক্ত ঔষধ সেবন করানো হয়েছিল? হ্যাঁ / না; হ্যাঁ হলে সে ঔষধের নাম কি?

#### সাধারণ প্রশ্ন:

১. শিশু কত দিনে উপুর হতে শিখেছে?
২. শিশু কত দিনে হামাগুড়ি দিতে শিখেছে?
৩. শিশু কত দিনে বসতে শিখেছে?
৪. শিশু কখন হাঁটতে শিখেছে?
৫. শিশু কত দিনে কথা বলতে শিখেছে?
৬. শিশু কত দিনে শব্দের প্রতি প্রতিক্রিয়া করতে শিখেছে?
৭. শিশু কে কিভাবে বুঝতে পারলেন যে সে প্রতিবন্ধী?
৮. প্রতিবন্ধী শিশুর স্বাস্থ্য সুবিধা কিরূপ?
৯. ডাক্তার পেতে কত দূরে যেতে হয়?

১০. কি ডাক্তার পাওয়া যায়? এম.বি. বি. এস. না অন্য কোন?
১১. ঔষধ কেমন পাওয়া যায়? এবং কতদূরে পাওয়া যায়?
১২. কি ধরনের ঔষধ ব্যবহার করা হয়? হোমিওপ্যাথী/ এ্যালোপ্যাথী/ বাড়ফুক/ আয়ুর্বেদী/  
মানসিক চিকিৎসা
১৩. স্বামী স্ত্রীর মধ্যকার সম্পর্ক কিরূপ?
১৪. বাড়ীতে অতিথী আসলে শিশু কি করে?
১৫. শিশুর ঘুম ঠিক মতো হয় কি না? হ্যাঁ/ না।
১৬. শিশু রেগে গেলে কি জিনিস পত্র ছুড়ে ফেলে? হ্যাঁ/ না।
১৭. শিশু একা থাকলে হাঁসে কিংবা কথা বলে কি ? হ্যাঁ/ না।
১৮. শিশু কি মাঝে মাঝে বাড়ী থেকে হারিয়ে যায়? হ্যাঁ/ না।
১৯. শিশু কি জন্ম সন্তান? হ্যাঁ/ না।

**APPENDIX-IV****Behaviour Check list to classify the cases:**

	Behaviour	1	2	3	4	5
1	Toilet Training	Very good	Good	Moderate	Bad	Very bad
2	Dress wearing abilities					
3	Personal hygiene abilities					
4	Eating abilities					
5	Mathematical abilities					
6	Linguistic abilities					
7	Memory Power					
8	Visual sensation					
9	Auditory sensation					
10	Cutaneous sensation					
11	Olfactory sensation					
12	Gustatory sensation					
13	Developmental stages					
14	Emotion					
15	Drug dependency					

**APPENDIX-V**

**Information of the Mentally Retarded person:**

Name .....

Date of birth ..... Age.....

Gender.....

Address.....

.....

Father's name.....

Age.....Occupation.....Yearly income.....

Educational Qualification .....

**Degrees of mental retardation:**

Level	Clinical type
1. Borderline	1. Down’s syndrome.
2. Mild retardation	2. Cranial anomalies.
3. Moderate retardation	Hydrocephaly. Mycrocehaly
4. Severe retardation	3. Cretinism
5. Profound retardation	4. P.K.U.
	5. Radiation.
	6.Stanted baby
	7. Other group.

**Major illness of the mentally retarded person:**

Age	Description of illness/Disease
Born- 14 days	
15 days - 2 Years	
2 Years - 6 Years	
6 Years- 12 Years	
12 Years - 14 Years	
14 Years - 17 Years	
17 Years - 20 Years	
20+ Years	

**Information about father:**

Name.....living/Dead:.....

Age:.....Educational qualification:.....

Profession: .....

Health: Very good/Good/Average/poor/very poor.

Age at the birth of MR child:

Health at the birth of MR child: Very good/good/Average/poor/very poor.

Immunization at childhood: DPT/Polio/BCG/etc. Yes/No.

Used to make before birth of MR child: Yes/No. Regular/Irr.

Used to alcohol before birth of MR child: Yes/No. Regular/Irr.

Mental illness in family? Yes/No. Who? .....

Blood group: .....

Weight in relation to height: Fat/Medium/Thin/Very thin.

**Performance of the sense organs:**

Organs	Very good	Good	Average	Poor	Very poor
Eye					
Ear					
Nose					
Tongue					
Skin					



**Major illness of the father:**

Age	Description of illness/Disease
Born- 14 days	
15 days - 2 Years	
2 Years - 6 Years	
6 Years- 12 Years	
12 Years - 14 Years	
14 Years - 17 Years	
17 Years - 21 Years	
21 Years - 40 Years	
40 Years - 60 Years	
60 Years - Death	

**Information about mother:**

Name: .....Living/Dead:.....

Age..... Educational qualification.....

Profession:..... Appx. Monthly income.....

Health: Very good/good/average/poor/very poor.

Age at the birth of MR child: .....

Immunization at childhood: DPT/Polio/BCG/etc. Yes/No.

Vaccinated at different time: Cholera/pox/etc. Yes/No.

Used to smoke before birth of MR child: Yes/No, Regular/Irr.

Use to alcohol before birth of MR child Yes/No. Regular/Irregular.

Mental illness in family? Yes/No. Who? .....

Blood group:

Weight in relation to height: Fat/Medium/Thin/Very thin.

**Performance of the sense organs:**

Organs	Very good	Good	Average	Poor	Very poor
Eye					
Ear					
Nose					
Tongue					
Skin					

**Major illness of the mother:**

Age	Description of illness/Disease
Born- 14 days	
15 days - 2 Years	
2 Years - 6 Years	
6 Years- 12 Years	
12 Years - 14 Years	
14 Years - 17 Years	
17 Years - 21 Years	
21 Years - 40 Years	
40 Years - 60 Years	
60 Years - Death	

**Questionnaire:****Prenatal period:**

1. Diet of the mother during pregnancy: Very good/good/poor/very poor.
2. Serious disease/illness during pregnancy period like fever, Pneumonia, Diabetes etc.
3. Deficiency of nutrients during pregnancy like protien, Vitamin, Carbohydrate etc.
4. Whether the pregnant mother had to take smoke regularly? Yes/No.
5. Had the mother intake alcohol or wine during pregnancy? Yes/No. Regular or irregular.
6. Whether the mother had to take Vaccine during pregnancy, Yes/No. If yes what is it?
7. Emotion of the mother during pregnancy. Excess joyful/Joyful / sorrow ness/ afraid.
8. Whether X-Ray was done during pregnancy period? Yes/No. If Yes, how times had to take it?
9. Had the mother intake home made wine during pregnancy? Yes/No.
10. Minor/Chronic illness during pregnancy period? Yes/No.
11. Injury/ hurt during pregnancy? Yes/No.
12. Traveled too much during preg period? Yes/No.
13. Daily household works continued during pregnancy? Yes/No.
14. Gynecological Disease during or just before the pregnancy period? Yes/No.
15. Whether blood grouping of the couple was done before pregnancy? Yes/No.
16. Whether the father of the MR child had to suffer from serious illness during the pregnant mother like Jaundice, Pox, Diabetes. Measles, typhoid etc.
17. Whether the father of the MR child had to take smoke regularly? Yes/No.
18. Whether the mother had to suffer from Jaundice, pox, Measles etc. during the first 3 months during pregnancy?
19. Whether the mother had to take any accident? Yes/No.
20. Whether the mother had to take high antibiotic medicine? Yes/No. What is it?
21. Health condition of the mother during pregnancy? Very good; good, normal bad, very bad.

22. Whether the mother had to take physical check up regularly?  
Yes/No.
23. Did the pregnant mother have itching/ burning in body during pregnancy? Yes/No.
24. Whether the mother had to drink dirty water during pregnancy?  
Yes/No.
25. Whether the mother had to get mental shock during pregnancy?  
Yes/No.
26. Does the mother think that she comes in contact with some bad wind during pregnancy? Yes/No.
27. Did the mother have swollen hand/leg during pregnancy? Yes/No.

**Perinatal period:**

1. How time was long duration of labour pain? ..
2. What kind of birth process? Normal/ Cesarean/ Foresafe.
3. Where was the child born? Residence/clinic/ hospital.
4. What was used for cutting umbilical cord? Foresafe or another.
5. When the dried umbilical cord fell down?
6. When the infant had first cry?
7. What was the colour of the newborn baby?
8. What was the weather at the time of birth?
9. What was given to the new born to eat?
10. Did the newborn fell down?
11. Whether the newborn come out in headfirst position? Yes/No.
12. What was the weight of the new born?
13. Was the child born before matured? Yes/No.
14. What was the head size of the newborn baby? Very big/big/normal/small/very small.
15. Whether the new born was injured on head? Yes/No. and bleeding at this? Yes/No.
16. Whether the new born had to suffer from fever? Yes/No. Approximately 102<sup>0</sup>F, 103<sup>0</sup>F, 104<sup>0</sup>F, 105<sup>0</sup>F. Had doctor's advice to take at this? Yes/No.
17. Whether the new born had cold? Yes/No. Had doctor's advice to take at this? Yes/No.
18. What was the dress during very cold in winter?

**Post natal period:**

1. Did the infant fell down within first 15 days? Yes/No/Can't remember.
2. Whether the infant had physiological problem during first 15 days from birth? Yes/No/Can't remember.
3. Did the infant had breast milk during first 15 days from birth? Yes/No/Can't remember.
4. The infant had to cry for food after every 4.5 hours during first 15 days? Yes/No/Can't remember.
5. Whether the child had to suffer from diseases like Meningitis, measles, high fever etc. During the first 14 day? Yes/No.
6. Whether the child had to take any vaccine during the first two years? Yes/No.
7. Whether the child had to take injury in head after birth? Yes/No.
8. During the first 15 days did the infant wake-up from sleep after every 2-3 hours? Yes/No/Can't Remember.
9. Did the infant enter into sleep immediately after woke-up from sleep? Yes/No/Can't remember.
10. Did the infant showed motor movements? (i. e. arm/leg etc.) Yes/No/ Can't remembers.
11. Infant had papillary movements? Yes/ No/ Can't remembers.
12. Infant had tongue movements? Yes/ No/ can't remembers.
13. Did the infant cry at least 48 minutes or the average through the day? Yes/ No/ can't remembers.
14. Did the infant have hiccough? Yes/ No/ can't remembers.
15. What was the duration of the hiccough in the first 15 days?
16. Infant showed reaction sound? Yes/ No/ can't remembers.
17. Infant showed reaction smell? Yes/ No/ can't remembers.
18. Infant showed reactions to taste? Yes/ No/ can't remembers.
19. Iodine deficiency of the childhood period? Yes / No. Was the skin dry at this? Yes / No. What is the treatment for this or not?
20. Excess or drug was taken after birth? Yes/No, What is the name of the drug?

**General questions:**

1. When the baby learnt to turn?
2. When the baby learnt crawling?
3. When the baby learnt sitting?
4. When the baby learnt walking?
5. When the baby learnt talking?

6. When the baby to react towards sound?
7. How did you understand that the baby is handicapped?
8. What age the health facilities of the MR child?
9. How far come from home to meet the doctor?
10. What kind the doctor? M.B.B.S or another?
11. How are medicine facilities in the locality? And how far is it?
12. What kind of medicine use? Homeopathic or Allopathic, faith healers, Ayurvedic or Psychiatry?
13. What type of relation between husband and wife?
14. What the MR child do when guests come to your house?
15. Does the baby sleep properly? Yes/ No.
16. Does the baby throw items when angry? Yes/No.
17. Does the baby laugh or talk when he stays alone? Yes/No.
18. Does he forgets to come back whenever goes outside the house? Yes/No.
19. Is the baby twin? Yes/No.

**APPENDIX-VI****LIST OF THE TRIBAL SUBJECTS**

<b>SL No.</b>	<b>Name Father Mother</b>	<b>Village Union Upazilla</b>	<b>Age Sex</b>	<b>Major Problems</b>
1.	Sumon Murmu Nishu Murmu Sumi Hasda	Chaolia Vognagar Birgang	5 Male	
2.	Rubina Hasda Late-Rati Hasda Sushila Marandee	Singara Vognagar Birgang	6 Female	
3.	Loghiram Hambram Ranta Hambram Pana Hasda	Singara Vognagar Birgang	20 Male	
4.	Priti Murmu Moshesh Murmu Shalomina Tudu	Singara Vognagar Birgang	8 Female	
5.	Sriti Murmu Moshesh Murmu Shalomina Tudu	Singara Vognagar Birgang	4 Female	
6.	Dhalui Marandee Sreemat Marandee Sonamoni Hasda	Singara Vognagar Birgang	26 Male	
7.	Sumon Basra Dumka Basra Late-Sona Marandee	Singara Vognagar Birgang	6 Male	
8.	Mina Hambram Sakila Hambram Maoli Murmu	Bochapur Nijpara Birganj	4 Female	
9.	Biplob Hambram Sakila Hambram Maoli Murmu	Bochapur Nijpara Birganj	5 Male	
10.	Mondal Tudu Chamak Tudu Pana Murmu	Chota Bochapur Nijpara Birganj	19 Male	
11.	Champa Marandee Babul Marandee Panu Hasda	Bochapur Nijpara Birganj	6 Female	



12.	Bizun Kisku Late, Dadhu Kisku Sanili Marandee	Bochapur Nijpara Birganj	32 Male	
13.	Sumi Hasda Simol Hasda Fulmoni Soren	Sultanpur Nafanagar Bochaganj	5 Female	
14.	Kaha Marandee Khajin Marandee Jalamoi Tudu	Dhananjoypur Rangaon Bochaganj	18 Male	
15.	Rabin Soren Chunda Soren Bulbuli Hembrame	Moheshpur Rangaon Bochaganj	20 Male	
16.	Crina Soren David Soren Som Soren	Moheshpur Rangaon Bochaganj	18 Female	
17.	Robi Hambram Mati Hambram Bahamoni Soren	Moheshpur Rangaon Bochaganj	2 Male	
18.	Loghiram Soren Babulal Soren Surujmoni Soren	Sultanpur Nafanagar Bochaganj	28 Male	
19.	Suman Soren Loghiram Soren Marina Murmu	Sultanpur Nafanagar Bochaganj	10 Male	
20.	Sabastia Hasda Torka Hasda Hapan Murmu	Bochaganj	21 Male	
21.	Looghi Murmu Mongal Marandee	Bochaganj	8 Female	
22.	Bhaban Tudu Hapan Tudu Parveen Murmu	Gobindapur Rangaon Bochaganj	13 Male	
23.	Jahon Kore Kubraj Kore	Gobindapur Rangaon Bochaganj	5 Male	
24.	Robin Soren Chunda Soren Bulbuli Soren	Moheshpur Rangaon Bochaganj	35 Male	

25.	Ripan Soren Sanjila Soren Talami Tudu	Sultanpur Nafanagar Bochaganj	5 Male	
26.	Oshes Marandee Jano Maradee Shipra Hasda	Chakbashudab- pur Dawlotpur Bochaganj	9 Male	
27.	Dati Soren Karu Soren Maru Hembrom	Dhananjoypur Rangaon Bochaganj	38 Female	
28.	Jozzo Soren Karu Soren Maru Soren	Dhananjoypur Rangaon Bochaganj	34 Male	
29.	Labdhu Soren Debu Soren	Dhananjoypur Rongaon Bochaganj	30 Male	
30.	Budhin Marandee Khajin Marandee Jalamoi Tudu	Dhananjoypur Rangaon Bochaganj	26 Female	
31.	Kati Marandee Khajin Marandee Jalamoi Tudu	Dhananjoypur Rangaon Bochaganj	15 Female	
32.	Mino Tudu Hapan Tudu Parvin Murmu	Gobindapur Rangaon Bochaganj	20 Female	
33.	Lughimoni Maravdee Jatan Marandee Chita Hasda	Madhabpur Bochaganj	8 Female	
34.	Bodin Soren Chanda Soren Bulbuli Hambram	Moheshpur Rangaon Bochaganj	25 Female	
35.	Supal Baski Samram Soren Lili Baski	Nafanagar Bochaganj	7 Male	

36.	Samiul Soren Tala Soren Sumi Marandee	Nafanagar Bochaganj	5 Male	
37.	Subash Marandee Boka Marandee Apanmi Soren	Nafanagar Bochaganj	8 Male	
38.	Rut Murmu Shazila Murmu Batia Hambrom	Sultanpur Nafanagar Bochaganj	22 Female	
39.	Bijoy Baski Basaki Sumiram Soren	Sultanpur Nafanagar Bochaganj	3 Male	
40.	Bijun Soren Loghiram Soren Talami Tudu	Sultanpur Nafanagar Bochaganj	3 Male	
41.	Sutu Murmu Late-Pradhan Murmu Sonmani Hasda	Sultanpur Nafanagar Bochaganj	17 Male	
42.	Sukal Hasda Ranta Hasda Mongali Tudu	Sultanpur Nafanagar Bochaganj	10 Male	
43.	Bahamoni Hasda Ranta Hasda Mongali Tudu	Sultanpur Nafanagar Bochaganj	6 Female	
44.	Ram Murmu Lala Murmu Radhoni Hasda	Mukundapur Kaharole	6 Male	
45.	Mangal Murmu Chawdhuri Murmu Bahamoni Hasda	Mukundapur Kaharole	6 Male	
46.	Supal Hasda Late- Ram Hasda Moni Kisku	Tarala Rasulpur Kaharole	14 Male	
47.	Huda Murmu Khanda Murmu Varonika Habram	Tarala Rasulpur Kaharole	8 Male	
48.	Som Tudu Robin Tudu Monika Baski	Tarala Rasulpur Kaharole	9 Male	

49.	Bishu Murmu Lada Murmu Tamia Hasda	Kukundapur Kaharole	33 Male	
50.	Som Soren Rubi Soren Sonath Murmu	Kukundapur Kaharole	4 Male	
51.	Budhin Marandee Dhama Marandee Bahamoni Hasda	Moheshpur Dabor Kaharole	10 Female	
52.	Matis Hasda Dhiren Hasda Sita Tudu	Mukundapur Kaharole	5 Male	
53.	Sita Murmu Lala Murmu Randhoni Hasda	Mukundapur Kaharole	6 Female	
54.	Moshesh Marandee Khoka Marandee Rojina Hambrom	Tarapur Targaon Kaharole	13 Male	
55.	Bishu Kisku Shakram kisku Shushil Soren	Tarapur Targaon Kaharole	30 Male	
56.	Rojina Murmu Mongal Murmu Dinomoni Soren	Tarapur Targaon Kaharole	7 Female	
57.	Supal Kisku Showmi Kisku Baha Soren	Jabarhat Pirganj	16 Male	
58.	Bablu Marandee Kalicharan Alisha Soren	Jangaon Bhomradaha Pirganj	6 Male	
59.	Somo Murmu Khogen Murmu	Barabari Jabarhat Pirganj	32 Male	
60.	Nilmoni Kisku Late- Bini Kisku Chumki Murmu	Barabari Jabarhat Pirganj	4 Female	
61.	Baburam Murmu Soma Murmu	Barabari Jabarhat Pirganj	12 Male	

62.	Anjila Kisku Barnabash Kisku Luchia Tudu	Boldiara Jabarhat Pirganj	7 Female	
63.	Ziaskal Tudu Bidhan Tudu Hapan Marandee	Boldiara Jabarhat Pirganj	6 Male	
64.	Mongal Murmu Kanthna Murmu Marangi Murmu	Jabarhat Pirganj	16 Male	
65.	Domnika Soren Mukul Soren Sumi Hasda	Jabarhat Pirganj	35 Female	
66.	Sraboni Hasda Dinu Hasda Shimul Murmu	Jabarhat Pirganj	4 Female	
67.	Sanjili Marandee Shusil Marandee Luna Murmu	Jabarhat Pirganj	2 Female	
68.	Bodhini Marandee Suhan Marandee Minoti Soren	Jangaon Bhomradaha Pirganj	5 Female	
69.	Sushil Hasda Gobin Hasda Suruz Hambrom	Doshtompur Shangaon Pirganj	12 Male	
70.	Bikash Hasda Tala Hasda Lalmoni Murmu	Doshtompur Shangaon Pirganj	3 Male	
71.	Anzalina Kisku Barnabash Kisku Luchia Tudu	Doshtompur Shangaon Pirganj	7 Male	
72.	Budhan Hambram Dana Hambram Sanjili Murmu	Doshtompur Sangaon Pirganj	7 Male	

73.	Amla Hasda Hasra Hasda	Dostampur Jabarhat Pirganj	6 Female	
74.	Sewli Hasda Chunu Hasda Rosunful Murmu	Dostampur Sangaon Pirganj	6 Female	
75.	Marotina Marandee Hasra Marandee Nilmoni Hasda	Pirganj Dostampur Sangaon	6 Female	
76.	Jogash Hasda Soniram Hasda Rani Murmu	Dostampur Sangaon Pirganj	7 Male	
77.	Prafulla Baski Dinesh Baski Olfobala Murmu	Dostampur Sangaon Pirganj	8 Male	
78.	Ripon Soren Ragda Soren Lalmoni Murmu	Dostampur Sangaon Pirganj	7 Male	
79.	Sumati Hasda Soniram Hasda Rani Murmu	Dostampur Saangaon Pirganj	8 Female	
80.	Soniram Hasda Sobin Hasda Fulmoni Soren	Dostampur Sangaon Pirganj	7 Female	
81.	Maloti Murmu Shiba Murmur Samia Hasda	Dostampur Sangaon Pirganj	8 Female	
82.	Marita Marandee Hasra Marandee Nilmoni Hasda	Dostampur Sangaon Pirganj	6 Female	
83.	Mati Murmu Matu Murmu Talami Tudu	Madhabpur Bairchuna Pirganj	15 Female	

**APPENDIX-VII****List of the Non- tribal subjects.**

Sl. No.	Name & Fathers Name	Thana	Age	Major Problems
1.	Md.Mokbul Korim Huq Alaya Khatun	Nafanagar Bochaganj	24 Male	
2.	Mominul Islam Md. Malak Jahanara Khatun	Dawlotpur Nafanagar Bochaganj	18 Male	
3.	Monirul Islam Abdul Kalam Azad Momana Khatun	Nafanagar Bochaganj	2 Male	
4.	Asa Aminul Haq Bali	Nafanagar Bochaganj	4 Female	
5.	Rubal Kashem Ali Rokshana Begum	Nafanagar Bochaganj	13 Male	
6.	Mukul Muniruddin Bedli Begum	Vaturia Haripur	24 Male	
7.	Suman Kamal Sahina Akhtar	Vaturia Vaturia Haripur	12 Male	
8.	Yasmin Md.Hasan Ali Parul	Vaturia Vaturia Haripur	15 Female	
9.	Md. Awal Halim Mondal Irin Parvin	Vaturia Vaturia Haripur	10 Male	
10.	Sudeb Roy Kaluram Roy Dhanassari Rani	Radhikapur Bhomradaha Pirgang	15 Male	
11.	Md. Manik Md. Sahiruddin Samana Khatun	Bhomradaha Pirganj	17 Male	

12.	Md. Safiruddin Md. Jasimuddin Miss. Fatima Khatun	Radhikapur Bhomradaha Pirganj	20 Male	
13.	Miss. Sahina Akhtar Md. Samsul Haque Rozina	Kusharigaon Bhomradaha Pirganj	14 Female	
14.	Arun Chandra Durgash Chandra Dipti Rani	Kusharigaon Bhomradaha Pirganj	5 Male	
15.	Md. Shahid Md. Tulaboddin Miss. Momana Khatun	Kusharigaon Bhomradaha Pirganj	8 Male	
16.	Abdul Hakim Yakub Ali Halima Khatun	Kusharigaon Bhomradaha Pirganj	25 Male	
17.	Chilka Yakub Ali Halima Khatun	Kusharigaon Bhomradaha Pirganj	15 Female	
18.	Md. Delwar Hossain Amirul Islam Salina Begam	Kusharigaon Bhomradaha Pirganj	10 Male	
19.	Md. Azad Nurul Islam Azita Khatun	Vakura Pirganj	10 Male	
20.	Khataza Md. Shafiruddin Shahita Khatun	Bhomradaha Pirganj	25 Female	
21.	Saminur Islam Khairat Ali Aisha Khatun	Sengaon Pirganj	17 Male	
22.	Mamunur Rashid Md. Oazed Moriam Begum.	Sindunna Sengaan Pirganj	18 Male	
23.	Farizul Rahman Samsul Haq Nurzahan khatun	Vabra Hajipur Pirganj	13 Male	



24.	Nunihar Khatun Rahmatulla Saleha	Naranpur Pirganj Pirganj	15 Female	
25.	Md.Hakim Yushuf Ali Moklesha	Kusharigaon Bhomradaha Pirganj	15 Male	
26.	Budhu Md.Kalua Dubunnesha Begum	Naranpur Pirganj	22 Male	
27.	Sadekul Islam Samsul Haq Mahfuza Begam	Naranpur Pirganj	25 Male	
28.	Md. Monsur Ali Ritu Md. Rafaka Khatun	Naranpur Pirganj	29 Male	
29.	Sree Chandan Anil Kumar Mira Rani	Naranpur Pirganj	22 Male	
30.	Rumi Begum Kalim udin Alma Khatun	Konnait Jabarhat Pirganj	22 Female	
31.	Tultuli Razpati Roy Fulmoni Rani	Uzzalkota Khangaon Pirganj	29 Female	
32.	Arpana Rani Dilip Kumar Kobita Rani	Biswaspur Khongaon Pirganj	2 Female	
33.	Mawsumi Rani Madhab Chandra Aruna Rani	Biswaspur Khongaon Pirganj	6 Female	
34.	Sinzo Rani Dighal Chandra Fulmoni Bewa	Biswaspur Khongaon Pirganj	26 Female	
35.	Md. Inul Haq Chamta Md. Chamti	Vakura Pirganj	28 Male	
36.	Taslina Md. Moslam Jorina Khatun	Khidragorgaon Hajipur Pirganj	25 Female	

37.	Jali Tamatol Nunihar	Bohara Hizipur Pirganj	24 Female	
38.	Miss. Chali Mokless Porima Khatun	Gargaon Pirganj	18 Female	
39.	Md. Bablu Tazmul Saleha Khatun	Vakura Pirganj	23 Male	
40.	Habla Panabula Pansi Khatun	Chandipur Pirganj	28 Male	
41.	Monsur Ali Karkaru Shahida Khatun	Chandipur Pirganj	30 Male	
42.	Sakaru Kalimuddin Shamima Khatun	Pirganj Satia Hajipur	25 Male	
43.	Moksad Asharu Khataja Begum	Satia Hajipur Pirganj	20 Male	
44.	Belal Sirazul Islam Parul Begum	Ronria Jabarhat Pirganj	10 Male	
45.	Ashraful Late.Dobiruddin	Bhomradana Pirganj	20 Male	
46.	Lipton Nurul Amin Muslima Khatun	Chandpur Khangaon Pirganj	23 Male	
47.	Dristi Dobirat Ali Shokhina Begam	Jashipara Khangaon Pirganj	18 Male	
48.	Hiran Roy Goranga Prashad Mira Rani	Chandpur Khangaon Pirganj	23 Male	
49.	Rozina Khatun Akimuddin Khadija	Jabarhat Pirganj	15 Female	

50.	Tajim Ali Muniruddin Rini Begum	Jabarhat, Pirganj	10 Male	
51.	Rezuanul Hajab uddin Nazma Khatun	Jabarhat Pirganj	10 Male	
52.	Kartik Chandra Jotish Chandra Krisna Bala	Kornait Jabarhat Pirganj	8 Male	
53.	Aisha Khatun Shahiruddin Amina Khatun	Kornait Jabarhat Pirganj	15 Female	
54.	Akul Chandra Pulin Chandra Parun Rani	South- Maloncha Jabarhat Pirganj	7 Male	
55.	Shirin Akhtar Md. Sahiruddin Samana Khatun	Bhomradaha Pirganj	9 Female	
56.	Farida Khatun Habibar Rahman Aisa Khatun	Bhomradaha Pirganj	21 Male	
57.	Momtajuddin Akimuddin Deluara	Chandoria Jabarhat Pirganj	22 Male	
58.	Jafar Naimuddin	Kasabilpara Kasaranigangj Pirganj	12 Male	
59.	Sapna Rani Dinesh Chandra Bina Rani	Kusharigaon Bhomradaha Pirganj	8 Female	
60.	Miss. Anari Walid Tahmina Begum	Vakura Pirgoanj	22 Female	
61.	Anishur Rahman Md.Ali Sharifa Begam	Sengan Pirgonj	26 Male	
62.	Nazma Khatun Abdul Bashed Sufia Begam	Kusharigaon Bhomradaha Pirgonj	27 Female	

63.	Md.Mizanur Rahman Dablu Md. Jabeda Khatun	Gargaon Pirgonj	25 Male	
64.	Hablu Ramzan Ali Karima Khatun	Khidragorgaon Hajipur Pirgonj	18 Male	
65.	Arif Mondal Anwarul Mondal	Kasamandalpara Kasaraniganj Pirgonj	11 Male	
66.	Ushadrik Roy Krisna Roy Zalzolibala	Katihar Ranisankoil	22 Male	
67.	Nikhil Chandra Subas Ashnibala Rani	Katihar Ranisankoil	28 Male	
68.	Chamtu Dutu	Vandara Hosangaon Ranisankoil	30 Male	
69.	Vitlu Kumar Sunil Roy Sokobala Rani	Bachair Ranisankoil	25 Male	
70.	Md. Riazul Md. Ali Husna Ara	Bachair Ranisankoil	25 Male	
71.	Bawram Asanikanta Roy Bimala Rani	Bishnapur Ratore Ranisankoil	5 Female	
72.	Rostam Rahimuddin Kulsum	Vandara Husangaon Ranisankoil	5 Male	
73.	Akram Samsul Haque Sheuly Khatun	Vandara Husangaon Ranisankoil	13 Male	
74.	Aisa Khatun Pashiruddin Rahena Khatun	Vandara Husangaon Ranisankoil	15 Female	
75.	Ramzan Ali Pashiruddin Rahena Khatun	Vandara Husangaon Ranisankoil	29 Male	

76.	Md. Jakir Md. Jahir Shafali Begum	Gogor Lehemba Ranishankoil	22 Male	
77.	Miss. Halima Md. Jahir Aklima	Gogor Lehemba Ranishankoil	20 Female	
78.	Yakub Ali Bashed Ali M. Nihar	Patuapara Lehemba Ranishankoil	15 Male	

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## Certificate

This is to certify that Mr Md. Solaiman Ali, Research Fellow of the Institute of Biological Sciences, Rajshahi University, worked under my supervision. His thesis entitled **Biological factors of Mental Retardation among the tribal population in Dinajpur** may be submitted for examination.

*A. Hasan*  
27-8.2003  
Professor Anwarul Hasan  
Supervisor

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