CHAPTER VII

DISCUSSION
DISCUSSION

Early intervention is a term that encompasses a wide range of experimental, educational, therapeutic and training procedures and supportive experiences. The present study has focused on the effect of early intervention on the development of 25 mentally retarded children and their comparison with those without intervention. Here experimental group is comprised of 25 mentally retarded children and the control group consisted of 24 children who had not taken specialised therapy. The study has intervention and therapy span of two years of period as evident in the observation. However, the result at the end of one year was also considered to check the efficacy of the training. The significant findings are presented in (Figures - 65 to 70).

At the end of study (two years) the analysis of the data was in confirmation with the hypotheses — 1, 2, 3 (H₁, H₂, H₃, Chapter - IV).

1. With respect to H₁ and H₂ the statistical comparison of the pre and post findings of the control and experimental groups clearly indicated the increase in Developmental Quotient (D.Q.) and Social Quotient (S.Q.) of the experimental group. At the same time there was decline in D.Q. and S.Q. of the children from the control group (Figures - 68, 69).

2. In respect of H₃, early intervention programme had the most positive impact on the functional skills (motor, cognitive, communication, vocational skills) as demonstrated in the experimental group (Figure - 70).
3. In respect to $H_4$, $H_5$, $H_6$ the observations made by therapist, social worker and psychologist throughout the follow-up study were taken into account. Though there was no measurement scale or statistical analysis to quantitatively evaluate emotional, psycho-social and personal problems, but most informal qualitative change was noticed. Thus, the favourable response on parent study was observed. It was also found helpful in some cases, where genetic counselling could be possible in planning the birth of their second child.

**INTERVENTION STRATEGIES FOR HIGH-RISK INFANTS IN INDIA AND ABROAD:**

As mentioned earlier in introduction (Chapter-I), infant stimulation distinguished programmes emerged on the western horizon in only last decade. Although the earlier studies were confirmed to educationally improverised and socio-economically deprived children considered as "High-Risk", the biologically impaired children received attention in the later period. A fairly convincing evidence supported the efficacy of early intervention for potentially normal children of the poor, however the same model may not be effective for the organically mentally retarded children (Piper and Pless et al. 1980\(^{40}\), Browder 1981\(^{8}\), Simeonsson et al. 1982\(^{50}\)).

Some of the literature on early intervention for the retarded (Piper and Pless et al. 1980\(^{40}\), Ferry 1981\(^{19}\)) had been challenged on theoretical grounds (Goodman et al. 1984\(^{23}\)) and on neurological grounds
few studies have analysed the effectiveness of intervention programmes in general or how child characteristic (etiology, sex, age, social status, I.Q.) differentially predict outcomes. Farran (1988) excellently published a decade review on effects of intervention with disadvantaged and disabled children during the period 1977 to 1986. Evaluation services for infants with specific disabling conditions had been criticised for methodological shortcomings.

Dunst and Rheingrover (1982) reviewed a set of 49 studies of programme for children with organic impairment under 3 years of age with either pre-experimental or non-equivalent control groups. Similar to this, Simeonsson et al. (1982) also concluded that the "large majority of studies examined do not provide the type of evidence needed to support the contention that early intervention is efficacious with organically impaired children." The lack of supportive evidence was the result of methodological flaws in the research rather than of programmatic failure. Sandow et al. (1981) who assessed the effects of a three years intervention programme found no differences between experimental groups who received different level of intervention, but that both groups attempted higher levels of performance compared to a control group. Their study was limited to home intervention with parents of severely subnormal pre-school children.

Conventional cognitive measures indicative of intelligence and psychometric properties have limited utility for children under the age of two years. They
are particularly inappropriate for the evaluation of youngsters with motor impairment who are unable to demonstrate their true cognitive abilities on the tests relying so heavily on motor skills (Johnson, 1982, Shonkoff, 1983).

It was therefore, the objective of the present study to demonstrate the efficacy of early intervention through reliable methodological techniques. The attempt was also made to maintain different comparisons (viz. [1] Pre and Post, [2] Experimental and Control, [3] Different follow up period such as 1 year and 2 years), as can be evident from the various observations illustrated earlier.

INDIAN SCENERIO:

As mentioned earlier, the research on mental retardation, in India is more confined towards the epidemiological work. The concept of educational curriculum is observed only by a few voluntary organisations in the past. The awareness of education and rehabilitation at the policy and health level are emerging only in recent years. This is also mainly supported by the medical faculties having the interest in early detection and assessment/evaluation. Such efforts along with the services are noticed in big metropolitan cities in India. Therefore, a large sector of socio-economically deprived population in rural as well as in urban areas is not benefitted by the least educational services.

In such situation it is obvious that the early detection at the infant level followed by early inter-
vention is far out of the reach of the common man. It is therefore empirical that one does not find the research oriented programmes and the further studies to check their efficacy.

The only noticeable observation on the positive role of early intervention was offered by social organisations and off late by Thakur Hari Prasad Institute, The Association for the Welfare of the person with Mental Handicap, and National Institute for Mentally Handicapped (Refer Chapter - III). However, to the best of our knowledge, the systematic, scientific approaches of such studies have not been published. Hence, throughout this study, the help of the investigations and analytical data published abroad is taken into consideration, despite the vast differences in cultural, social, racial and ethnic background. The control group had therefore offered the excellent stable background reflecting the importance of the present study.

EFFICACY OF EARLY INTERVENTION

The overall findings of the present study indicated that the early training given to the experimental group reflected the better outcomes in different developmental areas as compared to the children who received no intervention. This can be further discussed on the basis of the current observations. It could be also witnessed that the pre and post comparisons within one year had revealed faster rate of improvement compared to the progress noticed in the second year. The contributing factors were the first time environmental exposure and integration & the guided
efforts of the therapist. At the same time the tendency towards stabilization of the physical and mental growth was occurred in the second year of progress. Since the present study was a vigorous intervention with inbetween evaluation, such observation could be possible. However, there was paucity of such important evidence in the available literature.

MENTAL DEVELOPMENT:

The comparison of the pre and post values of mental age in experimental and control groups is seen in Figure - 65. It is evident from this results that there was an increase in the mean value of both the groups. This could be contributed to the fact that during the critical developing period (till 5 years of age) mentally retarded children also progress like normal children in all aspects, but at their own slow progress rate. However, on statistical comparison the mean value of the experimental group was found to be significantly higher (P < 0.001), than that of the control group. This reflected the efficacy of the highly individualised and scientific programme of the intervention. It also stressed that the parental counselling followed by the parental involvement is the most influential factor in development of mentally retarded children at an early age.

As can be seen from the Figure - 65 the mental age of the control group was also increased, but the value of D.Q. was found to be reduced (Figure - 68). This peculiar observation can be explained by the slow rate of progress in children of the control
group in the absence of any stimulative factors. Conversely, the children from the experimental group had maintained their rate of progress, and to our surprise, in some children it was rather fast. This was contributed to the effect of intensive training which was evident enough to reflect the increase in mean value of D.Q. after two years of period. The statistical comparison of the post findings of the control and experimental group confirmed this significantly higher ($P < 0.001$) difference. It is relevant at this juncture, to discuss the findings of the present study in relation to the similar data reported in the literature.

Although there have been numerous reviews of study on early intervention services, most have focused on programme designed for socio-economically disadvantaged pre-schoolers (Bronfenbrenner, 1974; Lazer and Darlington, 1982; Ramey and Bryant, 1983). Earlier there was enthusiasm for the efficacy of intervention programmes, boosting I.Q. scores of low-income minority children (President Committee on mental retardation, 1973). Evaluations of services for infants and toddlers with specific disabiliating conditions on the other hand have been conducted less frequently and have been criticized for methodological short coming.

Goodman et al, (1984) offered some encouraging results, similar to ours on early intervention with retarded children. The progress of 35 retarded children attending a highly specialized treatment programme was compared with that of 36 control children of
similar age, social background and I.Q. On re-evaluation after an average of 1 - 4 years, the treatment children had gained 8 - 10 I.Q. points compared to 0.8 in the contrast group. These results are in agreement with the findings of the present study.

There are number of reviews and meta-analysis on early intervention or some times referred as early childhood education. There are various approaches to reviewing efficacy literature, the latest of which involves the meta-analytic technique. It calculates the "effect-sizes" for studies and then adding the effects of experimental children across all programmes and comparing them to the effects for control (or in the absence of control, comparing post-test scores to pre-test scores). The meta-analytic reviews were described by the Early Intervention Research Institute at Utah State University. A compiled data base including published articles and presented papers offered a conclusion about the effects of programmes for children with disabilities (Casto and Mastopieri 1986) and disadvantaged children (Casto and White, 1985). The immediate increase by 6 to 7 points difference in I.Q. was the common finding and not to be long lasting.

There are very few studies of intervention efforts with either disabled or disadvantaged children that are scientifically valued to summarize (Dunst and Snyder, 1986; Simeonsson, 1985). However, they are all we have to work with at the moment. It is reported by McCall et al. (1972), Vandeveer and Schweid (1974), Goodman and Cameron (1978) that the
overall stability of I.Q. among the control group is a surprising feature at early age in long term follow-up studies.

What emerged is that the only pre-existing condition which seems to be at all related to I.Q. change is neglect or deprivation (Goodman et al. (1984)^23.

SOCIAL DEVELOPMENT:

As can be seen from the observations of the present study, the primary aim was not on developmental quotient but also on the social development and social competency of the mentally retarded children. There was clear indication of increase in the social age of both control and experimental groups compared to their initial scores. This was more evident when statistically significant higher social age was observed compared to the control group ($P < 0.001$). It is necessary to mention here that the end result was reflected in the decrease in S.Q. of the control group but the increase in S.Q. of the experimental group (Figure 69). The importance of such a social development has not probably received any careful attention in the past. In our opinion the assessment and evaluation of social development using the best available measures place an important role in adaptive and independent behaviour than the D.Q./I.Q. which generally encounters academic skills.

Reviews on the statistical findings similar to that of the present study were hardly reported in the literature. However, the mention must be made of the study by Ramey and Bakerward, (1982)^42 in the
area of children's social skills; experimental group children were found to be more socially confident (as measured by the infant behavioural record of the Bayley) than were control children at 6, 12 and 18 months of age. Ferran et al (1980) also found that the experience of participating in the intervention programme helped to make experimental group children more active and effective in their interactions with their mothers than were the children in the control group. The findings of the present study on social development also support this view and recognise its specific role in up-liftment of high-risk cases. On the other hand, children with major disabilities may never function completely within the normal range across a number of behavioural domains, but there are data to suggest that such disabled children can be assisted in becoming more adaptive and independent (Bricker, Bailey and Bruder, 1984; Simeonsson, Cooper and Scheiner, 1982).

MOTOR SKILLS:

Motor skills evolve in a sequential pattern in normal development. They are only momentarily acknowledged as they emerge in a growing child. But for children with developmental disorders of neurophysiological origin, the achievement of each or even one of these motor milestones can be monumental accomplishment.

On Bayley Scale of Infant Development the motor age was assessed and it was observed to be increased in both, the experimental and control groups. However,
there was mild significant increase in the control group \((P<0.01)\) compared to highly significant difference in the experimental group children \((P<0.001)\) (Figure - 67). In the absence of any sensory input the mild degree of gain in motor skills noticed in the control group was probably the result of physical maturity. While the experimental group reflected not only the physical maturity in the due course but also the high motivation, intensive efforts, training and practice included in the programme.

Unlike the so far above mentioned results on social age, social quotient and developmental quotient, there was only moderately significant increase in the mean value of motor age which was noticed while comparing the control and experimental groups after two years \((P<0.001)\). This was possibly due to the wide range of individual differences with regard to motor development in M.R. subjects under study. This point can be illustrated by two cases (Cases - 8, 12) in the present programme who reached to the maximum point (26 months by Infant Bayley Motor Scale) of the motor development within one year of training, on the contrary 3 infants with quadriplegic spasticity (cases - 1,2,3) could hardly gain 4 months of achievement within the same period of two years.

It should be emphasised that the development in motor area needs the long term intervention even to observe a slight improvement. Hewitt et al.\((1983)\) especially in physical handicapped children found no progress in any of their groups on motor skills,
where as after six months of intervention Cocks (1982) found the greatest gain in the motor area. Unfortunately after 6 months of intervention, Kaminer and Chinitz (1982) achieved no gain in motor area. In conclusion one should intervene longer in order to effect motor skills as evident in some cases of the present study.

**FUNCTIONAL SKILLS:**

A unique feature of the present study is the emphasis given on developing the functional skills of mentally retarded children instead of merely paying attention to the increased points of mental, motor and social age. This was feasible due to MDPS Scale based on Minnasota, published by F.W.M.R. (Please refer Chapter - V) since this test is solely based on the Indian situations and this adaption and standardization is to measure functional skills of the mentally retarded.

The significant increase in 18 different areas of the experimental group compared to the control group (Figure - 70) offered the additional evidence of the implementation of well structured curriculum in the experimental group. The comparison of the pre and post findings of the experimental group also indicated more than 30% progress in fine motor, toileting, grooming and in social interaction. More than 20% of progress noticed on gross motor, eating, dressing, receptive language and expressive languages, suggested the improvement in various functional skills having the absolute demand in day to day life. Contrary to this the minimum (10%) progress in reading, writing,
number knowledge, domestic behaviour, etc. was indicative of the low gain in academic skills. It was also logical not to expect the academic achievement in this age group (below 5 years of age) having mental age below 28 months.

However, the pre- and post-findings of the control group exhibiting very minimum (less than 10%) change was supportive of the lack of intervention programme (Figure - 70).

Unlike our study, Moore et al. (1981)\textsuperscript{37} focused on 9, 10, 11 years old moderate to severely handicapped children enrolled in trainable M.R. Public School Classes. A retrospective observation indicated that those children enrolled in pre-school for two years performed significantly better in language, academic, self-help and motor scale. Their results were thus in agreement with the findings of the present study emphasising the efficacy of early intervention. Nevertheless early intervention services for handicapped infants and toddlers have been questioned and criticised.

**CHARACTERISTICS AND SPECIAL NEEDS OF FIVE SUB-GROUPS**

During the course of this study, it was realized that degree of brain damage in mentally impaired children depends on the etiological factors which could be either environmental, genetic or unknown. Besides the diagnostic significance these factors contributed to the achievement of progress and also the lack of it. It was therefore imperative that the efficacy of intervention differed in different subgroups. This remarkable observation is discussed below in view of
the guidelines to the individuals dealing with mentally deficient subjects.

1. DOWN SYNDROME:

Children with Down Syndrome present a special case of exceptional development. This syndrome is identifiable at birth and prevalence is high enough to yield adequate number of children for study (the ratio is 1 : 700 - 800 births). In view of this, the data obtained was separately analysed in 50% of Down Syndrome children comprising the material of this study. As a result of such high prevalence, most of the studies from abroad are confirmed to Down Syndrome group.

To our surprise among the various subgroups the significantly higher value of mental age and social age was noticed in the experimental group compared to the control group, after two years of intervention. This was evident by the higher gain in mental age \( (P<0.001) \), social age \( (P<0.001) \), developmental quotient \( (P<0.01) \), and social quotient \( (P<0.01) \) of experimental group. The mild increase in the pre- post-findings within the control group was negligible and indicated the deprived motivation (Tables - 7, 8).

Similarly the gain in functional skills (MDPS) demonstrated the progress which was significantly higher in the experimental group than the control group (Tables - 9, 10). The improvement by 20 to 30% in various areas of self-care, social skills, language development and vocational skills, was the noticeable
findings emerged from this study which is indicative of the efficacy of early intervention in genetic causes also.

A mention should be made at this juncture of one remarkable case (Case - 24) who had progressed exceptionally well during the two years of period. As a result, this child was ultimately transferred to normal school where the follow-up revealed the satisfactory progress of this child. This incidence gave the encouragement to the therapist. It also additionally offered support to the view that environmental differences can greatly affect the Down Syndrome Children's acquisition of motor skills, speech and I.Q. as rightly reported by Brich and Cornwell (1969).4

Except hypotonia the Down Syndrome subjects are basically manifesting good muscle and power strength. This was found to be advantageous to make the progress in higher gross motor skills such as jumping, climbing, walking on tiptoes and riding a bicycle. This was witnessed by 95% of the progress in 11 experimental group children. In pooled findings from 21 early intervention programmes, reviewed by Hartly (1986)28, It was demonstrated that short-term benefits in the growth of fine motor skills, social repertoire and D.Q./I.Q. scores was a consistent findings in Down Syndrome. But he offered conflicting evidence in support or not of benefits in gross motor, linguistic, and cognitive academic domains. Similar to our findings Aronson and Faustrom (1977)1 and Sloper et al.- (1986)52 found the immediate effects in favour of the treatment in Down Syndrome of experimental group than the control group. Conversely
Piper and Pless (1980) failed to report the immediate effects. This was mainly because of the absence of any control group maintained in several investigations assessing the intervention programme. However, the importance of the present data lies in line with the reported findings of other investigators from abroad such as Hanson 1981, Hanson and Schwarz 1978, Kysela, Hillyard et al. 1981. They had argued in favour of successful intervention programme in Down Syndrome children supporting our observation.

2. CEREBRAL PALSY:

Cerebral Palsy (C.P.) is one of the associated problems with mental retardation. In C.P. children there is a biological trajectory that limits the impact of early stimulation. These efforts were made in the present study to note the effects of sensory-motor and neuro-developmental stimulation on mental, motor and social development of cerebral palsy children. This group mainly comprised of paraplegic and hemiplegic subjects.

The comparison of the pre and post findings of cerebral palsy children from the control group indicated mild significant increase in mental age (P<0.05), social age (P<0.05) and motor age (P<0.05). On the contrary the significantly higher mental age (P<0.01) and social age (P<0.01) was noticed in pre-post comparison of the experimental group, and similarly compared to the control group moderate increase in motor age (P<0.01) was observed. On the whole D.Q. and S.Q. as expected was reduced in the control group, while they remained unaffected in the experimental group.
children (Tables 11, 12). The explanation for getting the mild increase on the motor performance was probably because of spasticity and other associated upper and lower motor deficiency.

As it is evident from the methods used, the majority of the tasks included in the infant assessment are based on the motor performance.

Several studies from the western countries examined the effects of sensory/vestibular stimulation on the gross motor, fine motor and reflex development of cerebral palsy preschoolers. Chee et al. (1978) and Ottenbacher et al. (1981) found significant differences between groups on all dependent measures. Sellick and Over (1980) in contrast found no differences between groups on any of their dependent measures. These contradictory findings are difficult to explain since the differences in the subjects' ages, nature of the treatments, outcomes measures and methods of analysis make interpretation problematic.

Comparison of two occupational therapy approaches for treating the young cerebral palsy child, Carlsen (1975) reported the significant differences in gross motor of the 4 developmental areas. This is also reflected in our study, the significant increment in gross motor areas was observed (Tables 13, 14). Tentatively such results also suggested that traditional physical and occupational approaches are not effective treatment strategies. The remarkable difference in gross and fine motor skills even in cerebral palsy group emphasized the neuro-developmental approach used in the present study.
3. PROFOUND RETARDATION WITH QUADRIPLEGIC SPASTICITY:

In the present programme three profoundly retarded quadriplegic spastic children were also taking the benefits of early intervention programme. On the basis of etiological factors, bad prognosis was indicated. However, on the ethical grounds they were also included in the programme. As expected the obvious results could be observed only after two years of intensive neuro-developmental therapy and sensory stimulation. As a result the significant increase was observed in the experimental group compared to the control group (Table - 5). In comparison with the Down Syndrome group this increase, though statistically was very mild. Similarly only 20 - 30% of progress was observed on Madras Developmental Programming System - Adaptive Test in areas of gross motor, environmental interaction and language - communication in the experimental group and the least (less than 5%) in the control group (Tables - 16, 17).

One of the striking observations in this group was the better outcome of results with good motivation, as inspite of trying very hard to express their feelings, the spasticity becomes the obstacles in expression. This is mainly due to the simultaneously working of the whole body instead of a particular individual part of the body. Because of physical restriction the better performance could not be achieved in this profoundly retarded quadriplegic spastic group and scored lowest point on the assessment skills. Ottenbacher et al, (1981)\textsuperscript{38} studied the effect of a clinical applied programme of Vestibular stimulation on the neuromotor
performance of children with severe developmental disability. Similar to our findings they also found that child age and degree of spasticity were significantly correlated with gross motor gains; the younger the age at onset of the intervention the more progress was likely to be made. Degree of spasticity is also correlated with child progress; the less spasticity the more progress. This statement held true in the progress manifested by less severe paraplegic or hemiplegic cerebral palsy compared to the quadriplegic spastic.

4. VARIATION IN DEGREE OF MENTAL RETARDATION:

One of the noteworthy features emerged from the comparison of various groups was the relation between the child's progress and severity of retardation.

In moderately retarded group, consisting the majority of the Down Syndrome children, highly significant improvement was observed. Conversely the severely retarded group showed only moderately significant increase in the progress (Tables - 18, 19). To our surprise, the mildly retarded children had revealed only moderate significance in mental and social development which was mainly due to a large proportion of the physically handicapped children present in this group.

Similarly, observation on all areas of functional skills indicated good progress in mild and moderately retarded group (Tables - 20, 21). Contradictory to this, the severely retarded group showed progress only in some areas such as motor development, social interaction, self-care and receptive language but the least
in academic skills. This data analysed on the basis of variation in degree of retardation also confirmed a wide spread clinical impression that all mentally retarded children do not benefit equally but depending on their degree of severity.

Gordon (1977)\(^2\) examined the amount of progress in three groups of children differing in their degree of severity; low, medium and high. He did find differential effects in terms of child's progress (i.e. the less severe the impairment the more progress). Several investigations (Bricker and Sheehan 1981\(^6\), and Bailey and Bricker, 1985\(^2\)) examined pre and post test differences in different mild to severe groups and concluded that the less severe the degree of impairment the more progress that was likely to be made.

Macy et al. (1983)\(^3\) examined the pre-post test differences for mild, moderate and severe handicapped groups and reported "generally consistent treatment effects across the range of handicap involvement" though appropriate statistical analysis was not encountered.

5. **AGE AT ONSET OF INTERVENTION**:

It is logical that "early intervention" denotes to the early in to the programme as per the chronological age of a child. It was possible to make four age groups:

1. 0 to 24 months
2. 25 to 36 months
3. 37 to 48 months
4. 49 to 60 months

of the subjects under study to check the efficacy of
intervention. Surprisingly, the age group whose onset of training was 37 to 48 months indicated the significantly highest progress (Tables - 22, 24, 25). The first two groups ranging from 0 to 36 months, however, showed moderate improvement and the fourth group between 49 to 60 months was found to be unaffected in terms of social quotient and development quotient (Table - 23).

Further analysis of this observation revealed that the physical disability (Cerebral Palsy children) as more in the youngest group and therefore it is reasonable to infer that this group despite the earlier training did not show significantly higher progress on statistical comparison. In addition, the age group between 37 to 48 months had mainly Down Syndrome children displaying more of cognitive impairment than the physical disability. Similar to our study Utah State Data (Shonkoff and Hauser Cream, 1987) base focused solely on programmes for children younger than 36 months with biological disability and concluded that earlier programme enrollment made a difference for children with less severe disability. The similar findings were observed by White and Casto (1985) and White (1984) who concluded that early entry in intervention did not necessarily result in greater effect compared to later entry.

Cluniess Ross (1979) found that the level of performance of an early entry group (less than 12 months) was much greater than for those children entering after 24 months of age, and the degree of delay was much greater for children who entered after their second
At one glance one may find this contradictory to our findings which showed mild progress in the same age group. However, as explained earlier that was due to the profound motor disability associated and that was also the reason for detecting the disabled child earlier followed by the early entry in the intervention programme.

The overall findings confirmed that the age of entry is likely to be influenced by other factors such as causative, degree of retardation. This statement can be supported by the two illustrations given below:

**CASE NO. 24**

A] Anish Lad, mildly retarded Down Syndrome child had an entry in the programme at 36 months of age. His I.Q./D.Q. increased by 10 points at the end of two years of programme with overall significant progress in self-care, language, social as well as academic knowledge. His significant progress resulted in to his entry in to normal school at the kindergarten level. Though compared to the normal children he was low in academic skills with higher age, recently he has moved from kindergarten to Standard-I with 60% marks. Being a Down Syndrome child it must be pointed out that severe motor disability was not associated.

**CASE NO. 4**

B] Contrary to the above case, Jitendra having severe retardation with unknown genetic familial etiology entered in the same intervention programme at the age of 18 months. Severe delayed developmental milestones were characteristic features
confirming the mental age and social age to be four months and motor age to be six months. After intensive neuro-developmental training and sensory motor stimulation along with behaviour therapy, it was possible to achieve motor development by 8 months and social development by 6 months and negligible progress in mental development. There was manifestation of autistic characteristic in this child. The failure in the progress in this case in spite of the early entry into the programme compared to the above case, could be attributed to the basic genetically related brain damage.

THE HANDICAPPED CHILD AND THE FAMILY

The measurement and documentation of family impact is a complex but important topic. The effects of a handicapped child on family members and family functioning have been described extensively in the exceptional child literature (Bolacher and Meyers, 1983; Paul, 1981; Simeonsson and McTale, 1981). Parent's involvement and its evaluation are important in intervention programme for at least two reasons:

1. Parents have the most enduring relationship with the child and may have the greatest impact on the child's development; intervention, therefore should provide parents the skills they need to most effectively train their child.

2. The parents of the handicapped child can have significant impact on family functioning (There
are reports indicating effects of problems in marital adjustment, increased care taking demands, sibling relationship, stress and tension, child abuse, etc.). Intervention therefore should provide parents the support to adequately cope with a handicapped child.

In the present study the point no.1 is clearly encountered and effectively trained the parents in skills to train their child. The parent intervention programme is evaluated in terms of child changes with respect to the family counselling.

Initially the parents were counselled for the awareness of mental retardation and services available. These parents obviously were of the experimental group who could be highly motivated. This was reflected by their pursuit of appropriate intervention programme and their participation in the follow-up. All 25 families of the experimental group were counselled to offer information regarding the early intervention skills, regular training to a child, understanding of the concept of environmental and sensory stimulation. They were also trained to develop motor skills of child at home which was, supervised by the frequent home visits. As a result of this intensive family-focused intervention, 12 out of 25 families had created stimulative environment, teaching materials and conditioning habits for their child at home. Some parents (N=4) had not taken these painful efforts to cope-up with a child inspite of the same counselling to them due to other domestic reasons.

Ultimately parents' training and participation was found effective in helping the child to learn
basic developmental skills. Their right attitude under the therapist's guidance could reduce inappropriate and problematic behaviour which in other conditions could have affected the child's progress.

The various factors as mentioned in No. 2 were reviewed by Gallagher and Bristol (1989)\textsuperscript{20}, were not the subject of the present evaluation. However, equal participation of parents and professionals have determined the intervention efficacy in the current study. At the same time absence of the degree of the parental involvement in relation to the programme efficacy was found by White (1984)\textsuperscript{54}, White and Casto (1985)\textsuperscript{55}, although these findings must be interpreted with caution.

**GENETIC COUNSELLING**

Genetic counselling is the process by which individuals or their relatives at risk of a disorder that may be hereditary, are advised of the probability of developing and transmitting it, and of the way in which they may be detected. The purpose of the genetic clinic is to provide individuals with information so that they can make their own decisions about having children (Harper, 1984)\textsuperscript{25}.

Since a co-ordinated approach was used in the present study, a clinician (Pediatric Neurologist) had examined all cases offering the medical diagnosis. Hence the etiological factors could be taken into account to assess the efficacy of the early intervention.
At the same time the noticeable benefit was the possibility of genetic counselling with the parents of these children. During the course of therapy medical information and available treatment were made available to the parents. Explanation of the hereditary factors and the chances of recurrence along with the risk factors was done. Finally, the alternatives available in high risk of recurrence were discussed with the parents. These strategies were found effective in 3 young mothers who underwent pre-natal screening, and pregnancy monitoring giving a birth to a normal baby in one case. Thus, it was evident from the present study that genetic counselling has a supplementary role in early intervention programme of mentally retarded subjects, though unlike parental counselling it is not directly connected with the actual change in the progress of a child. However, the motivation on the part of the parents had occurred through the genetic counselling.

DIFFERENCES IN ECONOMICAL BACKGROUND:

In the socio-economically deprived country like India, there always exists a vast difference in economical background of families. This unavoidable truth also had an impact in the present various groups of children which was considered important to note down. In the experimental group 2 out of 25 were found to be from the very low socio-economical status. It was our consistent observation that the progress of their children was hampered due to irregular followups and domestic problems. So it is evident that provided all other remaining (etiology, degree of retardation, motor disability, etc) factors are stable/same, the economical
condition does play an important role in making intervention programme effective. In comparison with the western data from the well developed countries we found this as a noteworthy point in implementation of intervention programme in India where 60% population is below the poverty line.

REFERENCES


