REVIEW OF LITERATURE
CHAPTER II

REVIEW OF LITERATURE

The quest for scientific knowledge of the psycho-social sequelae of head injury dates as far back as the early twentieth century. But accumulation of knowledge in this area started only around 1950. There has been much progress since then around the world. The existing literature on the subject can be broadly grouped into neurological, psychiatric and social aspects. Of these the former two areas have assumed major significance and literature on the social aspects of head injury is rather scarce. A wide range of literature relevant to the study is reviewed in this chapter.

First of all it is important to review the available literature on indices of severity of head injury. Violon and Mol (1987) opined that there are three main criteria for estimating the severity of head injury namely the duration of the retrograde amnesia (prior to the accident), the duration of the post-traumatic amnesia (following the trauma) and the duration of the coma. These three criteria of severity and other neurological indices of severity largely determine the outcome of the victim.
There is a general consensus among neurosurgeons that coma after head injury indicates the brain dysfunction and that the degree and duration of coma are reliable indices of the severity of the brain damage and the ultimate outcome (Bricolo et al. 1980).

Coma is an indicator of prognosis in head injury. Heiskanen and Sipponen (1970) followed up 204 patients who suffered unconsciousness lasting more than 24 hours. The follow-up period was 3-5 years after the injury. According to them though there appeared to be a tendency to increasing mortality after more than 30 days' coma, in their study there was no statistically significant difference in mortality with the duration of the coma.

Post-traumatic amnesia is considered to be the best yardstick to measure the severity of head injury (Rutherford 1977). In the opinion of Symonds (1962) many head injury patients who regain full consciousness exhibit symptoms of impaired cerebral function lasting for a longtime or for ever. He regards PTA as a symptom of generalised cerebral injury. According to Sabhesan and Natarajan (1987) PTA lasting between one day and one week indicates a significant degree of diffuse brain damage.
while PTA exceeding one week indicates severe dysfunction. Coma and PTA generally reflect the degree of neuronal damage that has occurred. Organic damage which occurs mostly in severe injuries is rare in mild injuries.

It is well-known that the severity of injury determines the seriousness of the psycho-social sequelae. According to Oddy (1985) if the injury is more severe there is the possibility of persisting deficits and the interruption of routine daily activities. Oddy et al. (1978) opined that the very severely head injured who were single, showed a greater dependence on their families. Those with very severe head injury were significantly more bored. These two findings indicate that head injured suffered consequences which went beyond the physical impairment and psychological impairment of an accident.

Apart from the neurological sequelae various psychiatric sequelae follow head injury. The psychiatric sequelae after head injury include behaviour sequelae and cognitive deficits. Behaviour sequelae manifest themselves in the early phase of recovery and continue in the chronic phase.

Behaviour problems following head injury fit into a variety of psychiatric syndromes and have been
studied in the past. They vary in their severity and duration. They are also known to occur at various phases after the injury namely the acute, the subacute and the chronic phases.

During the acute phase symptoms like confusion and disorientation appear. Other behaviour problems commonly encountered at this stage are delirium, restlessness, running out and delusions of persecution. In a study of 123 patients, Sabhesan et al. (1990e) found 13 patients suffering from post-traumatic delirium. According to them post-traumatic delirium is the earliest and the most frequent. They encountered two categories of delirium namely the hypoactive and the hyperactive. The former was characterised by an inordinately prolonged period of confusion. The latter consisted of excitement, disorders of perception, transient delusions and violent outbursts. They found an association between previous history of alcohol abuse and hyperactive delirium in 50% of the cases.

During the subacute phase the patient may be conscious and well-oriented to person, place and occasionally to time but he still suffers from post-traumatic amnesia (Sabhesan 1987). Various psychiatric
syndromes emerge during this stage. One among them is delusion. Delusion and amnesia often overlap.

Sabhesan and Natarajan (1988a) studied 123 patients with head injury. Among these patients 17 patients suffered from delusions during their stay in the hospital. The rest of the patients formed the control group. Since all patients in the deluded group had suffered acceleration-deceleration injuries, a similar group of 16 consecutive patients with acceleration-deceleration injuries were taken as controls for comparison of PTA. They found that the patients did not remember the delusions after they had recovered from the PTA. They further observed that delusions did not occur in those with open head injuries.

Organic affective syndromes like secondary mania and depression are reported during the subacute phase. Yatham et al. (1988) think that head injury is one of the possible causes of secondary mania. Riess et al. (1987) are of the same opinion. In their experience the duration of mania was shorter than that found in the primary bipolar illness. Depression and irritability are also commonly seen in the victims of head injury.
Psychosis with schizophrenic symptomatology is said to be rare and has been observed both during early and late phases of head injury. Achte et al. (1969) found that 56.5% of those who suffered brain injuries before the age of 20 developed schizophrenia afterwards compared to only 11.1% of those aged 35 and above. It is interesting to find that those who had not lost consciousness after injury seem to be more at the risk of developing schizophrenia, in their series. Moreover the probability of developing schizophrenia did not seem to depend upon whether the injury was closed or open.

Behaviour sequelae in the late recovery phase include psychotic and non-psychotic disorders. Psychotic disorders include dementia, post-traumatic Korsakoff syndrome, episodic behaviour disorders and functional psychosis. Of these dementia is said to be rare. Stritch (1969) describes two forms of dementia after head injury, one which is obvious soon after the recovery from the acute phase and the other where patient appears to recover completely and then develops a progressive neurological disease and dementia. According to Hillbom and Jarho (1969) dementia occurs primarily in association with the extensive injury of the dominant hemisphere, with bilateral injuries or with otherwise severe diffuse
injury. In their view Korsakoff syndrome however might arise as a consequence of an anatomically small injury in the central and basal parts of the brain. Achte et al. (1969) found a higher incidence of the Korsakoff syndrome in the basal injuries. Confabulations are often encountered after head injury. Sabhesan and Natarajan (1988c) opine that diffuse cerebral dysfunction is causally related to occurrence of confabulations.

Damage to the frontal lobe leads to emotional, behavioural and cognitive disturbances. The frontal lobe syndrome is characterised by features of disinhibition, facile euphoria, blunting of emotional responsiveness, egocentricity, interference with behaviour of others, irresponsibility, lack of tact and concern and childishness and these patients usually exhibit purposeless drive and show loss of initiative and judgement and in a small number of victims, there is apathy and inertia and in others marked aggressiveness (Bond 1985).

Irritability, violence and aggression are also encountered in the chronic phase. Filley et al. (1987) studied 53 consecutive cases, selected from an urban paediatric rehabilitation hospital. Patients who were aged 18 years and below were included. They found that 19
out of 22 patients who were not vegetative at long term follow-up showed residual emotional disturbances. Of them, nine had a profile of over-arousal, exhibited inattentiveness, irritability and hyperactivity, often combined with impulsive and inappropriate behaviour and aggressiveness. Ten patients with under-arousal showed apathy, poor motivation and social withdrawal.

Various somatic complaints like headache, giddiness, fatigue and sensitivity to noise are described by patients in the chronic phase. Lishman (1968) opines that many somatic complaints are not due to any organic brain damage. While some affective symptoms like apathy and euphoria have a strong organic basis, others like anxiety, depression and irritability do not.

Elsass and Kinsella (1987) found that the majority of the head injured suffered from depression, anxiety or other non-psychotic disturbances with serious implications both for the injured individual and for the family members. Brooks et al. (1986) studied a close relative of each of 42 severely head injured patients at five years after injury, following initial study at 3, 6 and 12 months. They found that the items most frequently reported were psychological or behavioural, both at the
one year and at the five year follow-ups. The incidence of personality changes rose from 60% at one year to 74% at 5 years. Other most frequent problems were slowness, memory changes, irritability and bad temper. While personality change and threats of violence were reported to be on the increase, irritability and tiredness showed a declining trend in frequency at five years.

Pre-trauma pathology seems to affect the psychiatric outcome of head injury patients. Personality disorders and alcoholism are the most important among the various aetiological factors of pathology at the pre-trauma level. The association between alcoholism and accidents leading to head injury is significant. Hillbom and Holm (1986) studied 98 alcoholics without previous history of head injury and 59 others who had had head injuries. A control group of 200 men and 200 women was selected. Both alcoholics and the control group were identically examined by neuro-psychological methods and the neuro-psychological test battery included tests for general intelligence, learning and memory and the Halstead-Reitan battery. They found that head injury was 2-4 times more common among alcoholics than among the general population. According to them many alcoholics sustain single or multiple head injuries of the less
severe type which led to significant brain injuries. They further stress that trivial head injuries can lead to more severe consequences among alcoholics than among the general population.

Sabhesan et al. (1990b) compared three groups of head injured patients: non-alcoholics, alcoholics who had abstained during the follow-up and alcoholics who continued to abuse alcohol. They observed that among the head injured those who had abstained from alcohol after trauma showed a better cognitive adjustment than those who continued to abuse alcohol and they attributed this to the cumulative cognitive impairment in the case of persistent abusers. They added that continued alcohol abuse either deteriorated the natural recovery after the injury or aggravated the existing deficits.

Violon and Mol (1987) opined that previous psychological disturbances were observed in as many as 83% of the cases. However three of their patients did not suffer from previous psychological disturbances and projective techniques brought out a psychotic or borderline personality.

Thompson (1965) studied 500 cases of post-traumatic psycho-neurosis and they were compared with a
control group consisting of patients with non-traumatically induced psycho-neurosis and neurologically injured patients who did not develop psycho-neurosis. He found that 87% of the cases of post-traumatic psycho-neurosis were found to have neurotic traits of character even before the trauma. Twelve per cent of the patients with neurological disability had had premorbid neurotic traits of character.

Vilon and Mol (1987) opined that in patients in whom neurosis appeared after head injury, the trauma was usually mild, indicating the possibility of existence of a premorbid narcissistic or neurotic personality disorder.

Impending litigation and financial compensation seem to play a role in the causation of neurotic sequelae. Miller and Stern (1965) found that the subjective complaints of those with mild head injury who claimed financial compensation nearly always resolved without treatment after the financial settlement.

Ota (1969) stressed that desire for compensation need not be the only factor causing neurotic complications following head injury. Many psychological factors might play an aetiological role in these complications. In a recent study Leininger et al. (1990) also found that neuro-
psychological deficits occurred in patients irrespective of the fact whether they resorted to litigation for compensation or not.

Mc Kinlay et al (1983) opined that an organic component might underlie the post-concussional symptoms. It is possible that desire for financial compensation might also play a part. Those who claimed compensation tended to report more symptoms than those who did not claim. While the differences may well be due to the differing age and severity of injury in the two groups there were significant differences even when these two factors were statistically controlled. One could not say that only those with poor outcome considered it worthwhile of claiming compensation and that the decision to claim was made on the basis of culpability and the availability of witnesses.

Cognitive deficits are more common after head injury and they are of great significance in determining the outcome after the injury. Cognition includes various aspects of mental faculties like memory, concentration, comprehension, attention, etc. Memory deficits with varying levels of severity occur after head injury (Sabhesan et al. 1990a). The degree of memory impairment indicates the extent of brain damage suffered. Brooks
(1974) found an association between the severity of diffuse damage and the severity of memory deficit and the focal damage had lesser influence on memory. A diffuse brain damage resulted in memory disorders which lasted for months or years after injury.

According to Leininger et al. (1990) symptomatic minor head injury patients showed significantly poorer performance than uninjured controls on several neuropsychological tests especially on tests of reasoning, information processing and verbal learning. The performance of the patients was significantly poorer than controls when required to reproduce a complex geometric design. Inefficient organisation, poor attention to detail and faulty error recognition were attributed to this finding.

In closed head injury memory disorder is related to the duration of coma (Vizkki et al. 1988). Apart from the severity of injury, age also seems to determine the outcome of memory. Brooks (1974) found that PTA had a stronger relationship with memory in patients over 30 years of age than in patients between 15 and 30 years old, indicating that diffuse brain damage might be more severe in older age group than in the younger patients. The
recovery of memory in the younger patients appeared to be determined not merely by the extent of the injury but probably by other factors such as the site of injury, the pre-traumatic intellectual level, or perhaps by the degree of stimulation during recovery.

It is interesting to probe whether the side of damage has anything to do with the cognitive outcome. Sabbesan et al. (1991a) found that patients with right-sided damage showed poor performance. Smith (1974) showed that patients with a right-sided impact who were also decerebrate performed poorly on the whole when they were administered certain verbal tests. An impact on the right side led to greater cognitive deficits. The incidence of nominal aphasia and verbal memory deficits was higher with a right-sided impact, and those patients showed a greater impairment on visual-spatial tasks. Such an impairment was seen 10 to 20 years after the impact and was not associated with duration of PTA, initial neurological state, or age at which the injury was sustained. When the object naming test was done the right-impact group showed specific deficit and it was argued that this was secondary to perceptual dysfunctioning i.e., subjects in this group were taking a longer time to identify the picture and therefore a longer time to name it and that their
performance on these tests did not reflect a true verbal deficit. Their errors were similar more to those made by dysphasic patients than to those made by patients with perceptual deficits.

Brainstem signs serve as useful neurological index of severity of the injury. Ommaya and Gennarelli (1974) revealed that brainstem signs might indicate greater severity of diffuse rather than focal damage. The association between those signs and cognitive outcome is well known. Levin et al. (1979) found that patients with signs of brainstem damage performed poorly on memory tests.

Social functioning in relation to head injury is an important aspect to be considered. Currently social functioning is regarded as a complex neurological functioning of the higher order. Hence social functioning which denotes the tertiary outcome of neurological recovery can serve as a sensitive indicator of neuropsychological outcome.

Changes in the psychological functioning of the patients leave their marks on the social adjustment of the patients. The social outcome is determined by neurological, cognitive and behaviour sequelae and socio-
cultural factors. Of these, severity of injury appears to be important.

Oddy and Humphrey (1980) observed that the severely injured suffered from poor social contacts and disturbed family relationship even after one year and patients with more severe head injury accompanied by PTA of seven days had not resumed all their leisure activities and had a more restricted social life even two years after head injury.

Social outcome after head injury is likely to reflect the personality changes and the outcome is expected to be poor when personality changes are accompanied by physical and sensory impairment.

Weddell et al. (1980) found that head injured individuals with personality changes (as rated by relatives) maintained contact with friends significantly less often than those without personality change.

In the study of Elsass and Kinsella (1987) it was observed that the head injured were either cognitively incapable of experiencing close or meaningful relationships with the family members or spouses as before or they were satisfied with the reduced quality of their interpersonal interactions. Even though the patients
reported to be satisfied with the quality of their relationship, the quality surely did suffer.

Vocational outcome has been given utmost importance by most of the researchers and 'return to work' has been considered as a measure of outcome after recovery from head injury. But Oddy and Humphrey (1980) found that "return to work" is not a sensitive index. Even though most of their patients had resumed their jobs, they had restricted their activities and believed that they had still not regained their full working capacity two years after injury. Length of post-traumatic amnesia (PTA), neuro-physical sequelae, pre-morbid personality, post-trauma personality change and cognitive deficits are the factors which are assumed to play a major role in vocational restitution.

In the opinion of Sabhesan et al. (1990d) vocational restoration may not reflect the true outcome frequently, since while seriously disabled patients might gain a sheltered employment, fully restored patients might not get re-employment because of local conditions.

In many studies return to work is used as a measure of social outcome and leisure and social activities have been scarcely studied. Oddy et al. (1978)
opined that ability to return to work, which is a constant theme in studies on social recovery, is a crucial factor especially in the younger age groups. The authors express their concern over the scarcity of literature on other aspects of life which may be equally important to the patient.

In a later study, Oddy (1985) concluded that restitution of work is more rapid than leisure or social activities. It was evident in his study that many who had resumed their original jobs had not resumed their premorbid level of competence. He adds that return to work can only be a crude index of vocational restitution.

Impaired personality and intellectual functions may contribute to decline in the level of employment. Natarajan et al. (1987) found an association between behavioural changes and vocational dysfunctions. According to them irritability and social maladjustment led to disturbances in the workspot; amotivation and depression combined with disinclination disturbed the work restoration and excessive somatic concern led to withdrawal by the patient and restraint by the relatives because of culturally shared wrong health-beliefs about head injury.
According to Erculei (1969) patients in whom the personality inventory showed high scores on hysteria, depression or hypochondriasis had more difficulties in work than those whose personality was normal. Heiskanen and Sipponen (1970) found a significant correlation between the length of coma and disability. None of the patients who were comatose for more than 4 weeks resumed work within three to five years after injury. Levin (1968) found that return to work within 8 weeks was rare after a concussive injury and wherever PTA exceeded one week the period of invalidism was usually three months and for the severe injury this period extended to much longer period. Such patients resumed part time work initially and did simple work.

There are studies which emphasise age as an important predictor of vocational outcome. Non-restoration to work and time interval for work restoration were more with increasing age according to a recent study (Sabhesan et al. 1990c).

Heiskanen and Sipponen (1970) found age to be a significant factor in determining work restitution. According to them patients could not be restituted to work after a coma, which lasted for four weeks for those under 20 years, 3 weeks for the age group of 21 to 40 years, and
one week for the age group of 41 to 60 years. None of the patients over 60 years after a coma of 24 hours returned to work.

Extrinsic factors like attitudes of the family members, local employment requirements, and employers' attitudes are important determinants of vocational restitution (Sabhesan et al. 1988). According to them, an overprotective attitude of the family members enhanced the sick role of the patient and delayed the vocational restitution. They also found that those who were financially self-supporting resumed work early since most of them were working on their own lands and their work was supervisory in nature and was not very demanding. Among those who were in need of financial support restoration to work was earlier if they did not receive financial help from relatives. They explained that financial difficulties acted as an "aversion stimulus" to work.

Brain injury which is sudden and life threatening evolves into a serious and chronic illness posing a threat to routine family life and causes specific adjustmental problems for the families as well as the individuals.
As the occurrence of brain injury is often sudden, the families are shocked and become anxious about the patients' survival. The primary need of the families at this crucial stage is to know the condition of the patients. During the critical phase, the question of survival is the foremost and there is a grave concern over the future of the family. The needs of the families are multivarious but the degree of importance given by the families to the needs differ from one to another. The families like to be kept informed of the patients' condition and progress.

Clum and Ryan (1981) studied 19 wives and 11 mothers of head injury patients using a questionnaire. As many of the families are preoccupied with the physical survival of the patients they are unable to make much needed financial plans. During the critical phase the families of the injured seek support from close relatives and friends both for financial needs (if the families are poor) and for emotional needs.

The family members are preoccupied with the patient to such an extent that even they do not want to get away for a few hours from the bedside of the patients (Clum and Ryan 1981). Gentile (1987) went on to explain
how a family unit may break down because of the new demands like maintaining two residences, namely the home and the hospital. It is true that the persons attending on the head injured develop neurotic symptoms and require psychological support from others.

Apart from the initial crisis head injury with its impact on the brain leads to long term stresses in the family resulting mainly from character changes in the patient.

The problems faced by the families vary from one to another, depending on the individual circumstances. There are also some problems which are common to all the affected families. Over one half of the wives and mothers of the injured experienced frustration, irritability and annoyance in one study (Clum and Ryan 1981). More than half of the wives under study had feelings of depression and anger. Some complained of lack of time for themselves and of financial insecurity. About half of the wives in that study said 'I am married but don't really have a husband'.

The mere presence of cognitive and behavioural problems in the otherwise physically normal patients is not uncommon. The social contacts of the patients
including the family members may complicate the situation in such cases by expecting too much from the injured person. This possibility has been well explained by Zeigler (1987).

Livingston (1986) studied 42 consecutive cases with severe head injury and 41 cases with mild head injury. Both the groups of patients together with a female relative were seen three months after the injury and the families with severely injured patients were followed up at six and 12 months after injury. A significant difference in the perceived burden scores was found between the two groups, indicating that the relatives of severely head injured had a greater burden. In his study the personality problems of the patients like aggression, childish regressed behaviour and apathy were responsible for the greater burden of the relatives. He also found that patients who suffer from mobility problems, sensory loss, disfigurement and disabilities, cognitive impairment and personality changes are often dependent on their relatives for care.

Brooks et al. (1986) found that the relatives of patients with more severe injury reported more stress. Apart from the higher incidence of negative behaviour and
personality changes of the severely injured patients, factors other than the injury like the personality of the relatives themselves may be important in determining the burden.

Sabhesan et al. (1987b) studied 30 families of patients with accidental head injuries 12 months after the injury. They encountered patients whose cognitive performance in the routine tests did not reflect the real difficulties that arose in the actual life situations. The relatives who were aware of the patients' pre-trauma capability considered the difficulties as due to non-restoration of the normalcy.

Brooks et al. (1986) attempted to study the objective and subjective burden of the relatives of patients with severe head injury. At one year the relatives reported high levels of behavioural, personality and cognitive changes in the injured patient. Many relatives reported high levels of strain after 5 years more than at one year. Their ability to cope with the late sequelae of the patients had deteriorated markedly over the years.

Personality changes also influence their relationships within the family especially between the
patient and the siblings. The stresses of the relatives and disturbed family relationships are known to affect the total outcome of the head injured.

The rate of recovery of the patient is also determined by the coping ability of the family members. A good family support is a favourable indicator of a better outcome in the opinion of Clum an Ryan (1981). Earlier the researcher of the present study found that the family functions as a whole were disturbed. The leisure activities were minimised and the interaction between the family members was strained. It was also found that more than a third of the family members felt the need for psychiatric help. The financial stress was found to be very severe in 36% of the cases because of the loss of earning capacity of the patient and the paucity of dependable resources (Ramasamy and Ramanaiah 1987).

The marital adjustment after head injury is an important aspect to be studied. Adjustmental problems between the injured and the spouse disrupting the marital harmony are common. In fact the wife of a head injured person belonging to the Colorado Spouses Support Group in Denver aptly said: "I am a married widow. It's like caring for a child. I used to have a husband and seven children. Now I have eight children" (Anonymous 1985).
The stress encountered by the spouses of the head injured is often unbearable. The injured partner is often physically and psychologically handicapped and is unable to play his role. In such a circumstance an uninjured spouse is forced to assume singular responsibility for a variety of tasks like managing the household, parenting, attending the injured spouse, decision making, etc. (Zeigler 1987). There are certain other behavioural and psychiatric sequelae which affect marital adjustment. Delusions of infidelity, impotence and irritability are the most notable among them. Many a time the spouses are frustrated or break the marriage (Ramasamy and Ramanaiah 1987). Zeigler (1987) cited a similar situation. She found that the uninjured spouse either attempted to leave the marriage or just remained a caretaker of the victim with difficulties.

The responsibility of earning the livelihood is of a major concern. The resulting over burden causes dissatisfaction, worries, hopelessness and depression.

According to Rosenbaum and Najenson (1976) there were drastic and disturbing changes in the lives of wives of the severely brain injured even a year after the injury. They suffered from various depression related
symptoms and disturbances in interpersonal relationships with their husbands, in-laws and friends.

Many young spouses feel so desperate as to get out of the bond of marriage and reestablish a meaningful life for themselves and their children. There are others who grieve their 'lost' partner but remain available as a caretaker (Zeigler 1987).

Intervention techniques to treat the sequelae of head injury are poorly developed. Intervention for head injury should start at the site of occurrence of injury. The first aid given by the bystanders and transportation to the suitable treatment centre are the earliest interventions needed. After this prehospital care, the trauma team in the hospital centre renders co-ordinated service to the injured (Wilson and Driscoll 1990).

Unless the complex issues of evaluation and intervention of the sequelae of head injury are understood, it would not be possible to render the best care (Boll 1982). Soon after the head injury and once the patient's survival is assured, families anticipate that their loved one will return to normal functioning and that normal personality will be restored. They ought to be prepared for the possibility of agitated or aggressive
behaviour of the patient. Families who are unprepared suffer much embarrassment at the language and behaviour of the patient (Brigman et al. 1983).

Head injury patients and their families who are informed earlier about the symptoms of various phases of recovery are more prepared to prevent the development of disability during the period of recovery (Long et al. 1984).

There is dearth of systematic treatment programmes meant for the social and emotional rehabilitation of closed head injured patients. The need for information, support and counselling for the head injured and their family is often not met (Elsass and Kinsella 1987).

Behavioural disorders which develop in a considerable number of those who sustain severe head injuries affect or arrest the physical, social and occupational rehabilitation. According to Eames and Wood (1985) even the staff of the rehabilitation therapy unit frequently find it difficult to cope with such patients as they are discouraged by the amotivation of the patients, and many such patients ultimately land up in psychiatric, geriatric or mental handicap hospitals. These patients
are deprived of rehabilitation and treatment for their behaviour disorder which further deteriorates progressively. The authors further opined that it was worthwhile to find a means of tackling the behavioural disorder by which such patients are made co-operative so as to allow the therapist to apply his skills and help the patients to learn the behavioural controls and become socially acceptable.

Since the behaviour problems are chronic, their intervention is a long term process. The follow-up study of Eames and Wood (1985) reveals that a vast proportion of head injury patients showed a marked and lasting improvement in their behaviour inspite of long delays in commencement of rehabilitation. According to them the severely brain injured patients who cannot fit into the rehabilitation programmes can be successfully treated by combining formal rehabilitation with behaviour modification.

Jousse et al. (1969) attribute the success in rehabilitation to patient motivation. Physical disability hinders performance of the routine daily activities of the patients. When the disability is fixed and non-progressive, a patient improves reasonably by exercises.
Patients who possess the insight and understanding have a strong motivation and approach life in a problem-solving manner. When the obstacles are too high they end up with frustration. It then becomes necessary to modify both the patient and the environment so as to attain a successful achievement.

Friedman (1982) speaks of an integrative psychotherapy which integrates humanistic, behavioural, psychodynamic, and spiritual approaches to psychotherapy. It can provide the therapist with great flexibility in choosing the roles to play at different times and with different patients, couples, families, or groups. According to Libassi (1988) a humanistic orientation of the practitioner is important while working with clients with psychiatric disabilities. The practitioner acknowledges but de-emphasizes the disability. But he emphasises the strengths, assets, and potentialities of the client's. Thus the practitioner supports or realises the client's adaptability so that a victim can cope with the disability and improve his or her social functioning in the environment. The success of this approach can be evaluated by measuring the improvement in the person's competence and functioning in the environment.
Since many brain injured patients suffer emotional motivation problems, cognitive retraining, and re-socialisation skills re-training may help some of them (Prigatano et al. 1984). They add that successful outcome is a result of combination of multiple factors, namely the type and severity of injury, the premorbid characteristics of the patients, the skills and dedication of therapists and the local social and economic conditions.

According to Erculei (1969) the rehabilitation and the severity of injury are inter-related especially in work situation and social status rather than in economic and home situations. The more severe the injury the more frequent the unemployment. Neurological disabilities were more frequent in the major injuries and they might affect the outcome of rehabilitation. This was the experience of Lewin (1968). Eighty per cent of patients with neurological disabilities whom the author saw ultimately returned to their former work.

Prigatano et al. (1984) opined that a productive lifestyle can not be accomplished by improving neuro-psychological status and personality skills alone. In their study the outcome on sustained employment was disappointing. Though 60-65% of patients were expected to
work shortly after their rehabilitation programme was over only 50% could work. Among the controls 36% returned to gainful employment even without intensive rehabilitation.

Lewin (1970) opined that a majority of head injured patients required no special arrangements and showed progress in recovery with general guidance. But for the minority lack of after care led to unnecessary invalidism, economic loss of the country and management problem for the hospital services.

According to Libassi (1988) intervention with patients with chronic psychiatric disabilities should focus on the ecological perspectives. He defines ecological perspective as viewing people and environment as parts of a unitary system in which each shapes the other continually. In his view, this approach helps the practitioners to understand the impact of social and physical environment on a client's mental health and to make use of the environment to strengthen the coping and adaptive efforts of the clients as individuals and groups.

It is important for practitioners to understand the interactions between the family and the therapist and to develop strategies for establishing positive relationships with families (Schlosberg and Kagan 1988).
Libassi (1988) too stressed that family education is very important.

According to Gentile (1987) there must be trust between hospital personnel and family members. Fox (1987) opined that intervention by a short term goal oriented family therapy is essential. In his opinion the family therapy should be on the basis of the operational principle of "starting where the family is". Such an intervention is helpful in demonstrating to the family about the relationship between family interaction and the problems. It improves the ways of interaction on the one hand and helps to adapt the therapy to different types of families on the other. Through mutual decision making and agreement both the therapist and the family are drawn together to formulate a plan.

Along with medical care and monetary benefits continued counselling and guidance are essential to achieve the maximum success (Dresser 1969).

A majority of the respondents studied by Toseland et al. (1986) believed that effective functioning depended on the integrity of the team and the support received from its sponsoring agency. Many respondents feel that there should be open communication, full
participation and active interest on the part of all the members of the team.

According to Smith (1988) victims of major accidents should be treated in designated trauma units and regional trauma units would prove to be cost effective. Lewin (1968) suggest that a head injury bureau could be established with a medical social worker in its staff. The social worker can lend service to the patient, the general practitioner and the consultant.

The clinical factors like duration of coma, length of post-traumatic amnesia, presence of signs of brainstem involvement, early signs of neurological deficit, site of injury and alcoholism not only serve as neurological indices of severity but also determine the outcome.

Of the various behaviour sequelae some are due to organic damage of the nervous tissues while others arise as a consequence of psychological reactions to the persisting disabilities and in either case the outcome is disturbed both at the individual and the family levels.

There is accumulation of evidence to say that numerous psychiatric sequelae develop after the injury and all of them disable the individuals and burden their
families. There is generally an agreement on the impairment of marital adjustment after head injury.

Certain other factors like premorbid personality, impending litigation, financial compensation and environment of the patient are also said to contribute to the final outcome after head injury.