CHAPTER 2
REVIEW OF LITERATURE

Stroke is recognised as both a fatal illness and a major cause of disability. It necessitates a great deal of care involving human and material resources. Consequently, in recent years, more research has been directed towards the study of its etiology, incidence, effect on mortality, rates and of means which might help to prevent its occurrence. At the same time, progress has been recorded in the rehabilitation of stroke patients and in the improvement of their chance of both surviving and living a satisfactory life afterwards.

Although a great deal is known about the epidemiology of acute stroke, including risk factors for occurrence and on subsequent mortality, less is known about the long term physical, social and emotional dysfunction that may ensue (Silliman et al., 1987).

In the following section, studies related to stroke and the psychosocial aspects of stroke have been reviewed.

This chapter contains the following components;

a. Studies related to epidemiological aspects of stroke and clinical variables.

b. Psychosocial aspects of stroke.

c. Psychosocial intervention in stroke.
d. Studies and reports by Indian authors about
   i. neurological problems with special reference to stroke
   ii. psychosocial problems of stroke and related disability.

The review is done with a view to understand the various developments occurred in the field and to develop appropriate psychosocial strategies for the management of patients with stroke problems.

A. Epidemiology of stroke and clinical variables:

Stroke remains the third biggest cause of death not only in the western world but also in every other continent. Harris et al (1971) found that stroke is the commonest cause of neurological disability and severe physical handicap in the community. The other causes of neurological disability include multiple sclerosis, spinal injury, muscular dystrophy, spina bifida, cerebral palsy and various 'systems degenerations' such as Parkinsonism and motor neurone disease.

Marquardensen (1969) found the incidence of stroke to rise markedly with age and about 70 percent occur in persons aged 65 and over. Rose and Capildeo (1981) confirming this trend gave the annual incidence of stroke related to age as below;
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<th>AGE GROUP</th>
<th>INCIDENCE PER 1000 PER YEAR</th>
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<tr>
<td>35 - 44</td>
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Incidence refers to the number of new cases that occur in a defined population in a given period e.g. per 1000 in one year. The average incidence for stroke in most countries is slightly more than 2 per 1000 population per year, although Japan and Finland report higher figures. One third of those affected with stroke will be left with some degree of neurological disability, usually a hemiparesis or a hemiplegia (Hewer, 1983; Dennis and Warlow, 1987).

The incidence of stroke rises sharply with age in both men and women. Although the incidence is highest in the over 85 age group, in absolute terms most strokes occur in the 65 - 75 age group where the population at risk is much larger.

The incidence of stroke has been measured in many studies around the world but methodological differences do not allow direct comparison. In general, the more reliable studies have provided similar incidence figures.
Incidence and prevalence of stroke:

The incidence of stroke and transient ischemic attack was studied prospectively by Terent (1988) in Sweden, during the periods 1975-1978 and 1983-1986. The number of first-ever strokes increased by 28% between 1970's and the 1980's, while the annual incidence of first ever stroke rose from 2.90 to 3.53/1,000 (p < 0.02). Female incidence increased by 38%, i.e., from 2.62 to 3.62/1,000 (p < 0.03) between the study periods. Male incidence however, changed nonsignificantly from 3.19 in the first period to 3.43 in the second. In 1975-1978, male incidence was four times greater than that of females upto 65 years of age. But the distribution became balanced in 1983-1986, when the increase in the incidence of stroke in women was 47% in the group of 25 - 44 years old, and 23% (p < 0.05) in the group of 45-64 years old. The annual incidence of first-ever transient ischemic attack was 0.43/1,000 in men and 0.48/1,000 in women in 1975-1978. The corresponding rates for 1983 - 1986 were 0.56 and 0.45/1,000 respectively. These changes were not significant. The causes of the increase in the incidence of stroke among women had not been established.

The population based study specifically addressing stroke in young adults (aged 15 - 44 years) was conducted in Italy from 1983 to 1985 by Nencini et al (1988). The average
annual incidence rate for all stroke (cases per 100,000 population per year) was 9.0 for males and 8.7 for females. The average annual incidence rates for the pathologic types of stroke were 3.4 for cerebral infarction, 3.2 for subarachnoid haemorrhage, and 1.9 for intracerebral haemorrhage. The case-fatality ratio was 23.4% at 1 month. Among patients with ischemic strokes, athero sclerosis and cardiac disease accounted for 50% of the cases. Based on angiography or autopsy findings, aneurysm or arteriovenous malformation were demonstrated in 88% of the patients with sub-arachnoid haemorrhage and in 50% of patients with intracerebral haemorrhage, no cause of bleeding was detected.

Broderick et al (1989) provided similar data on temporal trends for the incidence of stroke in North America. Among the residents of Rochester, the annual incidence rate of strokes declined by 46%, from 213 to 115 per 100,000 population, between 1950-1954 and 1975-1979. The decline occurred in all age and sex groups, but it occurred earlier in women than in men. The rates stabilized in the 1970s, and did so earlier in women. For 1980-1984, the incidence rate of stroke was 17% higher than that for 1975-1979. The onset of the decline in incidence rates co-incided with the introduction of effective anti-hypertensive therapy, but stabilized rates were associated with continuing improvement in the control of hyper tension. The increase in the incidence rates of stroke coincided with the introduction of
computed tomography, which appeared to increase the detection of less severe strokes.

The Oxfordshire Community Stroke Project (Sandercock, 1985) gave the percentage breakdown of all first-ever strokes by its pathological type, as follows: cerebral infarction (embolic or thrombotic) - 80%; primary intracerebral haemorrhage (not due to head injury or tumour) - 15% and subarachnoid haemorrhage - 5%. In hospital practice, it was found that the proportion of strokes due to haemorrhage to be higher, since haemorrhagic strokes were more severe and such patients were more likely to be admitted to hospital.

In 1989, Dennis et al did a prospective study at Oxfordshire (UK) Community stroke Project, of all the newly registered cases of stroke and transient ischemic attack (TIA) in a population of 105,000 residents. According to them the crude annual incidence rate was 0.35/1000 and 0.42/1000 standardized to the 1981 population of England and Wales. It was estimated that each year approximately 21,000 patients in England and Wales (about half of whom are above 70 years) consulted a doctor for the first time with TIA. The incidence of TIA increased sharply with increasing age, and overall incidence in men was very similar to that in women. However, in middle age, men were much more likely to suffer a TIA than women (odds ratio 2 : 6).
Hu et al (1989) investigated the prevalence of stroke in Taiwan in an epidemiological study of stroke, diabetes, and cardiovascular disease during 1986 in both urban and rural communities from four regions of Taiwan. The point prevalence rate for people aged 36 or older was 1,642/100,000. Prevalence rates differed significantly among the four study regions and between urban and rural communities, prevalence was greater in northern Taiwan and in urban communities. Percentages of the major types of stroke were as follows: cerebral infarction 67.1%, cerebral haemorrhage 14.0%, sub-arachnoid haemorrhage 4.2% and unclassified 14.7%. Of the stroke survivors, 67.1% were independent in activities of daily living, and 75.5% were independent in ambulation. Hypertension, heart disease, diabetes mellitus, and a family history of stroke were significantly more common in stroke survivors than in stroke free individuals.

In another community based epidemiologic Italian study, Recci et al (1989) surveyed the incidence and outcome of cerebrovascular disease, covering a population of 49,101 people. The identified patients were followed up at approximately 30 days and 6 months. During the first year of the study 189 cases were registered: 108 suffered a "first ever in life time" stroke, 30 a recurrent stroke and 51 a "first ever in a life time" transient ischemic attack. Sixty one percent of patients (71% of first strokes) had a computed
In their study, the crude annual incidence rate of first stroke was 2.2 per 1,000 and the standardized rate to the European population was 1.36. At least 83% of first strokes were due to cerebral ischemia; in 26 cases a clinical diagnosis of lacunar ischemia was made. The 30 day case fatality rate was 21% and 25% of these patients had recovered completely or almost completely after 1 month.

Rose and Capildeo (1981) reported that of the patients who suffer a stroke, about a third would succumb to it, a third would survive but with severe disability and the remaining would make a good recovery with good functional independence.

There is some evidence that the mortality from stroke is declining at a rate of about 1% per year in developed countries. Some authors have inferred from this that the incidence is also declining at a similar rate (Whisnant, 1984). The evidence for this is far from certain, since the declining mortality could be due to several factors other than a declining incidence including reduced case fatality rates and changing fashions in death certification (Dennis and Warlow, 1987). However, various studies on this have brought out different results.

Garrway et al (1983) reported how survival following stroke changed over time. Their study compared survivorship
for first episodes of cerebral infarction, intra-cerebral haemorrhage and sub-arachnoid haemorrhage which occurred in residents of Rochester, Minnesota during five year periods from 1945 to 1949, through 1975-79. The progressive improvement in long term survival, following cerebral infarction which occurred during these periods was such that a higher proportion of patients survived for six years in 1970-74 (45%) than survived for three years in 1945-49 (42%). A modest improvement in short term survival following cerebral infarction occurred up to 1975-79, but marked improvement in 30 days survival following intra-cerebral haemorrhage was noted. The reasons for the improvement in survival could have been due to possible changes in the diagnosis and management of stroke.

Risk factors and mortality in stroke:

Among the risk factors, certain factors greatly increase an individual relative risk while the absolute risk of suffering a stroke may still be negligible. For example, the oral contraceptive pill increases the relative risk of stroke about three times but since it is used by a very few risk group (young women) the absolute risk is minimal. Patients with bacterial endocarditis have high absolute and relative risks of stroke but because this is a rare condition, the population attributable risk is minute, and the proportion of all strokes attributable to bacterial endocarditis is negligible (Dennis and Warlow, 1987).
The study of risk factors is important in defining strategies for the prevention of stroke in individual patients and also in reducing the burden of stroke in the community. Also, prevention assumes an enormously important role in stroke due to the current inability to influence effectively important role in stroke the outcome of stroke once it has occurred.

Whisnat (1984) in his Minnesota study described that stroke mortality had declined 76% since 1950, and the primary cause for the decline was a decrease in the incidence of new cases of cerebral infarction and cerebral haemorrhage. There were no data on the incidence of stroke prior to 1945 to confirm the U.S. mortality trend. The decline in incidence was noted in women 10 - 15 years before it was seen in men. He quoted that hypertension was the most important risk factor for stroke and the available evidence was consistent with the idea that treatment of hypertension was the only significant contributor to the decline of stroke.

Similarly, Kotila (1984) in his study on the declining incidence and mortality of stroke in Finland, compared the data of 1972-73 with that of 1978-80 and found a declining trend in age - adjusted incidence of stroke. The incidence of sub-arachnoid haemorrhage decreased in women. There was no decrease at all in the incidence of cerebral infarction.
The total mortality displayed no clear declining trend. However, the mortality from cerebral haemorrhage after three months from stroke had gone down from 72% to 59%. The most important factors responsible for increased case fatality were lowered level of consciousness, cerebral haemorrhage and old age. Previous heart disease increased the mortality, but hypertension, diabetes, myocardial infarction and previous transient ischaemic attacks had no influence on mortality. Kotila inferred that the cause of decline in the incidence of cerebral haemorrhage might be due to the improved condition of hypertension.

Mortality due to cerebro vascular disease in France during the period 1968-1978 was compared with cardio-vascular and all other causes of death by Doyon et al (1988). Their study reported a 25% decline in the age adjusted cerebro-vascular disease mortality rates in both sexes and particularly in the middle aged group. This decline was greater than that of the general causes of mortality, which was in the order of 20%. It paralleled the decline in congestive heart failure mortality but differed from that of ischemic heart disease. Nevertheless, despite the increase in the proportion of elderly people in the population, the total number of deaths from cerebro-vascular diseases had remained almost unchanged, although the deaths occurred at a higher age than previously. Doyon et al claimed that, if this trend was confirmed, cerebro-vascular disease would
remain one of the more frequent cause of death in the elderly and thus a social problem of crucial importance.

Tuffs (1990) in her study on cardiovascular diseases projected that the decline in mortality from these diseases was due to better and earlier treatment rather than to prevention, as the risk factors for these diseases - cigarette smoking, hypertension and high cholesterol level were increasing in the population.

Epstein et al (1989) studied the incidence and mortality of stroke in Northern Israel to determine possible reasons for the differences previously found in mortality from this condition between the sex and ethnic groups in Israel as a whole. While the age-standardized incidence was higher in men, the case-fatality rate was twice as high in women. After controlling for ethnic origin, they found that incidence was higher in men of Western origin while the female rates were higher in women of Asian and North African extraction. The case fatality rate was substantially higher in women in all ethnic groups. These differences, especially in relation to the case fatality rate would have important implications for health services in relation to both possible preventive action and in the management of the acute disease phase.
Falke et al (1989) prospectively followed 78 patients with transient ischemic attack (TIA) from the carotid artery territory and 45 patients with minor ischemic stroke for 3 years. Mortality among the TIA patients was significantly higher than that of minor stroke patients (18 in 78, as compared with two of 45, \(p < 0.01\)); mortality in the minor stroke group was not higher than that in the background population, whereas mortality in the TIA group was almost twice as high. The most common cause of death in the TIA group was myocardial infarction. The morbidity due to myocardial infarction and new TIA was higher in the TIA group than in the minor stroke group (35 events compared to seven), whereas no difference was found regarding stroke (five strokes compared with the eight). Preexisting vascular disease implied an increased risk of mortality and morbidity in the TIA group. They concluded that carotid territory TIA indicated a worse prognosis than minor stroke, as mortality was higher in TIA patients at the same pre-existing vascular disease prevalence and stroke frequency.

Survival after stroke and transient ischemic attack was studied in Soderhamn, Sweden during the periods 1975-1979 and 1983-1987. Patients with first ever stroke and patients with first-ever transient ischemic attack were followed up by Terent (1989) for 1-3 years. Between periods, 3 year survival after stroke increased by 16% \((p < 0.003)\).
Fewer patients suffered fatal complications of stroke during the second period. The rate of stroke recurrence was approximately 10% per year during both study periods. Survival after transient ischemic attack did not differ from that expected in the first 2 years of follow-up during the either study period. The risk for stroke after transient ischemic attack was approximately 5% per year during both periods. The higher survival rate after stroke during the second period was the result of fewer fatal complications rather than of reduced risk for recurrent stroke.

Howard et al (1989) evaluated survival following stroke for patients from a five country area of rural North Carolina during two programme periods - one during 1970 - '73 and the other during 1979 - '89. One year survival increased from 19% in the first programme to 62% in the second for all stroke patients. The increase was from 54% to 68% for patients with cerebral infarction and from 18% to 55% for patients with cerebral haemorrhage. This study suggested that increased survival after stroke may account for a large portion of the decrease in stroke mortality.

Solzi et al (1983) in their study at Israel, on the survival rates, found no significant difference between men and women. Age at onset, however, clearly influenced survival chances; the expected mean survival was 6 years at 40 and 2 at the age of 80; average loss of life was 14 years
for the whole sample, meaning a prognosis two to three times worse than that of the general population.

At least 86% of the sample presented one or more of 5 etiological antecedents to stroke: hypertensive heart disease (HHD) peripheral vascular disease (PVD), diabetes mellitus, myocardial infarction (MI) and atrial fibrillation (AF). In 87% of them, HHD and/or PVD were present. Presence of hypertension significantly lowered life expectancy and so did PVD; their influence was felt from the earliest stages. In contrast, diabetes mellitus, the next common factor, had a late influence, starting about the fifth year after the stroke. MI and AF were present in relatively fewer patients, but they contributed towards a considerable decrease in life expectancy, evident from the first stages, the more drastic reduction being observed in the AF groups.

Etiology, neuropsychological deficits, type of aphasia and recovery were retrospectively studied by Ferro and Crespo (1988) with 254 young adults with stroke. Cardiac embolism was the most common cause of stroke in patients younger than 40, while atherosclerotic was the most frequent etiology among those 41 - 50 years. In 166 aphasic patients, compared with an older aphasic population, young patients had significantly more nonfluent aphasias and fewer comprehension deficits. These differences were related to stroke localization. The majority of infarcts localized by computed
Tomography in 37 patients involved either entire middle cerebral artery territory or its superior or deep branches, explaining the preponderance of non-fluent aphasia. Prognosis of aphasia in these 62 patients was better than had been reported for non-age selected aphasia populations. Roughly one third had an un-resolved language deficit. Complete recovery and significant improvement was observed even 6 months after stroke. In some patients, recovery was much better than might have been predicted from lesion site and size depicted on computed tomograms.

Dennis and Warlow (1987) studied the risk factors and outcome of stroke in general terms.

They found that most important risk factor for stroke to be hypertension, and that was very common in the old age. Other risk factor was non-rheumatic atrial fibrillation. Ischaemic heart disease also increased the risk of stroke due to its association with atheroma in the arteries to the brain. Diabetes mellitus doubled the relative risk of stroke, taking into account all other risk factors. Transient ischaemic attacks increased the individual risk of stroke significantly, and smoking also increased the risk of stroke. The other environmental risk factors were diet, alcohol, climate and physical activity - but there was little evidence to suggest that they were significant risk factors.
As reported, the investigation of stroke outcome was useful in enabling to plan health care facilities, treatment trials and trials of secondary prevention. In individual case, it allowed to advise the patients' relatives of prognosis and to plan treatment and placement. They also suggested that by studying large number of stroke patients the factors influencing the outcome could be identified.

Khaw et al (1984) in their 9 years followup study reported that, age was the most significant independent risk factor for stroke associated mortality in both sexes. Both, blood pressure and cigarette smoking were the potentially remedial risk factors for stroke after the age of 65 years.

Ahlsio et al (1984) concentrated on the quality of life of patients after stroke and how this was influenced by disablement and emotional factors. Ninety six consecutive patients of mean age 71 years were followed for two years. At the end of that time 23% had experienced a recurrence of stroke and 27% were deceased. Of the survivors, 76% were dependent as regards to activities of daily life (ADL) and lived in their own homes. Age as well as initial function were prognostically important factors. Most of them had experienced a decrease in their quality of life during the two years. The deterioration was more pronounced in ADL dependent patients than among the independent. However, depression and anxiety were found to be of similar importance
for quality of life as was physical disablement. These findings greatly emphasised on the need for psychological support in the case of post stroke patients.

OUTCOME STUDIES

Most stroke patients show considerable recovery of function over the first few months (Newman, 1972; Skilbeck et al 1983), although the exact extent and duration of this recovery is less certain. Studies are usually based on infrequent assessments under taken over the first few months after stroke. Little information is available concerning the details of recovery in the first few weeks after stroke.

Wade et al (1985) investigated the factors related to recovery after stroke and reported that recovery was fastest in the first few weeks after a stroke but that it continued beyond the first 3 months. When they analysed the patients' recovery based on their functions such as walking, dressing, feeding, transferring and continence, they found that for each function, recovery was most rapid in the first two weeks but continued later. Incontinence was associated with poor functional recovery. Discharge from hospital coincided with a slowing or stopping of recovery.

The speed of recovery found in this study was similar to other previous studies (Newman, 1972; Jimenez, 1979; Wade et al 1983). Wade et al suggested that the rehabilitative
therapy should concentrate more on cognitive ability than on physical functioning.

The predictive factors in stroke recovery were aimed at by Henley et al (1985). 172 stroke patients were assessed two weeks post-stroke by a multi-disciplinary team. Two groups of variables were identified for 'good outcome' as well as 'poor outcome'. Generally it was observed that the good outcome was associated with variables like living with partner, high frequency of social contacts, previous independence and history of transient ischaemic attack. Likewise the poor outcome was associated with advanced age, prolonged coma and stroke during sleep. Findings during the first two weeks after stroke related to good outcome after one year were as follows: high level of consciousness, absence of visual field neglect, positive mood, normal speech, verbal learning ability, visuospatial ability, stereognosis, presence of isolated limb movements, presence of superficial touch and joint position sense, upper limb sensory motor co-ordination, high functional mobility, ability to perform personal activities (drink, feed, dress and personal hygiene) and ability to perform domestic activities.

The variables which indicated poor outcome during the first two weeks after stroke were conjugate gaze deviation, confusion, incontinence, perseveration, sensory neglect,
hypotonicity, swelling of hand, swelling of foot and pain in the shoulder.

They also came across an interesting negative result in regard to the lack of any significant relationship between recent life events and outcome.

From their findings it appeared that the patient's attitudes towards and ability to co-operate with treatment was as important as the actual amount of treatment provided.

Kotila et al (1984) analysed the recovery of stroke survivors in relation to discharge from hospital, activities of daily living (ADL) and return to work. A clear improvement in neurological and neuropsychological deficits was seen from the acute stage to three months, and this continued to twelve months, but to a lesser degree. 69% and 78% of the patients were at home three and twelve months after stroke respectively. Independence in ADL increased from 32% to 62% and 68% by three and twelve months, respectively. Of those gainfully employed prior to stroke, 55% had returned to work after twelve months. As a group, sub-arachnoid haemorrhage (SAH) patients seemed to recover better. Old age, acute stage, hemiparesis, impairment of intelligence and memory, visuoperceptual deficit, non-adequate emotional reaction, and living alone had a major negative influence on outcome.
In order to investigate the frequency, extent and importance of progression of stroke symptoms after arrival at hospital, Britton and Roden (1985) evaluated speech ability, extremity and facial pareses and graded on four occasions during hospitalization.

Deterioration was noted in 43% of the patients; it was fairly marked in 25%. The frequency among the few patients with cerebral haemorrhage was much the same as in those with infarction. Limb motor function was affected in most cases. Patients with progression stayed longer in hospital, were more disabled at discharge and more often needed further institutional care than those without progression, although the initial dysfunction was similar in the two groups.

The overall mortality rate one year after stroke was observed to range from 42% to 48% in different studies (Brewis et al 1966; Weinfield 1981; Henley et al 1985). These figures were lower for patients kept at home because they were, as a group, less severely affected. However, every survivor was found to have a continuing 10% chance each year of another stroke and 15% chance every year of dying, most commonly from a cardiac cause (Wade, 1986).
Brot and Reed (1989) studied that with the fully equipped medical intensive care units with on-site availability of emergency computed tomography and emergency cerebral angiography, high-quality intensive care could be provided to stroke patients outside of a specialized unit. Also, the standards of care can be developed that would effect varying capabilities for highly specialized neurological monitoring.

Klatsky et al (1989) studied the relations between related alcohol use and the incidence of hospitalization for several types of cerebral vascular disease. Daily consumption of three or more drinks, but not lighter drinking was related to higher hospitalization rates for haemorrhagic cerebral vascular disease especially intracerebral haemorrhage. Alcohol use was associated with lower hospitalization rates for occlusive cerebrovascular disease; an inverse relation was present in both sexes, whites and blacks and for extracranial and intracerebral occlusive lesions and baseline disease. Their data suggested that heavier drinking increased the risk of haemorrhagic cerebrovascular events, but that alcohol use may lessen the risk of occlusive lesions.
Neimi et al (1988) studied the quality of life for 46 stroke survivors under the age of 65 years, 4 years after their first stroke. The results showed that in spite of a good recovery in terms of discharge from the hospital, activities of daily living and return to work, the quality of life of most patients (83%) had not been restored to the pre-stroke level. Deterioration among the several domains of life ranged from 39% to 80%, the lowest being in the domain of activities at home and the highest in the domain of leisure time activities. Hemispherical localization of the lesion, paresis, coordination disturbances, and especially subjective tendency to depression were highly correlated with a deterioration in the quality of life. Dependency in activities of daily living and an inability to return to work were also associated with the lack of restoration. Their results suggested that much more attention should be paid to the quality of life of stroke patients.

An innovative evaluation method was used by Dove et al (1984) to study the outcomes and clinical predictions for patients with acute cerebral vascular accidents. The technique involved the participation of several professional disciplines in selecting and treatment variables and making independent prediction about the functional status of patients upon discharge from the stroke treatments centre. The data suggested that (i) base line variables were more
important than treatment variable in the participants' prediction about the patients' short term outcomes; (ii) stroke unit staff members were generally successful in predicting patients' functional status and (3) stroke extensions and other complications were important factors which affected stroke patients' short term outcomes.

Nursing and physical management:

Tilton et al (1982) focussed on the nursing aspects to be identified in patients with stroke. According to them, the following seven areas required intensive probing:

i. Impairment in communication related to aphasia.

ii. Sensory-perceptual alteration related to right sided hemianopsia and hemiparesthesia.

iii. Impaired physical mobility related to hemiplegia and hemiparesthesia on right.

iv. Alteration in nutrition related impaired swallowing and right sided hemiplegia.

v. Alteration in pattern of urinary elimination related to impaired impulse to void associated with neurogenic bladder.

vi. Alteration in bowel elimination related to alteration in nutrition, immobility and impaired defecation impulse.

vii. Potential impairment in skin integrity related to diminished sensation, impaired mobility and incontinence.
They presented specific types of assessment for each of these areas and inferred that in the case of stroke patients, the nomenclature of nursing diagnoses offered nurses a precise and consistent means of communicating and documenting the problems that nurses can manage.

Seven clinical tests were used by Wade et al (1983) to study the recovery of arm function in 92 patients over 2 years following their stroke. Statistically significant improvement was only seen in the first 3 months. While recovery of lost function did relate to the degree of initial neurological loss in the arm, it seemed to be largely independent of the overall severity of the stroke.

Griffith and Miller (1980), based on their own experience highlighted the importance of the use of speech, alternative ways of communicating, effect of morale on the use of speech, motivation and rehabilitation. They concluded that hope for the future would be essential but over optimism could deter the patients from using to the best advantage what is left. He suggested that the fight for the recovery itself would promote some inner peace and self respect.

In respect of the need of physical therapy for patients with stroke, Brocklehurst et al (1978) studied 135 patients with stroke surviving at two weeks and viewed that the objectives of physiotherapy for patients with stroke needed
careful definition with emphasis on treatment in the early months.

Nursing research indicated that the use of Bobath principles, a treatment approach based on the belief that stroke patients have the potential to regain movement and function of the affected sides, made a significant difference in the functional gains of stroke patients. Passarella and Gee (1987) using Bobath principles described various techniques which would help the patients function bilaterally even before he was allowed out of bed. They highlighted that, such an approach could go a long way toward improving the patients appearance, function, attitude and level of independence. It could help prevent disfiguring contractures, progressive neglect, dwindling self esteem and the loss of abilities, and reduce the families' burden.

Forster and Young (1990) reviewed the advantages and disadvantages of community physiotherapy for stroke patients.

The advantages of community physiotherapy were the following:
i) travel, ii) quick response, iii) limiting hospital admission, iv) improved home environment (patients were more relaxed and co-operative in their own environment and the treatment was more relevant), v) family involvement was more with better attitude, better care and better adjustment. The physiotherapist could also train the family on the activities
which patient had to carry at home, vi) the therapist was able to facilitate a patient's discharge from hospital and ensure that problems were speedily resolved.

As disadvantages, they observed that the frequency of depression and isolation felt by stroke patients and their main care givers were more as the visits to hospital for treatment were often the only opportunity for patients to escape from their four walls and for carers to have some time to themselves. If therapy was entirely home-based, patients might feel more socially isolated, being deprived of the encouragement and reassurance of fellow-stroke sufferers.

However, as Robins and Weinfield (1981) felt the data on the evaluation of stroke patients outside the hospital and follow up were minimal, as there was lack of information from the patient's relatives and the general physician (with whom the majority of the patients made the first contact and maintain follow up). This situation has not changed even after a decade.

Wade and Hewer (1985) described that stroke patients consumed nearly one twentieth of all natural health service resources and much of this was attributable to the admission of patients with acute strokes to hospital. However, patients rarely needed to be admitted for diagnostic or therapeutic reasons, and rehabilitation given in hospital was
something inappropriately. The major reason for admission was related to nursing care during the acute phase yet this could have been done at home in more cases. It was suggested that rehabilitation services should be more readily available for patients at home, so that fewer needed to be admitted and those admitted, could return home sooner. They felt that such an approach might lead to a more appropriate rehabilitation, less anxiety and depression in the patient and his family, and a more efficient use of limited resources.

PSYCHOSOCIAL ASPECTS OF STROKE

Stroke entails various degrees of loss of physical and mental functioning. The individuals suffer from mild embarrassment to feeling of shame and humiliation. Emotions, intellect and behaviour, being the products of brain activity, get disturbed by stroke and the survivors of stroke frequently suffer adjustment problems. Loss of mental abilities could occur as a reaction to mental upset, most commonly in the form of depression and anxiety (Fyre-Pierson, 1987). Deterioration could occur in variety of manifestations and depending on severity, they greatly influence the recovery and readjustment.

The repercussions of stroke are reflected not only on the individual but also on his family. The families undergo shattering experiences and the family members are forced to
face an unanticipated crisis, which could lead to total breakdown of the entire family functioning, causing great stress. Usually the family is left in a desperate helpless state of intense insecurity and instability while coping with the changes in behaviour, sexual functioning and other aspects of personality of the stroke patients (Wade, 1987; Dennis and Warlow, 1987; Noonan et al 1988).

Individuals response to stroke: Goodstein (1983) discussed factors which contributed to the individual's response to stroke. They included the meaning of the disease to the individual, self perception of the specific loss of function, the reaction of family and friends, the response of others within the social network, the effect on physical appearance and sexuality and the extent of loss of finances.

Individuals experiencing stroke react differently depending on their age. The adolescent patients studied by Dix and Ridder (1983) responded differently. With support and guidance they found, the adolescents accepted a different set of values that enhanced self-esteem and facilitated acceptance of an altered body image and permanent changes in physical endurance. Their potential for growth and personal growth, as an asset fastened the development of courage, perseverance and other skills helpful for dealing with their life.
Binder (1983) elaborated the emotional problems after stroke. He quoted estimates of the prevalence of clinically significant levels of depression after stroke to range from 26 to 60%. Other common difficulties included over dependence on others, inflexible and rigid thinking, impatience, irritability, impulsivity, denial and lack of awareness of problems, insensitivity to others and poor social perceptions. Occasionally suicidal ideation and paranoid delusions occurred. The emotional reaction to the sensory and motor symptoms was complicated and compounded by the cognitive deficits caused by the lesion - in language, reading, writing, memory, visual perception, planning, judgement, logic, initiative etc. Evans and Miller (1984) found the stroke survivors to live with incomprehensible fears of death, insanity, disfigurement and loss of physical function. They also experienced loss of dignity, severe financial problems and role alterations. With almost every personal need, they faced deficit and inability and were continuously confronted with diminished capacities.

Stroke has important consequences for the patients' social function too. About 25% of hospital admitted patients need permanent institutional care. Those who are able to manage at home may become socially isolated as may their families. Efforts directed at problems in these areas may be among the most rewarding in terms of improving the quality of
life of stroke survivors and it is unfortunate that psychosocial consequences are frequently underestimated or ignored.

Ahlsio et al (1984) studied disablement and quality of life after stroke. They viewed the quality of life as a subjective measure, dependent on the individuals' physical well being, psychological situation, living conditions, relationships and opportunities for meaningful activities. They also addressed the issue that the ability to perform independent ADL did not necessarily imply absence of physical disability and that it would be wrong to assume that the quality of life would improve as the individual became independent in ADL.

Sjogren (1982) suggested that life quality was closely related to leisure satisfaction and efforts should be taken to help fulfil life desires and minimise psychosocial deprivation of stroke survivors.

Doolittle (1988) observed stroke to affect one's self view, as well as how others viewed him. It also greatly altered how the individual viewed the future. She felt that systematic comparison of life histories of many stroke survivors would yield patterns and relationship of post-stroke processes, relevant to recovery potential and rehabilitation tolerance.
The stage of psychological coping to major illness have been studied by many. The main findings highlight that the acceptance of the illness of disability begin with denial and goes through displacement, isolation, reaction formation, depression and acceptance (De - Nour et al., 1969).

Andersons and wolf (1986) felt that across the life span, the impact of chronic physical illness on sexual behaviour was often overlooked in clinical care and research. Psychological adaptations of patients and their partners were often overlooked as contributing to sexual difficulties. Chronic physical illness threatens basic personal resources - sexual identity and self esteem, personal control over body functions, intimacy and generative that would have an impact on sexual behaviour. Psychological processes of cognitive appraisal, emotional expression and coping strategies that were triggered by chronic disease play a vital role in sexual adaptations.

Sioteen et al (1990) highlighted the changes that the spinal cord injury patients underwent in different aspects related to sexuality, overall quality of life and physical psychological and social adjustment. Despite severe genital dysfunctions, more than half of the subjects (57%) rated their sexual relations after injury as satisfying or at least rather satisfying. The majority continued having intercourse although many of them more seldom than before, and about half experienced orgasm.
Sexual adjustment after injury was closely and positively correlated to frequency of intercourse, willingness to experiment with alternative sexual expressions and young age at injury. Physical and social independence and a high mood level were further positive determinates of sexual adaptation after injury, whereas the neurological level and completeness of injury showed no significant correlations with sexuality. They suggested that sexual information and counselling should be integrated in the total care of such patients to reduce the negative effective on sexuality caused by the injury.

Mental health professionals are confronted time after time with depression in the context of stroke illness and the link between the two is of practical and theoretical interest. Morris and Raphel (1987) while addressing this topic observed that the process of adjustment to serious physical illness could be understood in terms of personal vulnerability, including low self-esteem and the conflict experienced within. A modifying factor on the outcome of the adjustment was the influence of social support in protecting the individual from the life events.

Variables likely to have an important place included (i) family history of psychiatric disorder (ii) a past personal history of depression (iii) the pre morbid personality (iv)
the impact of life events including the illness (v) the degree of disability from the illness (vi) the presence of brain pathology and neuro-endocrine abnormalities; and (vii) the quality of social support during the time of illness. A greater understanding of the relative contributions of these variables would enable more rational management of the individual patient.

There is a growing interest among health care professionals in the social and psychological difficulties facing stroke patients and their families. Maladjustment of psychologic, social, familial and economic stress following stroke might impede rehabilitation.

Feibel et al (1979) described the unmet needs of stroke survivors through a follow up study. Within the first 6 months after hospital discharge, the following difficulties (with percentage of those affected) were found. Moderately or severely incapacitating depression (37%) anxiety/anger (32%) or both (43%), significant economic strain causing life-style alteration (46%) and disruption of normal family functioning (52%). The number of affected patients and families remained relatively constant in the first months following hospital discharge. Despite available medical and community services, depression was rarely diagnosed or managed. No patient utilised existing stroke groups, psychologic or family services. These unmet needs were in
dramatic contrast to the effective performance of community services in reducing physical disability by improving function in activities of daily living. Unnecessary delay in recovery resulted from the failure of health care professional to appreciate and respond to the psychosocial needs of stroke services.

Robinson and Price (1982) attempted a follow-up study of 103 patients attending a stroke clinic. The patients were evaluated for post-stroke depression disorders, during a twelve month period. Almost one third of these patients were depressed at the time of the initial assessment and two third of these depressed patients who were reevaluated remained depressed for 7 to 8 months. The prevalence and severity of depressive disorder was significantly elevated in those patients who were at high risk for developing post-stroke depressive disorders: patients with left hemisphere frontal lobe infarctions who were within two years of the stroke.

Robinson et al (1985) found that post-stroke depressive periods were multifactorial in their determination and included both neuro-physiological - neurochemical mechanisms and psychological factor in their etiology.

In a selected group of right handed patients with single stroke lesions of either the right \( n = 14 \) or left \( n = 22 \) hemisphere and no predisposing factors for psychiatric disorders, Robinson et al (1984) found that the severity of
depression was significantly with proximity of the lesion on CT Scan to the frontal pole in the left anterior group. The right hemisphere lesion group showed the severe trend. Patients with posterior lesions were more depressed than patients with right anterior lesions who were unduly cheerful and apathetic. Their findings suggested intrahemisphere lesion location was in some way related to mood disorder in stroke patients and that there was a graded effect of lesion location on severity of mood change. The neuro-anatomy of the biogenic amine-containing pathways in the cerebral context might explain this graded effect and provide a neurochemical basis for the mood change.

Families' response to stroke: The family is subjected to a lot of suffering and hardships after a stroke and effects are borne by the family for a long time. The studies in this regard have been reviewed. A decade back, Mauss-Clum and Ryan (1981) reported that the adult onset of brain injury, especially as a result of trauma, stroke, or cardiac disease, being a sudden life threatening crisis, disrupt family life.

Hence, they emphasised the importance of including the families in planning acute and long-term care of all patients, especially the injured. They described that, at the time of injury, families wanted regular conferences to discuss the patients' condition and prognosis. They wanted a part in evaluating his future capabilities. They deserved to
know enough to be able to make informed decisions. Soon after the emergency stage was over, families needed financial counselling. Beyond giving information, someone on the health team was to find out how the family was reacting. Before the patient was discharged from the hospital, someone had to discuss how the family life might be changed as a result of brain injury, and also to give the family a resource to call when problems arose.

Stroker (1983) attempted at a descriptive study to gain information regarding the impact of the disability on families of stroke clients. Males were found to score higher than females in the areas of negative attitude towards the client, over commitment and financial problems. The males seemed to have greater difficulty with their new roles and responsibilities as care providers. As a major implication for nursing practice from the study, the author emphasised the need to include the family in the rehabilitation process. Community support of these families was also found to be important.

Ann (1984) examined how caring for elderly widowed people affected the lives of the caring family members. They were more likely than other families to suffer life restrictions before and after the death, because of the care and support given to the deceased and the surviving spouse. In addition to their caring role, they were often committed
to full or part time employment and had their own families to support. The care they provided for the elderly was not always without cost.

Stroke was an important cause of functional dependence among elderly. Hence, independent functional status was the single predictor deciding the stroke patients to be discharged from hospital. Silliman et al (1987) felt that the effects of persisting dysfunction on them and their families should be minimised if their living had to be improved.

Noonan et al (1988) in the study on family variates related to stroke patients found that the care givers reported significantly more state anxiety and more trait anxiety when compared to normative samples. Patients were reported to have significantly more confusion, depression and anxiety and to have participated in fewer household activities, and they were overall less well adjusted. Care giver anxiety was a significant predictor of adjustment for interpersonal involvement, social activities and total adjustment.

Similarly Evans et al (1989) evaluated the stroke patients to examine the contributions of care giver anxiety, self-care ability, age, time since onset, marital and residential status, and need for health care services on personal adjustment as reported by care givers. Compared
with community norms, stroke patients were reported to be more depressed, confused and anxious and they demonstrated fewer household management skills. Stroke patients were not different from a normative sample on measures of interpersonal involvement or social activity. Care-givers had high levels of anxiety compared with norms.

Pilsuk and Parks (1988) reviewed studies related to care giver burden, role of family in care giving, the care giver's net work, supportive services and care in the home and in the institutions. They opined that the service programmes represented an important patch work by which some care givers and recipients obtained needed help. Also that the services were unable to close the widening gap between the number of people who required care and the number who provided it. It was observed that the matter of care giving should not be one of meeting local needs of local resources; care giving clearly should be a matter of national policy.

Psychosocial intervention in stroke: Stroke individuals undergo psychological reaction, grief. They become worried about body control, employment, housing, loss of sexual function and social image. They need discussion about diagnosis and prognosis and would require intensive intervention in regard to their future coping.

The psycho-social problems are not restricted to the patients alone. A sense of isolation is felt as much, or
more by the relatives in many households, as they have to assume for months or years a responsibility combining the skills of nurse, neurologist, neuropsychiatric social worker, psychologist, speech therapist and other remedial therapists. Hurwtz and Adams (1972) felt that this role calls for unfailing optimism, resistance, patience and sympathetic understanding and support from community services and society.

In order to practice effective after care for stroke patients, Nichols (1976) narrated the following principles:

a) A clear definition of the clinical problem and likely outcome to be made, and discussed with all concerned as early as possible, the patient included.

b) A realistic programme for hospital admission and returning home and to work, should be agreed as soon as possible.

c) Appropriate industrial or domestic resettlement to be phased in, with physical treatment as soon as possible.

d) Not to leave gaps in treatment even for a few days.

e) Skills assessment to be made of the environment needs, aids and appliances, and the social support needed for people with long term disabilities.

For recovery and restoration of social function in a stroke patient, apart from the patient's co-operation, the family also would need details of diet, hygiene, control of
bowel and bladder, manicure, the scope of self-care and activities of daily living, and adaptations in the home. The family also would need opportunities to meet where they may find sympathetic understanding, counselling, and a sense of support through discussion, not only with professional but with others who share, or have experienced the difficulties of the family coping with stroke (Wells, 1974).

Treatment of the acute stage of stroke has to be in hospital. Alkalay and Wasserman (1983) felt that continuation of treatment and rehabilitation often prolonged depending on many factors. The modern hospitals, with their special rehabilitation units could help the patients recover from stroke. However, as Gang (1977) observed, the innovations in the delivery of community health care services made the professionals think of the possibilities of providing effective treatment in the home itself, in order to facilitate the patient and family and also to cut down the cost of hospitalization.

Stroke patients do not always receive the optimal level of rehabilitation in the hospital. Though stroke is commonly thought of as being a hospital based problem, in practice the admission rate of all new episodes of stroke appears to vary widely from 40% to 75% (Erocklehurst et al., 1978)
Grahm and Arie (1978) viewed the decision whether or not to admit a stroke patient to hospital to be influenced by social factors, the desires of the patient and the family, and the gravity of stroke. Social factors such as living alone, relatives' failure to cope, old age and low socio-economic status were found to be most important to consider admission.

The attitude of patients towards hospital is another factor that would smoothen treatment and after care management. Christie and Lawarence (1978) studied the attitudes of the stroke survivors towards the hospital, six months after the acute episode. Their attitude towards the hospital in which they received initial care, were not associated with social class, residual disability or length of stay, but were strongly related to age and sex. With increasing age, men regarded the hospital environment less favourably changing attitude towards doctors being a major contributor. In the case of women this trend was reversed, increasingly positive attitude being associated with increasing age. Technical skills of medical staff were highly regarded by most, but their ability to communicate and relate with stroke patients was often thought to be inadequate.

Three aspects to be kept in mind in the practical management of stroke would be, the patient, family and the
services available. In this regard, Bronsten et al (1986) emphasised the need to indentify patient related recovery - impeding complications, assessment of the impact of stroke on the ability to perform activities of daily living and to determine how depression affected functional recovery.

Even in the literature dealing with psychological and social aspects of recovery and rehabilitation from the acute onset of coronary heart disease (CHD), there was little question that CHD would result in the temporary disruption of normal psychological and social functioning. Long-lasting emotional distress, familial problems and occupational maladjustment were observed in a significant minority of patients. Psychosocial counselling appeared to facilitate and hasten rehabilitation (Doehrman, 1977).

Other studies related to cancer management also found that psychosocial adaptation to illness and disability was related to patient's ego strength (Worden and Sobel, 1978; Druss and Dougless, 1988) and sense of efficacy (Bloom, 1979) and they could be modified by intervention.

In a series of patients admitted to a stroke unit, the outcome of the acute phase of stroke rehabilitation, assessed by the patients returned to independence. The outcome was found to be related to the results of clinical examinations of mental function (memory recall and problem solving
ability), sensory function (proprioception and special orientation involving the left half of the space), motor function (upper limb and lower limb), postural capability and communication function (comprehension of speech and expression). The prediction of subsequent independence was estimated accurately, using the results of these tests (Prescott et al., 1982).

Sinyor et al (1986) examined the phenomena of post-stroke depression and evaluated its relationships to functional impairment, coping strategies and rehabilitation outcome. Patients presenting to a rehabilitation programme within weeks of first stroke were evaluated for depression through self-report measures and staff ratings. Patients also rated the particular coping strategies which they used in dealing with their illness and hospital stay. A high prevalence (47%) of depression was found in this population with no overall differences observed between patients with right or left hemisphere lesions. Depressed patients, in comparison to non-depressed, evidenced greater function impairment at both admission and discharge. However, both groups showed similar gains over the course of rehabilitation. Coping strategy employed by depressed patients appeared to reflect a lower level of participation in the rehabilitation process. These findings indicated, and later supported (Parikh et al., 1988) that depression was a frequent companion of stroke, that it is associated with
degrees of functional impairment and that it might exert a negative impact on the rehabilitation process and outcome.

Psycho-social rehabilitation implies services provided to the disabled person in order to reduce impairment, to facilitate optimum acquisition of skills, to overcome the disability and to intervene in the social area of patient's life.

For this, attempts are made to treat the deficits, strengthen assets, provide skill training and thus to intergrate the individual into the environment.

Hurwitz and Adams (1972) also observed that the encouraging prognostic signs in stroke rehabilitation were rapid recovery from coma, incontinence clearly in 2 to 3 weeks, absence of depression, absence of dementia, good recent memory, energetic demeanours, normal language, early recovery in positive supporting reaction, early recovery in balance, well aligned posture, rhythmical walk, unaffected proprioception, absence of anosognosia and transient apraxia.

In terms of contermporary model for rehabilitation after major stroke, they also listed the encouraging, as well as discouraging signs during in-patient assessment during 6 to 10 weeks after onset. As encouraging signs, with good home conditions, extended in-patient treatment, frequent home visits, family doctor care, day center vocational activities
lead to independent living of the patients. With the poor home condition, extended inpatient treatment, frequent home visits, family doctor care, day hospital physiotherapy, vocational activities and speech therapy resulted in not wholly independent status to the patients.

In his editorial comment, Peigenson (1979) dealt with some practical considerations like effectiveness, benefits and cost, in respect of stroke rehabilitation. In regard to effectiveness he mentioned six areas:

Effectiveness of rehabilitation, and its relationship with length of hospitalization, type of hospital rendering acute care, early institution of therapy, development of guidelines for stratification of health care services and regionalisation of health care services.

He also highlighted on the total cost for caring for a stroke patient and methods of minimising cost. It was found that the cost could be minimized by teaching interested friends and family members over the basic principles of rehabilitation, and then enlisting them in performing in a range of motion activities, transfer, activities of daily living, ambulation training and basic speech activities. He felt that by harnessing this un-tapped resources, rehabilitation could be started within 24 to 48 hours after admission to hospital often eliminating the added expense of hiring extra staff to provide these services.
Dombovy et al (1986) in their detailed review of researchers about rehabilitation of stroke, arrived at the central issue in rehabilitation for stroke i.e., whether early intensive rehabilitation by reducing functional dependency, acted to decrease long term social and economic cost. From this question stemmed several other important questions (a) which patients were likely to benefit from intensive rehabilitation and could they be preselected? (b) when should rehabilitation begin? (c) where should rehabilitation take place? (d) how should rehabilitation programme be organised?.

They felt that if these problems were to be solved, studies must be designed to include following criteria : (a) strict definitions and characteristics of specific populations, sample groups and control; (b) information concerning timing, duration, quality and type of therapy; (c) uniform assessment of patients with measures that have proven validity and reliability; (d) adequate numbers of comparable patients and controls. They also conveyed that such controlled studies would provide much useful information about patient care and the organisation and delivery of rehabilitation services.
Family and community support:

Thoitis (1986) quoted the theoretical framework to highlight the possibility of developing accepted and effective models of coping and support, as the coping strategies used by individuals in response to stress, and the strategies provided an assistance to distressed persons were the same. In close relation to this, Frank et al (1987) implied that an important aspect of emotional recovery was moving the injured person (SCI) toward a belief in internal resources.

The survey of research studies on social support individuals normally receive and its strength during illness brought many aspects to light.

Stuere and Gerson (1977) surveyed Detroit area and observed that social support varied over the course of the life span. As young adults, men were likely to retain childhood friends, but when they married and had children, their involvement turned to the neighbourhood in which they lived. Ties at work also became substitutes for childhood friendships and were more likely to endure into old age.

Lawton (1981) argued that environments for older people must maintain the right mix of support and challenge for each person; an environment that provided too much of support and too little challenge for a well functioning older person
would faster dependency and deterioration, although the same environment might provide too little support and too much challenge for someone who was frail.

Negative social interactions (eg. troublesome neighbours, problem getting along with fellow workers, troubles with boss or superior, difficulties with friends) were found to leave more psychological distress than the life events (Kanner et al., 1981).

Kobasa and Puccetti (1983) in their study on illness related stress, reported that most frequently affected area was work, and support from the boss buffered the effects of stressors on illness.

Dunkel and Schetter (1984) reported that cancer patients found information and advise from health care providers to be helpful; the same support resources were perceived as unhelpful when offered by family and friends.

Social support groups and group psychotherapy are known to provide patients with severe disability better care of their health, how to handle problems and that their problems were not unique (Brunh et al., 1971; Miles, 1979). Also, the patients who attended such groups could solve not only illness related problems but also general problems (Taylor et al., 1986).
Problems stroke patients experienced after rehabilitation and how they perceived and interacted with their environment were focused by Davidson and Young (1985). Person who had been suddenly disabled by a cerebrovascular accident and who had been through a rehabilitation programme went through a repatterning process when they returned to their home environment. These persons made changes in their environments in response to the changes which had occurred to them. The goal was to achieve an environment which was challenging but not overly stressful. Extensive energy was expended in accomplishing the activities of daily living and a few pleasurable social activities. They observed that planning and timing were complex process designed to allow for the continuation of previous pleasurable patterns.

Sexual dysfunction in stroke and its management:

Levitt (1981) opined that physically disabled individual needed positive reinforcement, encouragement, and sex counselling, to adopt to a mode of sexual expression that would satisfy both the patient and partner alike. She stressed that a mutually satisfying sexual experience would be possible. Her guidelines for the brief sexual history included, in the background on present relationship, occupational, social, educational and religious details of couples; and the feelings of both partners about present disability and each partner's expectation of their sex life. Counselling that she suggested encompassed the following:
Sex education; resumption of sexual activity fitting into a realistic life style for the couple, with the limitation of the disability defined; adaptive sexual technique that would be realistic in terms of the patient's limitations, the couple's personal preference, culture and religious background; being positive, supportive and reassuring; and encouraging open communication between the couple in a manner most comfortable and constructive for the relationship, as physical disability did not mean asexuality.

Tusk and Assejeu (1983) dealt with the problems of the rehabilitation of female paraplegics, including sexual intercourse, conception, delivery, pregnancy and motherhood. Successful rehabilitation created favourable condition for female paraplegic to bear children.

Their team approach to the problem of pregnancy and delivery in paraplegia included involvement of the gynaecologist, obstetrician and paediatrician. Work was entrusted to the clinic for gynaecologist and to the rehabilitation institute. While pregnancy in the paraplegic involved risk, this did not also apply to the delivery. Complication during pregnancy or delivery did not differ from those occurring in healthy pregnant women or healthy women in labour.

Usually, a paraplegic mother could meet the requirement of nursing, caring for and bringing up her children, thus
there was no reason why a properly rehabilitated female paraplegic should not fulfil her life and happiness by becoming a mother.

Some negative aspects uncovered were the incidence of feelings of depression, frustration, and the number of deaths from suicide. Nevertheless, females with spinal cord injury were by and large functioning very well in the community. Many positive features of life satisfaction such as living arrangement, family relationships, social activities and permit of further education were noted.

The result of such studies indicate that there are aspects of the rehabilitation programme which should be reviewed and the efforts to improve our knowledge and methods of treatment must continue. Yet not withstanding the myriad problems which they face from day to day, women are managing to deal with the paraplegic or tetraplegic state in a remarkably successful way.

Vocational readjustment:

Vocational activity has remained a pre-eminent ingredient in rehabilitation practices. For some patients, it is rehabilitation procedure, i.e., they are relearning what they once knew, but for many patients, it is habilitation procedure, i.e., they are learning to work for the first time.
Gellman (1966) elaborated on the perspectives in the rehabilitation. He suggested that scope of rehabilitation be expanded to include services to the disemployed—a significant portion of the disadvantaged group. The goals of rehabilitation, while broadened, would remain vocational the formation of a productive orientation and the capacity to work productively. He felt rehabilitation services were to add preventive and maintenance objectives to ameliorative functions. Rehabilitation methodology also was to utilize active treatment programmes to a greater extent with work activity services as one of the primary techniques.

In undertaking responsibility for developing employability in the disemployed group, rehabilitation became a significant instrument of social policy. It concretized the welfare goal of reducing long-term dependency through promoting the capacity for productive work. This vocational aspects was further emphasised by Guttman (1976) and Hale (1979). Hewer (1983) insisted that these activities should be implemented as a general principle that disabled patients should not be allowed to remain socially isolated.

Successful vocational rehabilitation programme depends on compliance to physical rehabilitation (drug treatment and physiotherapy) and psychosocial rehabilitation, aiming at the improvement of individual's psychological conditions and social environment.
Stroke and Home care:

Turning the focus to the family's involvement, Davis (1980) explored the dynamics of keeping a disabled adult in the home. He pinpointed the interaction system in the family, the social context, and the adoption the family made to the perceived misfortune, to be the main factors in keeping a disabled in home.

Wade (1986) reviewed the evidence concerning who looked after stroke patients including those at home. Few stroke patients needed admission for diagnostic or therapeutic reasons. It was the practical problems of managing disability (and the family) that dictated the place of care. Yet some patients were admitted un-necessarily and other remained in hospital well after their disability could be managed at home, and after any medical investigation or treatment had been completed. The family was the most important resource available to a stroke patient, according to Wade. Incr ease in the availability and level of home care services had been suggested both to reduce the stress on the families and to encourage the home care and thus to reduce the use of hospitals.

Wade also suggested that the successful management of stroke would be at home and the functions to be considered would be communication, excretion, mobility, feeding, washing and dressing. He also recommended to ask the following eight
questions during every domiciliary followup and to focus on any unexplained shortfall in recovery.

a) Is recovery progressing as expected?
b) Could the patient do more for himself than he is doing?
c) Is an aid needed, or should one be taken away?
d) Is a therapist required?
e) Is the patient as socially active as before?
f) Is the patient depressed?
g) Is more (or less) support needed?
h) Can the long term risks be avoided?

Considering the difficulties the families of stroke undergo Binder (1984) provided the needed help by specific advice and suggestions. They included the following informations:
a) Cognitive and emotional impairment, that often bewilders lay people
b) The need to relieve some patients of previous responsibilities such as paying bills, driving and working
c) The need for more explicit displays of affection
d) The tendency of patients to withdraw from family roles that they could still perform in some portion (For example, some aphasic patients could continue to provide emotional support to other)
The need for the care takers not to neglect themselves in the service of the patient

The increased tendency of stroke patient to become fatigued by activity or distracted by noise

Sexual concerns and problems

Poor motivation which explains disability less often than depression and lack of initiative

Illogic, impatience and impulsivity that might not be easily modified by rational arguments

The need for temporary or permanent nursing home placement in some cases

Availability of self-help groups for patients as well as families

Binder suggested that a crisis in a family could be prevented by imparting information about limitations in a hopeful manner and through brief counselling.

Elliott and Smith (1985) in their work with the families of neurotrauma patients realised the importance of recognizing each family's needs during the acute phase, in order to enhance the potential for recovery. Failure to attend to the family's difficulties and burdens, would directly or indirectly affect the members' quality of relationship within the family (Creasey and Jarvis, 1989)

Similarly, Washow (1986) highlighted the need for support groups for family care givers of patients with
Alzheimer's disease; in order to widen the variety of support - as care givers had different needs.

Cockerrill and Warren (1990) dealt with the 'need' of family members of multiple scelorosis patients, and examined the experiences and needs of the care givers of individuals with multiple scelorosis and concluded that care givers were under-utilizing available respite services and feel uncomfortable with the options available to them. They suggested to develop ways of ensuring the care givers' knowledge about these options and to make feel comfortable using them.

Many studies have shown that stroke rehabilitation can help a patient to regain and maintain functional abilities. However, the efficacy of therapeutic intervention has been questioned. As Silliman et al (1987) put it, the information regarding social and functional disabilities is less readily available though more prevalent.

Social work intervention:

Social work, being a vital helping profession, dealing with the individual, family and social welfare, could play a significant role in coordinating and helping the stroke patients deal with the problems of adjustment, precipitated by disability.
In social work, patient is not seen in isolation but in relation to significant others in his environment. In doing so, the social work functions as an enabler, coordinator and a liaisons while working with patients who have a disability. She, the social worker concentrates not so much on treating the disability as on treating the person who has the disability. In working with the family, care is exercised to relate to the family as an unit of persons and not merely as an instrument though which the patient might be helped.

Romano (1981) found three distinct types of social worker's role in their patients's care: clinical, sub clinical and non clinical. As a clinician, she undertakes enabling, facilitating, educational and advocacy function. In the sub clinical role she functions as a collaborator and psychosocial data gatherer. The non - clinical social worker's role warrants administration, research and programme development. The clinical and sub clinical roles imply direct, problem, oriented interaction with patient, family and health care staff. The non - clinical roles also focus on behaviours which may have an indirect impact on patient, family and staff and act primarily upon the system in which services are delivered.

One of the most important role of a social worker is that of psychosocial assessment, i.e., to assess the patients' functioning as a social being. The task is one of
skilled professional assessment of patient's financial, general and social background including where appropriate visit to home and work place, and interviews with family, friends, neighbours and employers. The assessment of social support system and supervision of the application of resources available for settlement, retraining, re-employment and follow up, also are the important social work activities.

Taylor (1982) viewed social workers as the only team member, who did not touch the patient but facilitated reactions. The model of social worker is seen as catalyst, interpreter, negotiator, transformer, bridge and buffer.

Skills and knowledge in after care and protective services for the disabled, primary reside with social worker. She could contribute significantly by translating more of this expertise into rehabilitation arena. She could lead other professional in the development of innovative home based post hospital programmes that would be superior to institutionalization for many disabled people.

Cho et al (1982) used social work skills in working with adolescents who had experienced dying. They found the process of helping to involve a relabeling of grief from unmanageable, fearful and hopeless, and helping them to change their responses to it. They observed that some of the coping skills that were essential to change the response to death included the following:
- modification of talk that labels the dying situation as unmanageable;
- meditation techniques for management of stress;
- self-monitoring of dysfunctional responses;
- self-reinforcement of dysfunctional responses and completing tasks that allow expression of feelings and remove fears.

The components of their intervention model were individual and group counselling, sibling therapy, family therapy, peer supports, community resources, meditation and preventive education.

Steiner (1984), based on observations, suggested that the family centered care of the disabled ought to consider the siblings' knowledge, fears, feelings and wishes, as it could affect the disabled deeply. The family centered case work should deal with their needs and facilitate frequent communication with others, including professionals.

Slater and Wikler (1986) confirmed that the families, involved with the extra-ordinary care taking demands of disabled member at home, were at risk for added stress, social violation and reduced feelings of autonomy. The interventions with these families needed to address their total needs. They mentioned that by employing specific social work interventions, these families were encouraged to obtain support from their informal as well as formal support networks. Some families required additional finances and extended resources, that only required coordination skills of social workers.
Indian studies:

India, a developing country having different ethnic, social, cultural and environmental backgrounds, did not have the neurology practice till 1950s. In the past four decades it has shown good progress (Wadia, 1989). Large number of neurological centres have been set up in the country, though this number is far from adequate. Large number of neurologists are needed even to provide care for common neurological illness and must be available in smaller town and cities, or at least in the district towns (Ramamurty, 1989).

Research in neurology has shown slow but a steady progress. However studies on stroke disability is less and much less studies have been reported on the psychosocial aspects of stroke.

Stroke, acute or recurrent cerebrovascular disease, predominates in neurological practice as in any other developing country. Yet, epidemiological studies are not many in India. The average annual incidence rate of initial stroke per 1,00,000 was 44 below the age of 45 and 129 below the age of 55 (Abraham et al., 1970; Mettlinger et al., 1984).

Dalal et al (1968), in his study on cerebral angiographic findings in ischaemic stroke, described that though the Indian patients had altogether different social
customs, living standards, and dietary habits, the relative incidence of various cerebral vascular lesions did not differ significantly from the Western people. Irrespective of the poor nutritional status of the patients, thrombosis associated with atherosclerosis was chiefly responsible for a non-embolic infraction.

Atherothrombosis in the young normotensive persons not showing any evidence of arteritis, diabetes mellitus, or hypercholesterolaemia was also identified.

They observed that the positive factors in prognosis, the nutritional status, the type and territory of an ictal lesion, and the blood levels of sugar and cholesterol had no significant influence on the immediate survival after non-embolic cerebral infraction. However, a significantly greater number of deaths were encountered in the hypertensive patients. Female patients and patients with a large cerebral infarction had a poor prognosis.

Vascular diseases of the nervous system rated first in frequency amongst all the neurological disorders and accounted for nearly 50 percent of all neurological admissions to adult wards. Though common in old people, its occurrence in younger individuals was being more frequently observed by Bansal et al (1973).
Abraham (1976) investigated stroke patients (n = 800) at Vellore, South India. He also conducted an attitude study in rural and urban areas. Nearly 80% of the public were familiar with the disease. There was less awareness among rural population than among the urban. 2/3 were ignorant about the causation of stroke. Among prominent probable causes mentioned, were defects in blood, nerve or gastric system and 'catching of chill'. 80% of the respondents were in favour of re-employment of stroke patients. And more than 80% had no objection towards having social contacts or marital allaince with families of stroke patients.

Based on experience in rehabilitating the stroke patients, Abraham emphasised on the following points.

i) A thorough knowledge of the patient's home and environment is needed; home visits could be useful for these purposes.

ii) Community awarenes need to be built.

iii) Need for sheltered workshop and vocational rehabilitation centres should be realized.

iv) Training schools situated in the city, need to take into account of the rehabilitation needs of the rural population in their teaching programme

v) Good team work should be emphasised.

vi) The occupational therapy should incorporate the indigenous ways of training and include components like use of public transport and utilities.
To obtain community based data on neurological disorders, a neuroepidemiological study was conducted by Govrie-Devi et al (1987) in the semi-urban and rural areas of Gowribidanur in the state of Karnataka, in South India. Essentially, the survey was an offshoot of the monthly neuropsychiatric services offered at one of the 'satellite centres' of National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore. The population covered in the semi-urban area, by house to house survey was 17,734. In rural area by systematic sampling of every third house 39,926 individuals were enumerated. A total of 57,660 individuals were included in this survey and the total population covered was 1,19,290. The overall prevalence of neurological disorders per thousand population was found to be 13.8 and in semi-urban and rural area the prevalence was 12.5 and 14.3 respectively. The prevalence of stroke was 52/100,000. An important fact of the study was that this research survey was combined with the clinical service rendered to the study population. The study also provided a model for conducting neuroepidemiological studies in developing countries using local non-professionals and meagre resources.

Gururaj (1986) reviewed the epidemiological studies (Abraham et al., 1970; Bansal et al., 1973; Govrie-Devi et al., 1987) found the prevalence rate of stroke per 1,00,00
to vary from 44.8 to 120. The total annual incidence rates were 16.47 for males and 4.96 for females.

The trend continued when Bharucha et al (1988) conducted a door-to-door survey on the Parsi community of Bombay, India, for positive neurologic disease. One hundred and eighteen persons (57 men, 61 women) suffered from strokes (842.3 cases/100,000 population). The age-specific prevalence ratios increased with age for both sexes and for each age group. Age adjusted prevalence ratios were slightly higher for men than for women. The most common type of stroke was ischemic (114 cases).

Similarly, even in the study at the Kuthar valley of South Kashmir (North Western India) during the year 1986, Razdan et al (1989) detected 91 cases of completed stroke, giving a crude prevalence rate of 143/100,000. However, they found that age-specific prevalence was 41/100,000 in the group ages 15 - 39 years and 630/100,000 in the group aged ≥ 40 year; 69.23% of the cases were men. Hypertension was present in 58.24% of the cases, while strokes due to valvular heart disease and puerperium related strokes were most common in the young.

A total of 251 patients (< 40 years) admitted with stroke during a 7 years period, were investigated by Chopra and Prabhakar (1979). These constituted 30% of the total stroke patients admitted to this hospital. Among the young,
63% of stroke were of nonembolic occlusive group. Hemorrhagic strokes were observed in 26% cases. This study revealed that concurrent infection, non-specific arteritis, diabetes mellitus and hypertension contribute very little to the stroke in younger population.

Srinivasan (1984) observed in a study at Madurai, South India on ischemic cerebrovascular disease in the young that 15% of cerebrovascular strokes occurred in those below 40 years of age. Meningovascular neurosyphilis in men (10 - 15%) and puerperal cerebral venous thrombosis in women (20%) were the two commonly proved causes. Haemorrhagic stroke was uncommon. Embolic strokes from rheumatic heart disease formed 10%. In over 50% the cause of stroke was not clear. Among 150 patients with neurosyphilis, mostly men, 25 had cerebral arterial thrombosis with stroke syndrome.

In his followup of young stroke (46 patients below 40 years) Srinivasan also found that 26 were fully independent and working, 12 partially disabled and ambulant and 8 dependent. But most of the patients who resumed their work belonged to the group of vascular stroke or neurosyphilis.

Abraham (1985) also estimated that there were approximately 400,000 persons in India with hemiplegia, and the high percentage of stroke was in the younger age group.
Dhanaraj and Jagannathan (1985) concurred that about 20% of the stroke patients were less than 40 years of age. Like the etiology of the stroke in young persons, the natural history of these patients was also unclear. Through their 5 years follow up study, it was observed that the immediate mortality (within 30 days) was about 12%, the intermediate mortality (between 1 month and one year) was also 12%, making mortality within one year to about 24 percent. The quality of survival after one year was good in most of these patients.

Rajendran (1990) in her study on stroke patients revealed that there was no significant difference between the patients with right hemisphere lesion or the left hemisphere lesion, on scales of depression, anxiety and mania. The symptoms of anhedonia seemed to differentiate the 2 groups significantly with patients in the right hemisphere group obtaining higher scores. The results obtained, had implications in the psychosocial management of these patients.

Psychosocial problems and social work intervention:

Many of the problems faced by the patients having neurological problems, need the services of social worker as their management require compliance to the treatment programme, family members' understanding about the illness, patients coping with limitations and appropriate
rehabilitation methods. These issues call for specialized professional inputs and a psychiatric social worker is skilled with it. In their study, Rajaram et al. (1985) highlighted that the communication between the hospital personnel and patients and family members needed to be strengthened with the sole aim of effective utilization of professional services by the patients. The need was more emphasised in the case of patients admitted to the wards. Due to lack of information on disease, treatment, rehabilitation and after care, the patients and the family members were not in a position to make effective use of the benefits of development in mental health and neurosciences. In this context, the psychiatric social worker's contribution was felt vital.

A considerable number of neurological departments have included the clinical social workers in their team. For the development of any new discipline it is necessary to systematically analyse the range of problem that come under the purview of the new discipline.

Rajaram and Gourie-Devi (1985) opined that, while the medical disciplines focussed on the neurological problems, the social workers dealt with associated problems of intra-psychic and interpersonal nature. A trend in neurological setting was to give emphasis to the neurological patient being viewed as person with problems.
With this framework, systematic attempts were made to analyse the psycho-social dimensions of the first 100 neurological patients referred to the social work unit, of whom about 60% were patients with epilepsy and 25% were patients with stroke. The prime service offered to this group was educational programme at individual and group levels. A significant number required visits to the families, schools and work spots for counselling purposes. Most of the patients utilized the services offered by the clinical social worker.

Mahadevan (1987) highlighted the intensity of the psychosocial problems associated with a crisis like a traffic accident and the problems faced by families. She emphasized that it was imperative that immediate steps were taken to tackle the acute problem from all sides. Her study had special implications to social work as the social worker has the professional skill and competence to effectively tackle the problems that arose out of traffic accident. She strongly felt that the social work intervention was possible at all the levels, i.e., at the individual, the family and the community level.

Rajaram and Gourie-Devi (1988) described the scope of social work services for neurologically ill in India, where appreciation of team work and the multidisciplinary approach is in the increase. They studied the pattern of utilization
of the services of the psychiatric social worker and found that the majority of patients were males and were in need of vocational services in addition to the psychosocial support. And the female patients needed assistance in their readaptation into their household and family adjustments.

Rajaram and Gourie-Devi found that the level and degree of psycho-social counselling was largely dependent on their age specific problems. Also that, the short distance of their residence from the treatment centre had aided them in utilising family counselling services. Such involvement of family members and structuring social service activities depended on the time at disposal of patients and the social worker. The social work techniques used were reassurance, discussions, advice, guidance, ego support, clarification and acceptance of reality.

In another study, the types of services organised by the clinical social worker for the neurological patients were highlighted by Rajaram and Gourie-Devi (1988). Majority of the patients (69%) had received mainly appropriate vocational services. The other services provided by the social worker were in the form of systematic education at group level (85%), psychosocial rehabilitation (80%), education at individual level (75%), group counselling and vocational guidance (65%) and environment manipulation (60%). Other specific services offered were family intervention (55%), sex
education (45%), marital counselling (40%) and generic social work services (20%). Many patients were offered a combination of services as part of the helping process. The authors felt that the skills in effective communication, interpersonal relationships, public contact and above all commitment for service activities are sine qua non of clinical social work in neurology settings.

The findings of the study are relevant from the viewpoint of establishing clinical social work departments in neurological settings. In doing so, the following aspects need to be considered on the basis of the formulations made by Desai (1985);

1. The body of knowledge of social work is to be drawn from the disciplines of social science and neurology.

2. The teaching to social work training should be based on sound educational principles which included the reflections of the realities of neurological problems and services.

3. While relying on western materials for teaching, there is a need to adopt the materials to suit the India conditions.

4. There must be field based participation in the learning of the social worker to gain practice and skills so that he develops confidence to work on his own.
The studies reviewed, indicate different psychosocial factors that are associated with the problem of stroke, both in India and in other countries. Most of the studies dealt with the descriptive aspects of stroke rather than psychosocial intervention. Specially, the studies done in India have given marginal interest to the psychosocial aspects of neurological problems, particularly to stroke. In the absence of such studies, it becomes very difficult to understand the efficacy of social work intervention or rehabilitative effort or similar programmes aiming at the amelioration of psychological and interpersonal adjustmental problems associated with stroke. The intervention oriented evaluative studies, which are directly relevant to the social work skills and knowledge would yield fruitful results. Such an attempt is made in the present research study to understand the problems of stroke patients and their family members and to formulate suitable helping processes and finally assessing the impact in terms of improvement in their quality of life.