ATTENDANCE OF STROKE PATIENTS AT PHYSIOTHERAPY SESSIONS, UNIVERSITY COLLEGE HOSPITAL, IBADAN: IMPLICATIONS FOR HEALTH EDUCATION

by

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DEDICATION

TO

Olubanji and Olalonpe,

my dear parents, and

the many families who have to cope with stroke

ABSTRACT

Stroke, usually defined as a cerebrovascular accident, manifests in hemiplegia. It is one of the most disabling complications of cardio-vascular diseases, including hypertension, and occurs mainly among the middle aged and elderly. A major component of orthodox stroke management is physiotherapy. Unfortunately, orthodox management has not been popular among many patients, who seek alternative treatments more congruent with their cultural beliefs about the condition. These behaviours often lead to complications that inhibit full recovery.

Stroke patients, at University College Hospital Ibadan, are usually seen daily by the physiotherapist during hospitalization. On discharge, however, patients are referred to the Physiotherapy Department to continue with physiotherapy. A minimum of 12 weekly appointments are made when patients first book for the service. This study aimed at documenting patient attendance behaviour at the recommended physiotherapy sessions and determining factors that may be associated with the level of attendance. The results were intended to provide a basis for improving patient health education at the Physiotherapy Department.

Two research methodologies were employed. First an

historical cohort study was conducted using all available patient records in the Physiotherapy Department from 1982 through 1991. Secondly qualitative research using in-depth interviews was conducted with the 15 physiotherapists in the Department and all (20) current stroke patients.

Over one-third of patients who reported to the Department to book an appointment subsequently did not show up at all for treatment. The review of 313 records of those who actually attended found that only 20.1% of patients completed the 12 sessions recommended by the Department, with a mean attendance of 6.0 sessions. Christians had a significantly better attendance record than Moslems. Those who came early (within two weeks of referral) for their first appointment, attended better than late arrivals. Neither sex, occupation, side of hemiplegia nor level of function at commencement of out-patient sessions were associated with attendance. Early attendance at the first out-patient session was positively associated with Christian religion and those with civil service/professional occupations.

In-depth interviews shed light on cultural beliefs not found in the records. Some known hypertensive patients thought their stroke was associated with neglect of their condition, while others believed it happened following evil actions. Almost all engaged in alternative therapy including the services of spiritual

and indigenous healers. Patients identified problems such as cost of treatment, transportation difficulties, perceived delay in improvement and staff attitudes as reasons for curtailing physiotherapy.

The results imply a need for detailed education on stroke rehabilitation through physiotherapy during hospitalization and at the time when first appointment is booked, to encourage early attendance and to answer questions about cause, prognosis and cost of therapy.

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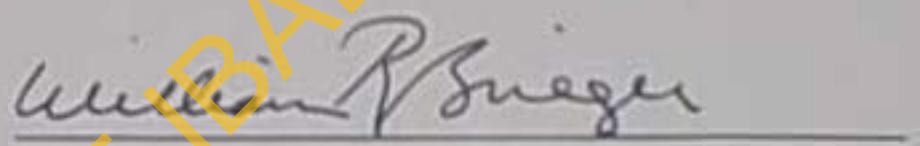
CERTIFICATION

I certify that this work was carried out by Anthony Akinyemi AJAYI in the Department of Preventive and Social Medicine, College of Medicine, University of Ibadan, Ibadan, Nigeria.



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CHAPTER ONE

INTRODUCTION

Stroke is one of the diseases of the cardiovascular system in which the occurrence is related to individual behaviour and life style [Osuntokun, 1988]. It is chronic in nature with known behavioural risk factors like cigarette smoking, excessive consumption of alcoholic beverages, use of illicit drugs, violence, non-compliance with medical regimen for underlying hypertension and maladaptive responses to social pressures and stress [Osuntokun, 1988].

According to the U.S. Surgeon General's Report [1979], stroke is the third leading cause of death in the United States. The mortality from stroke was estimated by Weinfeld, Frederick and Weiss [1981] to be more than ten percent of all deaths. It was also found to be the leading cause of disability. According to Weinfeld et al [1981], the incidence of stroke increases, while the long term survival rate decreases with age. In Nigeria, Osuntokun, Bademosi, Akinkugbe, Oyediran and Carlisle [1979] reported that the frequency of cerebrovascular disease as a cause of death at the University College Hospital, Ibadan, was four and a half-percent. However they suggested then that the disease

showed increasing mortality and morbidity in Africans.

Stroke has now become as common in Nigerians as in Caucasians because of serious changes in the culture, particularly deterioration of the extended family system, which provided much needed social support and care for the elderly. There has also been massive migration from rural to urban areas with attendant adoption of modern life styles and exposure to numerous stressful factors that can predispose to stroke [Osuntokun, 1988]. Stressors to which Nigerians are now exposed include high pressure jobs with heavy workloads, fear and anxiety created by traffic jams and armed robbery, greater levels of family and interpersonal conflict, threats of unemployment and unplanned retirement, and psycho-social transitions such as sudden transfer to an unfamiliar environment [Osuntokun, 1988].

The disorder stroke, also known as cerebrovascular accident, is due to interruption of blood supply to the brain causing sudden death, paralysis (hemiplegia) and loss of speech. Other manifestations include confusion and alterations of body image. The latter is such that the victim presents with difficulty in knowing his/her right side from the left and in carrying out movements with the unaffected hand, which require crossing over the midline of the body. For example, if the left side were affected, it would be very difficult if not impossible for the

patient to touch his left knee with his right hand. The patient also looses the ability to recognize as his own the limbs on the affected side, or worse still, he may deny that anything is wrong with him [Dardier, 1980].

Stroke prevention and treatment are becoming increasingly important as the population of elderly individuals increases. Presumable, with older adults living longer, the increased incidence of chronic disease can result in great burdens of disability, dependence and high medical costs. Because of its magnitude as a public health problem and the severity in terms of neurologic disability, stroke constitutes an important condition to be considered in planning for the delivery of health care [Weinfeld et al, 1981]. In this regard, averting disability and improving the quality and length of life of stroke victims becomes crucial.

Stroke is a single incapacitating neurological clinical entity [Osuntokun, 1969], and its treatment consists mainly of physiotherapy including re-education in the activities of normal daily living [Dardier, 1980; Bobath, 1990]. When a physician meets a patient with hemiplegia, and reaches a conclusive diagnosis, he can treat the patient to prevent further damage to the brain, but the problem of managing the hemiplegia will still remain. According to Nathan [1990],

It seems unlikely that there will ever be a drug that will undo the results of a stroke or the degeneration of masses of nerve cells, and so the treatment of neurological disorders will always be in the hands of physiotherapists.

The doctor might choose either a policy of persuading the patient to use the hemiplegic limbs and retrain his affected side, or else a policy of encouraging the patient to neglect the hemiplegic side and to use the un-affected side for all tasks previously done by the limbs of both sides. The choice however, affects only the upper limb and the general posture of the patient. There is no choice about the lower limb, as the patient must learn how to walk in order to return to life [Nathan, 1990].

The physiotherapist, with his specialized knowledge of motor activity and the effect of brain damage on normal function of the neuromuscular system, plans a specific rehabilitation programme for the patient, with an appropriate list of goals [Bardier, 1980]. The list can be divided into those things which should be prevented (or treated if they have already occurred) and those things that should be facilitated. For example, respiratory problems, decubitus ulcers, joint stiffness, deformities and abnormal reflex activity should be prevented (or treated), while communication, mobility, normal reflex responses and functional

independence should be facilitated.

However, the problem of non-compliance with the treatment regimen, including attendance at physiotherapy sessions, poses a threat to achieving these goals. Specific compliance problems include refusal to participate in physical therapy and not following through with home exercise programmes [Coy, 1989]. The stroke patient is often depressed and withdrawn because of his poor physical condition [Wade, 1992], but ironically withdrawal from treatment, including physiotherapy, only makes the condition, which led to the depression, worse. More information is therefore needed, especially in African health care settings, about the factors that can cause a stroke patient not to comply with physiotherapy.

The Research Problem

In the past, unfortunately, the health care provider's attitude toward the hemiplegic patient was one of hopelessness and passive acceptance [Rusk and Marks, 1952; Feigenson, 1979]. This response may derive from the negative reaction of the general society to the patient who may have residual physical disability and loss of economic resources, forcing him into the demeaning role of seeking public assistance [Feigenson, 1979]. It is not unusual for the stroke victim to become depressed, withdrawn, apathetic and bitter about the fact that modern medicine has saved

his life, only to have "the system" make it difficult for him to resume a reasonable normal existence [Felgenson. 1979].

Today, more and more of a physiotherapist's practice consists of the management of physical disabilities. like hemiplegia. that result from chronic disease. The majority of patients who sustain a stroke, or cerebrovascular disease, do not die during the initial stage. Instead they improve to a greater or lesser degree and often live a number of years despite their residual disabilities [Anderson. 1990].

The completed stroke patient who is isolated from physiotherapy. would eventually become an invalid, or be treated as one [Nathan. 1990]. In order to prevent this condition. stroke patients are referred for an initial set of standard physiotherapy sessions. Delay in attending or missing of sessions still presents a problem as these actions could result in intellectual regression and depression [Anderson. 1990; Wade. 1992] due to environmental sensory deprivation, and in muscle contractures, which enhance spasticity and interfere with ambulation [Anderson, Anderson and Kottke. 1978; Anderson. et al 1979]. Also delay in attending or missing treatment sessions could predispose to development of deep venous thrombosis [Izzo and Aquino. 1986]. All of these would ultimately lead to less-than-optimal long term outcome of the rehabilitation process.

Although attendance at outpatient physiotherapy sessions is not the only aspect of compliance with a recovery regimen, it is essential. At sessions patients have opportunity to learn and master new skills. Progress is monitored and modifications in exercise regimen made. Psychological and social encouragement is received from staff and other patients [Sanford, 1989].

Therefore the research question that this study has addressed is, "What are the factors that influence delay in attending and non-participation in recommended physiotherapy sessions by stroke patients at the University College Hospital in Ibadan, Nigeria?" Answers should contribute to the design of patient education programmes and better organization of the referral and service delivery process.

Setting of the Study

University College Hospital (UCH) was founded in 1948, as the teaching centre for the University of Ibadan's medical school. Ibadan was the pinnacle of pre-European urbanization in Nigeria and the largest purely African city, with over one million residents, in sub-saharan Africa [Mabogunje, 1971]. Ibadan was originally founded in about 1829 as a war camp of diverse Yoruba tribes, and its population remains heterogenous until today [Mabogunje, 1971]. Its large size and cosmopolitan nature make Ibadan an ideal site for UCH, the premier tertiary health care

institution in the region.

UCH is poised to provide services to the three main sectors of the city, the inner core, the transitional area and the suburbs [Brieger and Adeniyi, 1981-82], as seen in Figure 1. The hospital itself is located in the Agodi area in the north-central area of the city. Agodi is also the site of the state government secretariat and a low density suburban residential area begun originally as a government housing estate. At the southeast corner of UCH is the Yemetu area, a transitional zone consisting of relatively modern story buildings which house both Ibadan indigene and tenants from other localities and states. Within two kilometers is the Adeoyo community at the northern edge of the traditional inner core. The movement from suburban to inner core shows the following population changes: from educated to illiterate, from heterogenous to homogenous ethnic origins, from skilled and professional occupations to farmers and unskilled traders and from a variety of religions to a predominately Moslem community [Mabogunje, 1971]. Thus UCH serves a cross-section of the Nigerian populace.

In addition to UCH there are many other medical facilities in Ibadan. There are five state owned hospitals, two Catholic mission hospitals, and seven government health centres. There are over 90 registered private hospitals delivering both general and

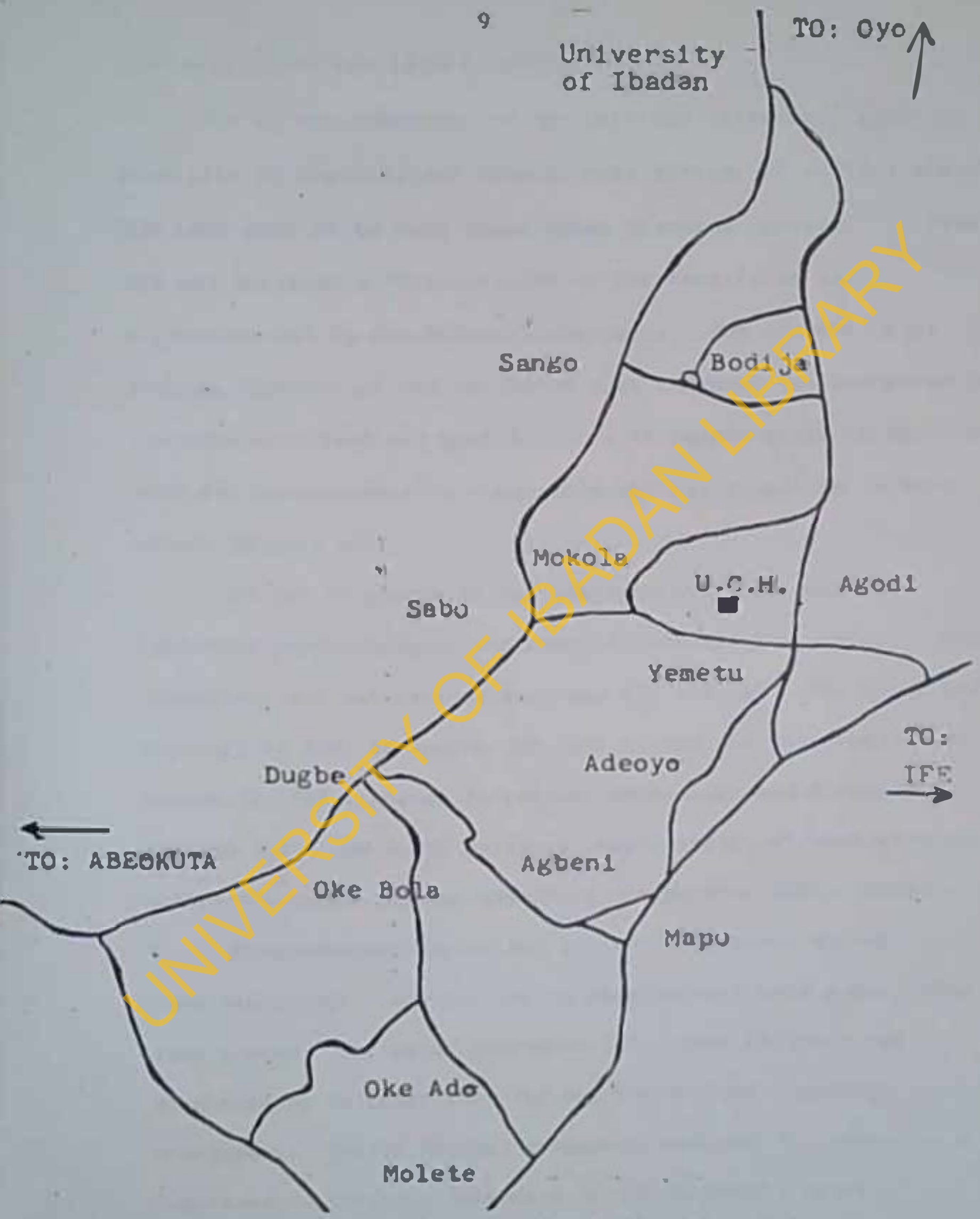


Figure 1: SKETCH MAP OF IBADAN SHOWING UCH AND ENVIRONS

specialist services [Ajayi, 1990].

UCH is the precursor to the thirteen university teaching hospitals in Nigeria, and indeed, West Africa, as staff trained at UCH have gone on to help found these teaching centres. In 1986, UCH was declared a "National Centre for Excellence in Neurosciences" by the Federal Government. The current Chief Medical Director of UCH has noted that the hospital has grown in its role as a tertiary health centre in recent years to serve the need for internationally comparable medical education in West Africa [Ajayi, 1992].

UCH has 45 specialty and sub-specialty disciplines, including physiotherapy, and runs 75 consultative clinics. Both in-patient and out-patient services are offered. The total bed capacity is 928, including 320 beds in the new neurology wards opened in 1987. Annual in-patient admissions and discharges average 9,888 and 8,838 patients respectively, of whom stroke patients account for approximately 0.6 percent [UCH, 1992].

Physiotherapy begins for the stroke patient during hospitalization. The patient is usually seen once a day, five days a week. The usual procedure for stroke patients, on discharge is to refer them for out-patient physiotherapy management. Twelve initial treatment sessions are booked as a Departmental policy. Depending on the patient's level of

improvement, more sessions may be recommended on completion of the first set of twelve.

The referred patient first registers at the physiotherapy clinic and is given an appointment for his/her initial therapy session, which is usually within the first week or two after discharge. When the patient attends his/her first therapy session, the physiotherapist makes an evaluation of the patient's condition, which includes subjective and objective assessment of the case, i.e. taking notes on case history and socio-demographic characteristics. This initial evaluation forms the basis for developing a rehabilitation programme for the patient.

At the commencement of out-patient therapy, the patients are seen individually. Later in the course of treatment, stroke patients who have reached a similar level of functioning may be seen in groups. Staff at the Physiotherapy Department have observed that patients do tend to drop out before completion of the initial course of therapy. This study intends to document the extent of patient drop-out and identify patient characteristics that may be associated with the problem.

Organization of the Text

This brief introduction to the research problem and study area serves as the first chapter of the text. Chapter Two reviews literature on stroke and the role of physiotherapy in

rehabilitation of the stroke victim. The concept of sick role behaviour is presented, and factors that may influence compliance with treatment regimen, that is the ideal sick role behaviour, are considered. Patient health education strategies used to encourage compliance are described.

Chapter Three begins with a description of the study design and methodology. The populations of patients and staff being studied are also described. Study methods included both review of records and in-depth interviews. The design, implementation and limitations of these methods are described.

Findings of the research are presented in Chapter Four. Patients whose records were available formed an historical cohort, and their characteristics and attendance behaviour are analyzed first. Findings from the in-depth interviews of physiotherapy staff and current patients comprise the second section of this chapter. The implications of these findings, major conclusions of the study and appropriate recommendations arising from these, are discussed in Chapter Five.

It is hoped that this research will serve as a guide , not only for further detailed investigation into patients' compliance with physiotherapy management, but also for appropriate policy and programme development to enhance the quality of care given the stroke patient at UCH.

CHAPTER TWO

REVIEW OF LITERATURE

Stroke, one of the most common neurologic disorders, shows increasing morbidity and mortality in Africans, although about three decades ago, it was believed to be uncommon [Osuntokun, et al. 1979]. The condition is now as common in Nigerians as in Caucasians [Osuntokun, 1988]. After a two-year review of 318 stroke cases in Ibadan, Osuntokun et al [1979] reported a male to female ratio of 5:2, compared to a ratio of 1.3:1 in the overall population. A peak age specific incidence for males was found in the eighth decade of life, and for females, in the seventh. Incidence rates for males were higher than for females in almost all age groups. Those authors concluded that the sex difference may be due to better toleration of hypertension by Nigerian females.

Since Osuntokun [1988] claimed that incidence rates for stroke among Nigerians were approaching that of Caucasians, it is useful to examine stroke data from the United States, which has a large Caucasian population. Walker, Robins and Weinfeld [1981] found an average annual incidence rate of 140.7 per 100,000 population between 1975-76. Incidence escalated rapidly with

advancing age, from 3.3 per 100,000 among those under 35 years, to more than 1,800 per 100,000 in persons 85 years and older. Age specific rates among persons 35 years and over were markedly higher for men that women, but the rate of increase with age was fairly similar and constant for both groups between ages 45 and 85, that is a range of 2.2 to 2.5 fold increase per ten years. Stroke prevalence for all ages was estimated at 794 per 100,000 [Baum and Robins, 1981].

The number of survivors among initial stroke cases decreases rather slowly with length of time from onset [Baum and Robins, 1981]. In their study of initial stroke patients (excluding non-hospitalized patients), Baum and Robins [1981] found that 30% died within the first 30 days after onset. Another 13% died over the next five months, leaving 57% alive six months after initial stroke. However, by the end of five years, approximately 30% of these patients were still alive. Age at time of initial stroke had a marked effect on both short and long term survival. A six-month survival rate of 65% was found for those under 75 years compared to 52% among those 75-84, and 33% above 84 years. The five-year survival ratos showed a similar trend: 35% for those ages 65-74 years, 22% for 75-84, and only seven percent for patients 85 years and older.

Other factors that influence survival include type of

initial stroke and occurrence of subsequent strokes. Generally the survival rate for persons experiencing haemorrhagic stroke is much lower than for those having infarction stroke. Ironically in haemorrhagic stroke victims have higher long term survival rates. Persons who suffer a subsequent stroke are much more likely to die than those who do not.

PATHOLOGY OF STROKE

The term stroke, or cerebral vascular accident (CVA), refers to an impairment of the cerebral circulation due to a pathological process in one or more of the blood vessels supplying the brain [Toole and Patel, 1974]. Changes in cerebral tissue resulting from the impairment are due to ischaemia, infarction or haemorrhage. Brain tissue that is deprived of an adequate supply of blood and oxygen undergoes ischaemic changes that can result in necrosis or infarction. When haemorrhage occurs in the brain, increased intracranial pressure exerted by the extravascular blood can also lead to infarction. Infarction of the brain tissue is irreversible. The three pathological processes involved are thrombosis, embolism and haemorrhage. It should be noted however, that cerebral infarction may be present without definitive identification of any of these processes.

The typical sequence of events is a relatively sudden development of a neurological deficit followed by a fairly rapid

evolution of it. The neurological deficit reflects the size and location of the ischaemic area, infarction or haemorrhage. Usually the onset is a matter of seconds, minutes or hours. However, the condition may develop over a period of several days. The completed stroke is an unchanging state that occurs after the maximum neurological deficit has been produced [Alpers and Mancoll, 1971; Mohr, Fisher and Adams, 1977].

The classic sign of cerebrovascular disease is hemiplegia. It occurs with lesions of either of the cerebral hemispheres and also may occur with lesions of the brainstem. Hemiplegia is a spastic or flaccid paralysis of one side of the body including the extremities. Hemiparesis, a weakness of one side of the body, may also be seen. Sensation may remain intact on the affected side, but frequently is impaired or absent. The paralysis or paresis is manifested on the opposite side of the body from the cerebral hemisphere in which the occlusion or rupture of the artery occurs [O'Brien and Fallett, 1978].

Other deficits accompanying hemiplegia or hemiparesis are homonymous hemianopsia and other visual defects, impairment of speech, impairment of cognitive functions and perceptual deficits. Specific focal neurological signs of stroke, such as hemiparesis, quadriparesis, aphasia, homonymous hemianopsia and ataxia, reflect the location of the lesion in the brain. When the initial insult

does not terminate in death, partial or even complete recovery may take place in a relatively short period of time. For some patients, however, the process of recovery may extend to weeks or months. Evidence of ongoing restitution may continue to be seen for many months [Alpers and Mancoll, 1971; Mohr et al, 1977].

In contrast to the sudden manifestations of an acute neurological impairment, there is often a slower process referred to as progressing stroke or "thrombus in evolution," where impairment develops gradually over hours or days [Mohr et al, 1977]. During this time one particular sign or symptom may worsen, and new neurological defects may develop. Usually this slower evolution of stroke is caused by an increasing stenosis of the involved artery by the mural thrombus, with extension of the thrombus along the artery, blocking its branches, and thereby interfering with collateral circulation. The thrombus may extend the entire length of the artery [Alpurs and Mancoll, 1971; Mohr et al, 1977].

The most common types of stroke are described below.

Cerebral Thrombosis

The most common cause of cerebral infarction is atherosclerotic thrombosis. Atherosclerotic sclerotic plaques usually form at the branching of blood vessels. Thrombosis will develop most readily whenever these atheromatous plaques have

caused a narrowing of the vessels [Alpers and Mancoll, 1971; Mohr et al, 1977].

The process by which the thrombosis builds up over the atherosclerotic area is not well understood. It is known however, that development of atherosclerosis in the smaller cerebral vessels is influenced by hypertension. Hypertension and diabetes mellitus are the two major predisposing factors to atherosclerosis in the vascular system. During the evolution of the thrombotic stroke, prodromal transient ischemic attacks are seen which are thought to be the result of a partial occlusion of the affected artery. The state of the atherosclerotic vessels and the progression of signs and symptoms will vary from patient to patient. However, as the thrombus continues to develop, the neurological deficit may progress until a fully established stroke is manifested [Alpers and Mancoll, 1971; Mohr et al, 1977].

The course of illness and immediate prognosis following cerebral thrombosis is difficult to foretell. Unfortunately most often the clinical course is one of progression of the neurological deficit. This may involve a temporary worsening of the patient's condition for a day or so or a progression to total paralysis and coma. This progression is most likely related to increasing stenosis of the involved artery or to extension of the thrombus into adjacent vessels. With cerebral infarction,

swelling of the necrotic tissue can result in increased intracranial pressure and even herniation of the brain [Alpers and Mancoll, 1971; Mohr et al, 1977].

If the patient survives the initial insult, he usually improves eventually. This improvement can run the gamut from total recovery beginning in a few days, if the infarct is small, to little significant recovery after months of intensive therapy, when there has been a large infarct with severe neurological deficits. It appears that the longer the period before spontaneous movement of the affected limbs is seen, the poorer the prognosis for recovery of motor activity and speech. Hemianopsia persisting beyond a few weeks or any paralysis remaining five to six months following the stroke is usually permanent [Alpers and Mancoll, 1971; Mohr et al, 1977]. Aphasia, dysarthria and cerebellar ataxia, however, can continue to ameliorate for a year or longer, and sensory improvement has been known to continue for up to two years [Alpers and Mancoll, 1971; Mohr et al, 1977; Toole and Patel, 1974].

With paralysis resulting from stroke, the affected muscles are initially flaccid. Then spasticity develops, giving the patient the characteristic posture of a flexed, adducted arm and an extended, adducted leg. It is important to keep in mind that early development of spasticity is usually a positive indication

for functional recovery, while slow development of this condition means that the patient is less likely to regain function [Alpers and Mancoll, 1971; Mohr et al, 1977].

If infarction of the cerebral cortex has occurred, the patient may become subject to epileptic seizures. Patients with hypertension remain in danger of extension of the stroke or development of thrombosis in another area in the future [Mohr et al, 1977].

Transient Ischemic Attacks

The term, transient ischemia attacks (TIA), refers to brief, recurrent episodes of a neurological deficit that clears completely. These episodes usually happen prior to a thrombo-occlusive stroke, and neuropathologic studies link them almost exclusively to atherosclerotic thrombosis [Mohr et al, 1977; Walton, 1977].

At the onset of such an attack the patient suddenly becomes aware of the functional loss. Depending upon whether the carotid or vertebral basilar circulation is involved, the loss of power takes place in the hand or foot and progresses rapidly to the entire extremity or side of the body. The patient may experience numbness, partial or complete loss of vision in one or both eyes, diplopia, dysarthria, vertigo, deafness or "drop attacks" in which he or she has a sudden loss of awareness and falls to the ground.

The attack rarely exceeds 30 minutes, but may last as long as 12 hours, with full recovery within 24 hours. Many very brief attacks lasting only seconds may occur in one day or there may be fewer than one per month. In all cases the findings on neurological examination are negative between attacks [Alpers and Mancoll, 1971; Mohr et al, 1977; Toole and Patel, 1974].

Approximately one-third of the patients who suffer TIA will later have cerebral infarction due to a thrombotic stroke. Another third will continue having these TIA episodes without ever developing any permanent disability, while for an equal fraction the attacks will cease spontaneously [Toole and Patel, 1974].

Cerebral Embolism

Embolism is the second most common pathological process of stroke. In most cases the embolic material has broken away from the thrombus within the heart and lodged within the cerebral hemispheres. The course of illness and immediate prognosis following cerebral embolism is as difficult to predict as it is for cerebral thrombosis. Massive brainstem infarction following embolic occlusion of the basilar artery is nearly always fatal. Most patients recover from cerebral embolism, some with no neurological deficits. When a patient dies, it is usually due to the secondary effects of cerebral oedema.

There may be a remarkable return to neurological

functioning, with observable improvement just hours after the attack. This may be due to disappearance of arterial spasm or to the progression of the embolic material into smaller distal branches of the artery. The long term prognosis depends largely on the severity of the underlying disease responsible for producing the embolism and the likelihood of subsequent embolization. Improvement in the resulting neurological deficits is identical to that described for cerebral thrombosis [Mohr et al, 1977; Toole and Patel, 1974].

Intracranial Haemorrhage

The third most common cause of stroke is intracranial haemorrhage. In most cases haemorrhage is due to hypertension or to rupture of a saccular aneurysm. Hypertension results in haemorrhage within the brain tissue, whereas a ruptured saccular aneurysm bleeds into the subarachnoid space. These two causes of intracranial haemorrhage will be discussed separately.

It is not known precisely what vascular lesion leads to the rupture of the vessel in hypertensive intracranial haemorrhage. The rupture usually occurs in the arteries that penetrate the brain itself rather than in the Circle of Willis [Mohr et al, 1977; Toole and Patel, 1974].

Extravasation of blood from an intracranial haemorrhage due to hypertension will create a mass that compresses and displaces

adjacent brain tissue. As bleeding continues, the mass increases in size. In the case of a large haemorrhage, the vital centres will be compromised. Coma and death may ensue.

The prognosis in cases of massive cerebral haemorrhage is extremely grim. Putaminal, thalamic, cerebellar and pontine are the most common sites of haemorrhage due to hypertension, and are all usually large [Mohr et al, 1977]. Approximately seventy percent of patients afflicted with this type of stroke die as a result of brainstem compression within a very short time. When the haemorrhage is small, prognosis for complete recovery, once the extravascular blood is absorbed, is good, since rebleed is not likely and there may have been no destruction of brain tissue (i.e. the haemorrhage may push the brain tissue aside rather than destroy it). However, 75% of all patients with intracranial haemorrhage die because bleeding extends into the ventricles or causes midbrain compression and possibly herniation [Mohr et al, 1977; Walton, 1977].

Saccular aneurysms are small, thin-walled outpouchings that develop on the arteries that form the Circle of Willis and on their many branches. It is thought that saccular aneurysms result from developmental defects of the arterial wall, developing over years in parallel with the evolution of the arterial defect. The aneurysms themselves are not congenital anomalies. Protrusion of

the artery at the site of the defect will occur and enlarge gradually over time. Eventually the arterial wall at the dome of the aneurysm may rupture. These aneurysms are rare in children and are seen most frequently in patients between the ages of 35 and 65 years [Mohr et al, 1977].

With massive haemorrhage death may ensue within minutes or following several days of deep coma due to intracerebral dissection into the ventricles. If the haemorrhage is small, there may be no loss of consciousness, or it may be regained within minutes. The patient will remain confused for as long as ten days and experience severe headache and stiff neck. There will be no lateralizing neurological signs if bleeding is confined to the subarachnoid space. However, if there is intracerebral clot formation or cerebral infarction in the area surrounding the site of rupture, the patient will become comatose, and lateralizing signs such as hemiplegia or aphasia will be seen [Mohr et al, 1977].

Haemorrhage due to rupture of a saccular aneurysm tends to recur. The first major haemorrhage is fatal for approximately fifty percent of patients. A significant proportion of those who survive will die as a result of a subsequent haemorrhage occurring within 6-12 months following the first attack. The prognosis for this condition is grave, especially when rebleeding occurs shortly

after the first attack [Alpers and Mancoll, 1971; Mohr et al, 1977].

PROFILE OF A STROKE PATIENT

The patient who has suffered a recent stroke may be admitted to hospital in a state of coma or semi-consciousness, or be moderately alert and very frightened. Some patients, on sustaining a stroke, never loose consciousness. Others do so only momentarily and gradually become aware that one side of their body is not functioning quite like the other. Whatever state the patient is in when first seen by a medical attendant or when first admitted to hospital, his condition is unlikely to remain static for very long [Bardier, 1980].

In complete stroke there will be continued deterioration in function and level of consciousness over a varying period of time, which may even amount to days. The stroke whose onset is sudden is sometimes followed by a period of cerebral shock, during which cerebral function on the side of the lesion is virtually brought to a standstill, resulting in a flaccid paralysis of the limbs on the opposite side of the body.

A lesion which causes damage to Wernicke's speech reception area of the cerebral cortex causes receptive aphasia. Another area of the cortex concerned with speech and where memory is stored, called Broca's area, if damaged, will cause the patient to

have expressive aphasia or dysphasia if the ability to find words is only partially lost. Dardier [1980] noted this to be a much more distressing disability for the patient and a very frightening state to be in, as patients who recover their speech are able to tell afterwards.

An expressive aphasia is not always accompanied by loss of the ability to read, write or construct sentences, so an alternative channel of communication is open to some of these patients. However, presence of a right-sided hemiplegia, for instance, necessitates the right-handed patient learning to write with his non-dormant hand, which Dardier [1980] noted often proves to be a long and tedious process.

Even with no damage to the cortical speech centres and with retention of the ability to understand and write sentences, the patient may find it difficult to speak clearly because of disruption of the nerve supply to the muscles of phonation and articulation. This mechanical difficulty in speaking, dysarthria, is part of his motor paralysis, not caused by a lesion of the higher speech centres. It occurs therefore, in lesions in either the dormant or the non-dormant hemisphere.

Damage to the optic nerve tract on the side of the lesion will cause homonymous hemianopsia, which sometimes recovers partially or fully at a later date. Homonymous hemianopsia is

that visual deficit that patients commonly describe as being "blind in one eye" [Dardier, 1980]. The patient looses the ability to see anything on one side of the midline.

The commonest site for a cerebro-vascular accident is in the small blood vessels that supply the internal capsule. The medial and lateral striate arteries. A mild stroke in this region may only affect the descending motor fibres (the pyramidal tract) as they pass through on their way to the brain stem. Patients who suffer simple stroke like this may be fortunate to be left with a mild hemiparesis and sometimes make an almost complete recovery [Dardier, 1980]. A vascular accident in a larger cerebral vessel will cut off a much more extensive area of cerebral function, although fortunately a collateral blood supply sometimes prevents what would otherwise be devastating damage [Dardier, 1980].

When a large number of fibres, a large area of motor cortex or the motor nuclei in the brain stem are damaged, motor function of every type may be affected. These may include difficulty in speaking, swallowing, mastication and an asymmetry of fascial expression. Also the functions of the arm, leg and trunk will not only be affected by the "weakness" of these parts associated with the early flaccidity, but more importantly, by alteration in reflex activity caused by cutting off the inhibitory function of the cerebral cortex.

Loss of sensation results as a consequence of damage to the sensory fibres in the internal capsule, or even the sensory cortex, in a more extensive stroke than one which cuts off the circulation to the motor fibres only. Whenever sensory loss occurs, there is always less likelihood of a good recovery from the accompanying paralysis [Dardier, 1980]. In this situation the sensations of pain, touch and proprioception are all likely to be affected.

Anosognosia, alterations in body image, results from the damage to the parietal lobe of the non-dominant hemisphere. It is therefore generally accompanied by a left-sided hemiplegia [Curtis, Jakobsen and Marcus, 1971, as cited by Dardier, 1980]. This condition, usually classified as "parietal lobe syndrome," is a difficulty of the patient in knowing his right side from his left, and in carrying out movements with the unaffected hand, which require him to cross the midline of the body. Also he may be unable to recognise as his own the limbs on the affected side and may deny that he has anything wrong with him (Dardier, 1980).

Anosognosia was pointed out by Friedlander (1967) to be based on three theoretical mechanisms, a deficit in morphosynthesis, a defect in body concept and a maladaptation to illness in a personality that premorbidly denied illness. Whatever the defect, the phenomenon of anosognosia significantly

impeded rehabilitation training [Anderson, 1990].

The patient who has suffered damage to his non-dormant hemisphere has spatial disturbances. He has great difficulty in orienting himself in space and in relation to objects around him [Leiper, 1971]. Another group of movement disorders often seen in many patients with parietal lobe syndrome, but not necessarily associated with other gross disability, are the apraxias, or disorders of learned movement [Curtis et al, 1971, in Dardier, 1980].

The intellectual functions of the brain are shocked by the trauma of a stroke in just the same way as the motor and sensory functions are. This mental condition of confusion, as noted by Dardier [1980], may delay the recovery of physical signs.

Other significant changes that may manifest in the patient following a stroke are alterations in the activities of daily living and social life [Feigenson, 1979]. These include the desire to perform self-care activities, normal activity patterns at home, work or school, leisure pursuits, position in the home, personality and sexual patterns, types of close personal relationships, and degrees of life satisfaction and socialization.

RECOVERY FOLLOWING STROKE

Anderson [1990] noted that there are two types of improvement that occur in completed stroke, neurological recovery

and improvements in functional abilities or performance. Neurological recovery depends on the mechanism of the stroke and the location of the lesion, so that no one generalization about neurological recovery is applicable in every individual case. However, it was pointed out that 90% of the neurological recovery occurr by the end of three months following onset of the stroke, with the exception of some haemorrhagic strokes that may continue to show some neurological recovery for a longer period [Anderson, 1990].

The improvement in function depends upon the environment in which the patient with completed stroke is placed, and on how much training and motivation there is for the patient to learn and become independent again in self-care and mobility [Kingsman, 1989].

Once the tissues of the central nervous system have been damaged, they do not recover in the way that skin or bone repair themselves [Dardier, 1980]. Any recovery that takes place after a CVA will result, as a rule, from one of two processes, reduction of inflammation and the opening of new neuronal pathways. Trauma within the brain is followed by an inflammatory reaction, with the usual vaso-dilation and accompanying oedema. There is cessation of the conduction of neurones in the area, some of which die causing permanent damage, while others may be restored when the

inflammation reduces.

The second type of recovery is a more functional one, which is more likely to occur in younger patients, especially children, in whom the central nervous system is still adaptable. New neuronal pathways, which have not previously been used, are opened [Dardier, 1980]. There is evidence that the average human uses only a small portion of the available synapses in the nervous system, and some of the ones that have not previously been used may be opened up following damage to others. The development of new pathways permits the relearning of motor activities that were lost through the damage to other pathways. The improvement in motor function, for whatever reason, may continue for more than a year [Dardier, 1980].

Dardier [1980] noted however, that whether this process is equally true of sensory pathways is more difficult to assess because the return of sensation, if it occurs at all, seems to occur in the early weeks following stroke. This would indicate that the sensory neurones were undergoing the first type of recovery, i.e. from reduction of inflammation. It may be that within the sensory system there are not the same number of alternative pathways for "relearning," as are available within the motor system.

Clinical experience indicates that return to function cannot

be hurried in the early weeks, but on the other hand, it may be delayed if treatment is not given. As Dardier [1980] noted...

> It is doubtful whether the intensity of treatment has any effect on the time it takes for the inflammatory reaction to die down. In the long run, however, it seems that there is better recovery of function when treatment of some sort is instituted soon after the lesion has occurred.

The assessment of recovery potential is by nature subjective because one stroke patient cannot be easily compared with another in the way that two cases of fracture can be compared. Also it is not possible to tell what the result would have been if no treatment had been given to a particular patient.

Though some major conditions often associated with unfavourable outcome have been identified, Anderson [1990] pointed out that it was still not proven that early initiation of rehabilitation treatment, particularly some of the facilitative techniques, could influence a greater return of neurological function. He did indicate other justifications for commencing treatment early in the course of a completed stroke. Included is the prevention of avoidable complications such as depression, intellectual regression, physical deterioration and contractures.

It appears that there are no predictive findings in the

early evaluation of a stroke patient that will indicate the nature of long term recovery [Anderson, 1990; Lehmann et al, 1975]. However, there are some conditions and processes that are associated with unfavourable outcomes including marked concomitant disease, bilateral brain damage, dementia, persistent neglect, bowel and bladder incontinence lasting more than three or four weeks, gross perceptual deficits, flaccid paralysis lasting more than two months, severe dysphasia, prolonged bed rest, clinical depression, and a long interval between onset and the initiation of rehabilitation.

The influence of age on outcome has not been clarified. Even though older patients may have more functional loss, they appear to recover as well as younger ones, both socially and functionally [Wade et al, 1984, as cited by Anderson, 1990]. Another factor that impedes understanding the influence of age on recovery is the fact that elderly patients have greater pre-stroke impairment and were living alone in a less supportive environment [Anderson, 1990].

If recovery will occur, spontaneous improvement will be discernable within few days of the ictus [Toole and Patel, 1974]. As a rule, the more rapid the initial recovery, the more complete it will be eventually. Expatiating further, Toole and Patel [1974] noted that if there has been no recovery of volitional

activity after 6-12 weeks, it can be assumed with some confidence that little recovery will subsequently occur.

Recovery almost always occurs first in the proximal muscles of the torso, hip and leg, followed by the foot, toes, upper arm and forearm, and lastly the fingers. This return to function resembles the normal acquisition of skills in infants and children, i.e. the developmental stages of the infant central nervous system (Toole and Patel, 1974). Mass activity always appears before isolated joint movement is possible. The developmental stages of movement are therefore used as landmark for assessment and treatment (Bardier, 1980).

Finally, according to Toole and Patel (1974), even after motor power begins to reappear, improvement may cease at any stage. Identified among the factors which may cause such reversals is motivation, which tops the list. Poor family relationships are another important concern, as are other factors noted above.

Quality of Life After Stroke

The concept, quality of life, is difficult to define. It consists of both subjective and objective assessments of the social environment. On the subjective level, individuals must consider issues of happiness, satisfaction and well being. Objective assessment considers social issues including housing,

social support, employment, education and access to basic services. Obviously there is interaction as the individual, for example, would evaluate her own quality of life by assessing her degree of satisfaction with her current employment or health situation [Green, Kreuter, Deeds and Partridge, 1980]. The stroke patient may measure her quality of life by assessing her own ability to perform the activities of daily life [Kinsman, 1989].

Most patients report a decrease in quality of life after stroke and an increase in disablement, even though objective measures of daily life activities may improve. Even patients without discernable disability indicate a decrease in life quality [Ahlsio, Britton, Murray and Theorell, 1984]. The psychological reactions of depression and anxiety are implicated. As Ahlsio et al [1984] found that stroke patients who were either depressed or anxious during the acute phase of the illness showed more deterioration in quality of life after 24 months than did other patients.

Age was found not to correlate with depression beyond the acute post-stroke period, but there is correlation between the degree of functional physical impairment and severity of depression which steadily increases [Robinson, Starr, Lipsey, Rao and Price, 1984]. A study in Oxford, England, found that depression, i.e. a state of being unhappy, was relatively rare

after stroke (11-15% of patients), while emotionalism (e.g. misery and non-specific emotional distress) was more common (45%). Wade [1992] found that provision of accurate and relevant information about stroke would often allay both anxiety (the emotional response) and depression.

Concerning the more objective measures of quality of life, Holbrook [1982] observed that stroke "disrupts family life, work patterns, financial status and general life-style. It imposes a heavy workload on hospital and community care services." Affected families may need considerable support, not just during the initial crisis stage when the patient is in shock, confusion and high anxiety, but for many years after [Holbrook, 1982]. There is a positive correlation between available social support and favourable outcome after stroke, suggesting that family involvement in rehabilitation is essential to recovery [Evans, Matlock, Bishop, Stranahan and Pederson, 1988].

Depression and emotional distress is also common among the family members who are expected to provide social support and care to the stroke patient [Mulley, 1982; Wade, Leigh-Smith and Hewer, 1986]. These problems may be associated with the patient's own emotional state and to financial costs of care, restrictions to the carer's social life, and to physical strain on the carer [Wade et al, 1986; McAlpine, 1992]. Thus carers may benefit from

information on caring procedures, attention to their own personal needs, financial assistance, emotional support and help in caring for the patient, including respite care [McAlpine, 1992].

REHABILITATION

Stroke rehabilitation can be carried out in a nursing home, a rehabilitation centre, a community hospital, or even in the patient's own home. The overall aims of rehabilitation of the stroke patient are directed toward his early return to the community, home and/or employment, where possible. Rehabilitation begins when a physician first sees the patient. Even before a definitive diagnosis has been reached, the physician must initiate a programme designed to prevent complications and minimize neurologic deficit [Toole and Patel, 1974].

Patients suffering acute cerebrovascular episodes receive care from a number of health professionals, who may each direct special skills to one or more aspects of his condition, but inevitably affect him as a whole person. The physician and the nurse at first will be concerned with instituting life-saving measures associated with the cardio-vascular and respiratory systems. The nurse will also be concerned with the patient's feeding, bowel and bladder function and with the condition of his skin. The physiotherapist may be called in early because of the condition of the patient's chest (i.e. breathing), or because the

attending physician is aware of the value of early mobilization [Dardier, 1980]. The physiotherapist, with her specialized knowledge of motor activity and the effect of brain damage on the normal function of the neuromuscular system, is called upon to guide most appropriate positioning and handling of particular patients [Dardier, 1980].

Following a completed evaluation of the patient as a whole and in conjunction with the specific treatment of his general medical condition, the physiotherapist carefully formulates a rehabilitation plan for the patient, which is directed toward prevention of additional complications, treatment of the problems that have already occurred, and facilitation of normal motor responses, communication, mobility and functional independence [Dardier, 1980].

Among the various places where rehabilitation could take place, Anderson [1990] recommends the large comprehensive rehabilitation centre, which the stroke victim can attend from home on an out-patient basis. Rehabilitation in this setting has been found to move the patient from a low level of functioning to a higher level in a relatively shorter period of time. In contrast rehabilitation carried out in extended care facilities, community hospitals and nursing homes is often labelled maintenance rehabilitation, which prevents deterioration of

function, but does not actually aid the patient to progress rapidly.

Kinsman [1989] observed that in the conventional hospital environment, rehabilitation and physiotherapy do not achieve much more than helping stabilize a patient's condition and do little toward helping her learn to function at her maximum potential. This has led to skepticism by some about the efficacy of physiotherapy, as patients in hospital are often observed not to comply with prescribed movements and exercises [Kinsman, 1989].

The hospital setting, with special furniture, meal times and other routines, does not permit the patient to learn how to function within her usual environment. In this setting the physiotherapist is likewise confined to directing his attention toward functional training of the muscles and not toward the acquisition of basic life skills. A rehabilitation centre can offer a "total learning environment," with longer sessions and a motivating atmosphere, where patients have been observed to perform relatively better [Kinsman, 1989].

Such an ideal design of services, let alone traditional hospital-based physiotherapy and rehabilitation, is seen as a luxury for patients with disabilities in developing countries [Levitt, 1988], especially when attendance is required for months or years. This is because such services are often too far away

from the disabled person and are too expensive.

Further skepticism about the value of rehabilitation has arisen also due to the common belief that stroke patients do not survive long enough to justify the expense and effort of rehabilitation [Anderson, 1990]. Research has provided evidence to counter this myth, and shows that at least 50% of survivors of stroke live for 7½ years or longer [Anderson et al, 1977; Anderson et al 1978; Matsumoto et al, 1973].

In assessing the impact of rehabilitation there is need to go beyond consideration of the location and design of services and factors such as age that may influence prognosis. It is equally important to consider the patient's own response to the situation including her willingness to utilize the services offered. While many people come to hospital to seek initial treatment, not all comply with the prescribed treatment regimen [Kirscht and Rosenstock, 1979], including the need for appointment keeping [Loventhal and Cameron, 1987] and partaking in physiotherapy services [Coy, 1989]. This problem may arise when the health worker concentrates solely on the benefits of compliance and overlooks the patient's own concerns and perceptions [Coy, 1989]. for example, the lack of visible or timely signs of improvement as viewed by the patient or her family members [Adanlawo, Ajibola, Akpan, Malomo, Olowolafe and Tejumola, 1988].

Never-the-less, a patient can protect himself from disability and further handicap if his motivation is maximized. This could be achieved when the threat to health is severe, the individual feels vulnerable, the recommended adaptive response is believed to be an effective means for averting the threat, the person is confident in his abilities to complete successfully the adaptive response, the rewards associated with any maladaptive behaviours are small, and the cost associated with the adaptive response are small [Prentice-Dunn and Rogers, 1986]. These behavioural issues are discussed in more detail later in the chapter.

The Role of Physiotherapy

According to Anderson [1990] rehabilitation of the stroke patient connotes his treatment and training to a maximum potential where he is able to achieve physical, psychological, social and vocational independence, and begins on the first day of the attack. The Joint Commission for Stroke Facilities [1972] recognized the essential input of physiotherapy in stroke rehabilitation. Physiotherapy can be defined as ...

> The act of providing preventive, curative and rehabilitative health care by employing physical means, and as much as possible, without drugs [Gani-Ikilama, 1990].

The physical agents employed include, among others, water, light, electricity, heat, massage and exercises.

The stroke inevitably results in hemiplegia. Thus the general aims of physiotherapy are to ensure soft tissue flexibility and to minimize effects of disuse and spasticity [Mulley, 1982], to promote purposeful motor learning [Carr and Shepard, 1989], and to improve the patient's functional abilities, such as self-help and daily living activities [Bobath, 1990].

The physiotherapist at entry level accurately identifies the patient's problems with the use of evaluation data. These data are used to determine the nature and extent of the pathological condition causing the hemiplegia and to select scientifically justifiable treatment [Olsen, 1983]. The initial evaluation of the patient's condition made by the physiotherapist usually includes the following [Bobath, 1990]:

1. A general impression of the patient, including whether she is seemingly younger or older than her chronological age, her cooperation, indifference, emotional release, depression, negativism, aggression, euphoria or instability.
2. State of health including underlying conditions and signs like hypertension, heart failure, respiration problems, giddiness, weakness, and others.

3. Tonus, that is the reaction of the musculature to passive movement, and the quality of postural and movement patterns.

4. The sensory state at deep (proprioception) and tactile sensation levels, with focus on the effect of sensory deficit on movement, muscle power and prognosis.

5. Functional abilities and disabilities.

This evaluation reflects the neuromuscular status of the patient with stroke, and has implications for his physiotherapy management [Anderson, 1990; Bobath, 1990; Carr and Shepard, 1989; O'Brien and Pallett, 1978].

Various treatment patterns and techniques to facilitate recovery exist. Range of motion (ROM) exercises are instituted in the acute phase, when the patient is unable to move her extremities actively to prevent first, the shortening and eventual fibrosis of the muscles that are maintained in a fixed position. Secondly, loss of lubrication between the moving parts and the periarticular structures is minimized, while contractures or contractural joint deformities are prevented.

The ROM exercises include "passive movement" where exercises are performed by the therapist on the patient who is not actively involved. Later free active exercises are performed by the patient under the direct supervision of the therapist. There are

also active-assistive exercises that the patient performs by bringing the joint through the normal range of motion, assisted by the therapist, or by herself using her unaffected extremities.

O'Brien and Pallett [1978] identified the following purposes for ROM exercises:

- To prevent tightening of ligaments and muscles that may cause contractures. Contractures are painful and unattractive and limit performance in activities of daily living, such as dressing, bathing and feeding.
- To improve circulation. ROM exercises prevent or reduce oedema by enhancing venous flow.
- To facilitate rehabilitation. If joints are kept "free" or "loose" during the acute stage of illness, movement can be performed as soon as recovery begins.

Recovery from hemiplegia is facilitated by proper positioning. Bed rest, required during the initial stage of stroke due to the patient's medical condition, will have a deleterious effect on his neurological state, which may already have been impaired by the upper motor neuron lesion [O'Brien and Pallett, 1978]. The specific objectives of positioning are to maintain full, passive ROM, to prevent contractures and necrosis, to improve circulation and to minimize spasticity.

The various positions that the patient can assume with the

therapist's supervision include lying supine, lying on the affected side or unaffected side, lying prone, and sitting. The bed on which the patient is laid is placed so that the locker, food, television and radio, visitors and other objects of interest are on her affected side. The bed must have a firm mattress on a solid base, and a bed cage to cover the patient's legs to eliminate the weight and irritation of beddings. Five or six pillows would be required for adequate support and correct alignment of the head, trunk and limbs [Cash, 1979].

Inhibiting abnormal muscular activities also helps the stroke patient recover from hemiplegia. The main aim is to improve tonus and coordination by obtaining normal, active reactions on the affected side [Bobath, 1990]. Flaccid extremities require particular support. To prevent subluxation of the humeral head out of the glenoid cavity, a flaccid arm, with or without spasticity of the depressors of the humerus, is supported on pillows when the patient is in bed, and supported with an arm sling when she is transferring or ambulating [O'Brien and Pallett, 1978; Bobath, 1990].

Spasticity, moreover, is treated by inhibiting the definite synergic pattern. This is achieved by changing and dissociating the spastic patterns, i.e. by "shunting" using static reflex-inhibiting patterns, and also by the process known as

"autoinhibition" [Bobath, 1990]. Autoinhibition is not only beneficial for one specific movement, but also, by reducing spasticity generally, gives control over other movements. Reflex-inhibiting patterns not only inhibit abnormal activity, but at the same time give the patient normal "postural sets" to initiate movements [Bobath, 1990].

Recovery is facilitated by functional training in "activities of daily living" (ADL). The term ADL refers to those activities involved with personal care, ambulation, housemaking, transfer and transportation that would allow the stroke patient with hemiplegia to function as an independent person [O'Brien and Pallett, 1978]. The treatment therefore, is geared towards making the patient a functioning person who can perform activities throughout the day and in any environment by conserving her strength, facilitating mobility and providing any assistive equipment necessary to promote independence [Kinsman, 1989; O'Brien and Pallett, 1978].

The therapist analyses the component motions of each activity. Then he has the patient practice each of these component motions as exercises until she is able to practice the activity as a whole [O'Brien and Pallett, 1978; Kinsman, 1989].

SICK ROLE BEHAVIOUR

Health behaviour consists of all human actions that are

guided by health purposes or reinforced by health outcomes, and a subset of these behaviours, sick role behaviours, include those actions taken by an ill person in order to recover from poor health [Kasl and Cobb, 1966]. The sick role itself refers to the socially sanctioned designation of being in ill health [Stone, Cohen and Adler, 1979].

According to Parson [1972], the sick role is necessarily socially deviant. Sickness is permitted by society after a doctor (in Western societies) or other socially recognized healer legitimizes the patient's need to both regress and accept the sick condition. This is because society's efficient functioning depends on contributions made by people who are healthy. A sick person suffers a disturbance of capacity, and once the incapacity is recognized, the sick person moves into the sick role. Occupants of the sick role are exempt from responsibility for the incapacity since it is viewed as being beyond their control. They are therefore exempt from formal social obligations [Stone et al, 1979].

However the legitimization of the sick person's exemption from usual duties required that the occupant of the sick role recognize that being ill is inherently undesirable and that he or she should therefore feel obligated to try to get well. Such obligations include seeking of technically competent help and

cooperating in the process of recovery [Rosenstock and Kirscht, 1979].

The sick role for persons with chronic illnesses is different from that of people with acute, short term illness episodes. Chronic illnesses are not curable, and therefore require the patient to adjust to his condition rather than to try to get well. In addition, the exemption from usual responsibility would be partial rather than complete [Rosenstock and Kirscht, 1979]. The sick role in older people is more complex, especially because the person receiving treatment is often suffering from several conditions [Kirscht and Rosenstock, 1979].

Two major components of sick role behaviour are first, initial and subsequent utilization of treatment services, and secondly, compliance with recommendations made by those from whom illness care is sought.

Utilization of Health Services

An understanding of health service utilization begins with an awareness of the alternative choices facing the sick person. Once choices are made, issues concerning frequency and regularity of use arise. It should be noted that the use of medical services is not the most usual response to symptoms and that most illness episodes are self-treated or treated within the family [Haggerty and Roghmann, 1972]. Although the alternative of self-care is

often viewed with alarm, it is a ubiquitous human reality [Stone, et al, 1979]. Advice seeking during illness is not limited to that obtained from health professionals [Suchman, 1966], but includes the "lay referral system," a process wherein the ill person discusses his health disturbances with other people with the aim of at least partially legitimizing his entry into the sick role [Zola, 1973].

Health service utilization differentials have been observed for different segments of society. Generally middle-aged adults have the lowest levels of utilization. Females have been observed to seek health services to a greater extent than men [Rosenstock and Kirscht, 1979]. Although poor and non-poor patients appear to have the same utilization rates, the poor actually utilize health services less based on need for health care [Kelman and Lane, 1976]. Finally perception of the condition, i.e. that it is becoming worse, precipitates hospital visits [Kahn, Anderson and Perkoff, 1973].

Utilization of services is a continuous process, especially for patients with chronic or long term illness. This leads to the problem of dropping out of treatment. This problem may arise either because symptoms may have abated or because the patient decides to seek treatment in another place [Baekeland and Lundwall, 1975]. The likelihood of dropping out is related to

social isolation, lack of visible affliction, negative therapist attitudes, long waiting time for treatment, low socio-economic status, young age, and social instability [Rosenstock and Kirscht, 1979]. The design of the health care system itself may prevent or enhance the chances of dropping out. Reminder cards or contacts, continuity of service providers and modification of clinic procedures to ensure personalized, convenient care have all proved valuable in reducing drop out [Backeland and Lundwall, 1975; Finnerty, Mattie and Finnerty, 1973; Becker, Drachman and Kirscht, 1974].

Another aspect of service delivery that may affect utilization is the referral system. Many patients never show up at the place of referral to receive (i.e. utilize) the recommended services because they were not given specific appointments or the name of a specific contact person of service provider [Rosenstock and Kirscht, 1979]. The referral process is also inhibited by transportation problems, a long time lag between referral and first appointment [Hertroijis, 1974], cost of service [Rosenstock and Kirscht, 1979] and whether the patient was involved in choosing the site of referral [Hertroijis, 1974].

Compliance

Compliance is the extent to which a patient's behaviour coincides with the clinical prescription and includes an array of

different behaviours [Kirscht and Rosenstock, 1979]. Compliance behaviour overlaps utilization behaviour in that it includes appointment keeping, but is also concerns performance of treatment regimens [Leventhal and Cameron, 1987].

The presence of symptoms is a focal event for complying with medical advice [Kasl and Cobb, 1966], and when advice includes actions aimed at relieving symptoms, it is more likely to be followed [Haynes, 1976]. On the other hand, the absence or cessation of symptoms often leads to premature termination of the regimen [Becker, Drachman and Kirscht, 1972]. Compliance is enhanced by other factors including satisfaction with services [Becker et al 1974; Korsch and Negrete, 1972] and clear communication of information [Leventhal and Cameron, 1987].

Social structural variables are also positively associated with compliance and include educational level, income and occupation [Tagliacozzo and Ima, 1970]. Younger adult patients have been found to be more likely to break appointments [Jonas, 1973].

The nature of the regimen itself will influence compliance. Chronically ill patients are less likely to stay in treatment where the treatment regimen has a high degree of interference with daily activities [Tagliacozzo and Ima, 1970]. Complexity, duration, cost, accessibility and side effects of the regimen are

other factors to be considered [Becker, 1974]. Theoretical and conceptual models that shed more light on compliance and utilization behaviour are presented below.

Role of Health Education

Attempts have been made to modify behaviour patterns relating to compliance through systematic intervention, particularly patient health education. These interventions have included modifications in the patient's social support system, his self-help skills and his modes of contact with the health care system [Kirscht and Rosenstock, 1979].

In patient education, the focus is on voluntary behaviour change in an individual depending on his current health care needs, such that unhealthful behaviours are modified and new behaviours that will help the patient attain his maximum health potential are facilitated [Stanton, 1983]. Caffarella [1981] defined patient education as a process by which patients, and in some cases their families, receive information about specific health problems and develop positive attitudes towards resolving the problems, with resultant changes in life styles. Focusing on process, Bartlett [1985] defined patient education as a planned learning experience involving the use of a combination of methods such as teaching, counselling and behaviour modification techniques to influence patients' knowledge and health behaviour.

Patient education emphasizes active patient involvement in his medical care programme. Learning processes such as counselling, skill development, guidance and support facilitate the patient's decision making about care and treatment, and also provide an opportunity for continuing education through the cycle of health-sickness-rehabilitation and throughout the various health care delivery settings including the home, the worksite and the community [Deeds, Herbert and Wolle, 1979; Pollock, 1987]. An organized programme of patient education is needed especially for the chronically ill in order to reduce a patient's anxiety, provide insights into her ailment, increase her knowledge about the effect of treatment, encourage greater self-acceptance of her present condition and improve her social contacts [Dehaes, 1982].

Patient health education should be a planned activity if desired effects are to be achieved [Green, Kreuter, Deede, and Partridge, 1980]. Planning includes the following steps [Dubrey, 1982; George, 1982]:

- Assessment of the patient's and family's needs for patient education (e.g. knowledge, skills, attitudes, values, support levels).
- Assessment of the patient's readiness for patient education.
- Planning and developing the educational programme

including setting, in concordance with the patient, educational and behavioural objectives.

- Implementation of the patient education programme with the active participation of the patient and family.
- Evaluation and documentation of patient learning with feedback to the patient and family.

Wolle [1972], identified several conditions which must be met to enhance the effectiveness of these steps. The situations and opportunities for accomplishing the steps, including "how," by "whom" and "when," must be analyzed and clarified. The attitude of health staff must be positive toward the planning and delivery of health education, and their knowledge and skills for doing so should be adequate. Finally, educational programmes in health care settings will occur only when supportive administrative arrangements and policy decisions have been made and adequate resources have been provided.

Conceptual Framework

The planning of patient health education programmes, e.g. for stroke patients, requires a thorough educational diagnosis of the factors that influence existing patient behaviour and could influence the adoption of healthier alternatives [Green et al, 1980]. This diagnostic process is aided by theoretical frameworks that attempt to explain human health behaviour. This current

research is an educational diagnostic effort, and as such has been guided by several health behaviour models.

Basic consideration is given to the fact that persons with chronic illnesses or conditions, like hemiplegia following stroke, are faced with many adaptive tasks including the need to master the physical symptoms of illness, manage the required treatment, develop and maintain relationships with health care providers, cope with a wide range of emotions, preserve self-image, maintain a sense of independence and control (while still having to be dependent on others), preserve relationships with family and friends and live with uncertainty. Behavioural models offer insights on the factors that may encourage or inhibit these adaptive tasks.

The Health Belief Model (HBM) seeks to explain decisions regarding health behaviour and the perceived value of that behaviour for coping with a threat to health. The cognitive elements of the model have been developed by Becker [1974] and Rosenstock [1974], among others, and include the following:

- Perceived Threat: Beliefs about the nature of the threat to health in terms of its perceived subjective severity, should the threatening condition occur, including evaluation of both health and social consequences, and perceptions of personal

susceptibility to that threat.

- Perceived Benefits: Beliefs that specific recommended actions will be beneficial, protective and efficacious in reducing or eliminating the threat.
- Perceived Barriers: Beliefs about barriers that may inhibit taking recommended actions including high costs and inconvenience.

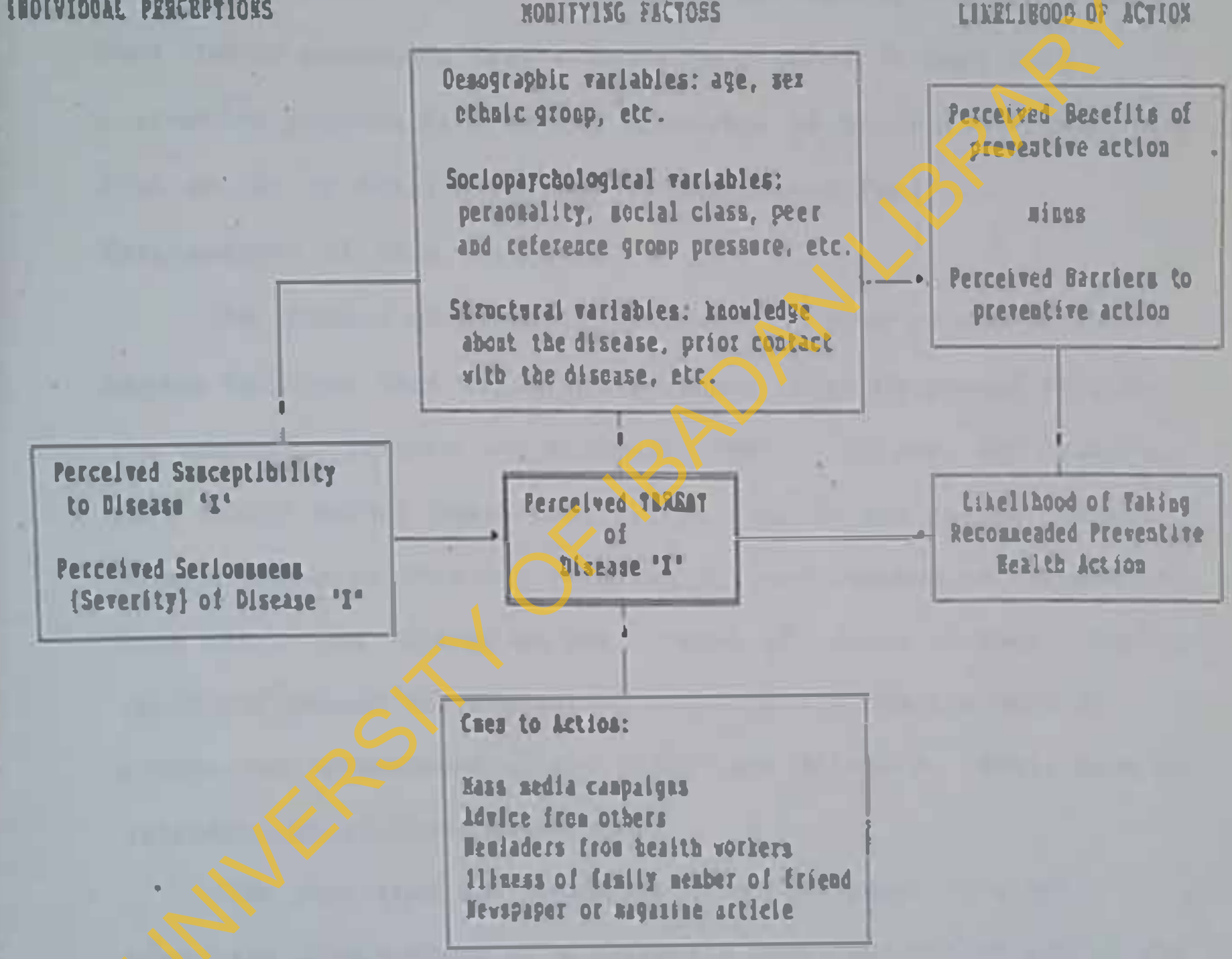
Leventhal and Cameron [1987] have found that the dimension of beliefs or perceptions that is most powerful in predicting behaviour is perceived barriers, followed by perceived susceptibility, perceived benefits and perceived severity, in descending order.

The HBM, as seen in Figure 2, explains that beliefs or perceptions may be modified or stimulated [Rosenstock, 1974]. Major modifying factors include socio-demographic variables such as sex, age, ethnic group, socio-economic status and occupation. Existing knowledge about the condition is another potential modifier. These background characteristics condition the beliefs people hold about a particular threat to health and the value which they may place on particular threat reducing actions [Kirscht and Rosenstock, 1979]. "Cues to action" stimulate or trigger the decision making process and may take the form of a reminder call from a health worker, previous experience with the

symptoms, or a similar experience of a friend or family member, and messages heard through the mass media.

Perceived susceptibility in the case of the stroke patient, or others suffering from chronic illness, does not focus on beliefs that the stroke will occur, but on whether the patient perceives that she is vulnerable to subsequent disabilities and poor recovery because of the condition [O'Brien and Pallett, 1978; Dardier, 1980; Anderson, 1990; Bobath, 1990]. Her perception of the hemiplegia becomes central, and barriers to acting on the recommended therapy are varied. The perceived impediments may include expenses incurred to obtain therapy, unpleasantness, difficulty with transportation and other inconveniences, complexity of the therapeutic regimen, side-effects, such as pain arising from the performance of the regimen, and disruption of the daily life and careers of both patient and significant others [Levitt, 1988].

Overall, the HBM should be seen as a dynamic construct. There are a variety of changing forces in the individual's environment that can act as facilitators or inhibitors to potential paths of behaviour. Thus the decision to initiate a recommended action, may not in itself predict the likelihood that that decision will be carried out successfully over the course of time [Kasl, 1974].



(Source: Becker, 1974)

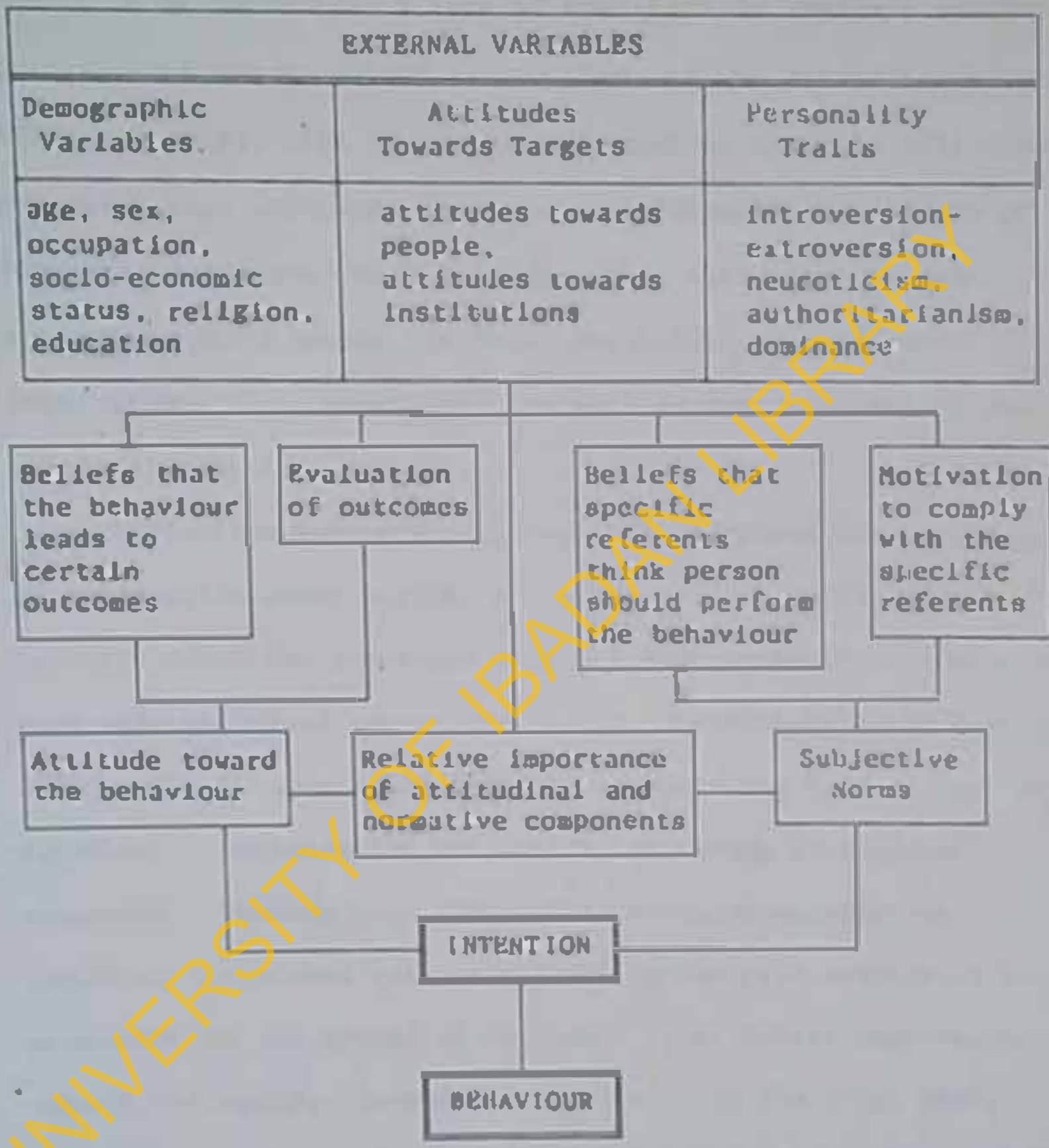
Figure 2: THE HEALTH BELIEF MODEL

However, the Theory of Reasoned Action [Adjzen and Fishbein, 1980] asserts that intention to perform a given act will be a function of perceived normative expectations regarding that act and beliefs about the consequences of performing the act. Thus this theory propounds that a decision reached through this evaluative process is a strong predictor of behaviour (Figure 3). Even so, it is still necessary to understand fully the determinants of this intention.

The process of normative evaluation rests on whether the person believes that significant others think he should perform the behaviour [Adjzen and Fishbein, 1980]. Stroke, for example, is a family matter [Holbrook, 1982]. The stroke patient is not sure of his prognosis and requires information and encouragement from family and friends on what course of action to take. Their input influences his subjective values and normative beliefs concerning recommended action [Adler and Milstein, 1979], such as attending physiotherapy sessions.

The physician and therapist also have input into the normative expectations on a patient's behaviour, particularly the intention to continue with treatment. The level of their influence is determined by the degree of satisfaction the patient feels with their performance [Korsch and Negrete, 1972].

The individual develops her attitude toward the proposed



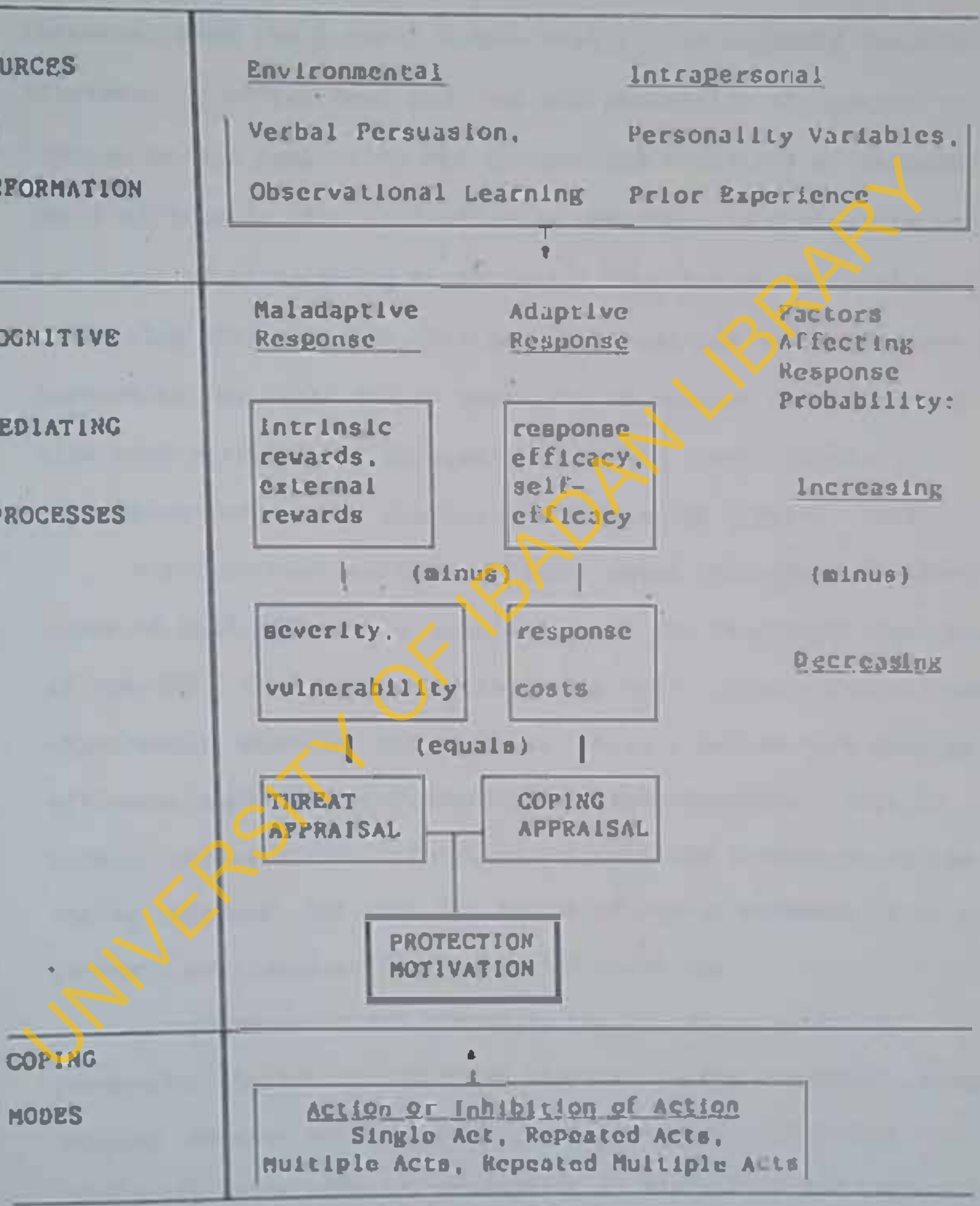
(Source: Adjzen and Fishbein, 1980)

Figure 1: Theory of Reasoned Action

behaviour by conducting a type of cost-benefit analysis concerning the value of the perceived consequences of the action (Adler and Milstein, 1979). The theory also recognizes that the attitudes and norms that influence intention, are themselves products of "external variables" such as demographic variables, general attitudes toward people (in this case health workers) and institutions (e.g. hospitals), as well as the individual's own personality traits.

Protection Motivation Theory (PMT) proposes that two sources of information about health, environmental and intrapersonal, initiate cognitive processes that ultimately result in action to cope with perceived threats to health (Prentice-Dunn and Rogers, 1986). Threat appraisal processes evaluate the factors that may increase or decrease the probability of making maladaptive responses. Factors that "reward" or increase maladaptive behaviour are either intrinsic (such as the pain associated with physiotherapy exercises) or extrinsic (e.g. social approval by others for seeking indigenous medicine). On the other hand, maladaptive responses may be decreased through perceptions about severity of and vulnerability to negative health outcomes, which in the case of the stroke patient include increased disability or delayed recovery (Figure 4).

A coping appraisal is also made concerning adaptive



[Source: Prentice-Dunn and Rogers, 1986]

Figure 4: Protection Motivation Theory

responses. The probability of adaptive coping behaviours is increased when the patient judges that the recommended response or treatment is efficacious and that she personally is capable of initiating and completing the recommended behaviour or response (self-efficacy). The self-efficacy component is crucial to the avoidance of threatening situations. Thus for stroke patient undergoing physiotherapy, her perceived ability and confidence in performing the exercises is necessary to prevent complications like contractual joint deformities, muscle contractures, depression and general physical deterioration [Levitt, 1988].

Prentice-Dunn and Rogers [1986] noted that the individual's sense of self-efficacy is independent of the "barriers" component of the HBM. Thus a person with strong self-efficacy perceptions might easily overcome any barriers, while a person with weak self-efficacy, might be overwhelmed by the same barriers. This is because self-efficacy influences not only the initiation of the coping response, but also the amount of energy expended (i.e. the person's persistence) in the face of obstacles.

Response costs are viewed in the PMT as potentially decreasing the likelihood of an adaptive coping response. These include inconvenience, expense, unpleasantness, difficulty, complexity, side effects, disruption of daily life and overcoming ingrained habits [Prentice-Dunn and Rogers, 1986]. In sum, PMT

assumes that protection motivation is highest when the person perceives high vulnerability to and severity of the health threat, but an equally strong faith in the effectiveness of recommended actions and perception of personal capabilities for performing those actions [Prentice-Dunn and Rogers, 1986].

Social Network Theory examines the set of personal contacts through which a person maintains his social identity, receives emotional support, material aid and information and develops new social contacts [Walker, MacBride and Vachon, 1977]. The quality of relationships among people involved in a social network is a major determinant of behaviour as the influence of others acts on the individual's motives, learning and relationships to the environment.

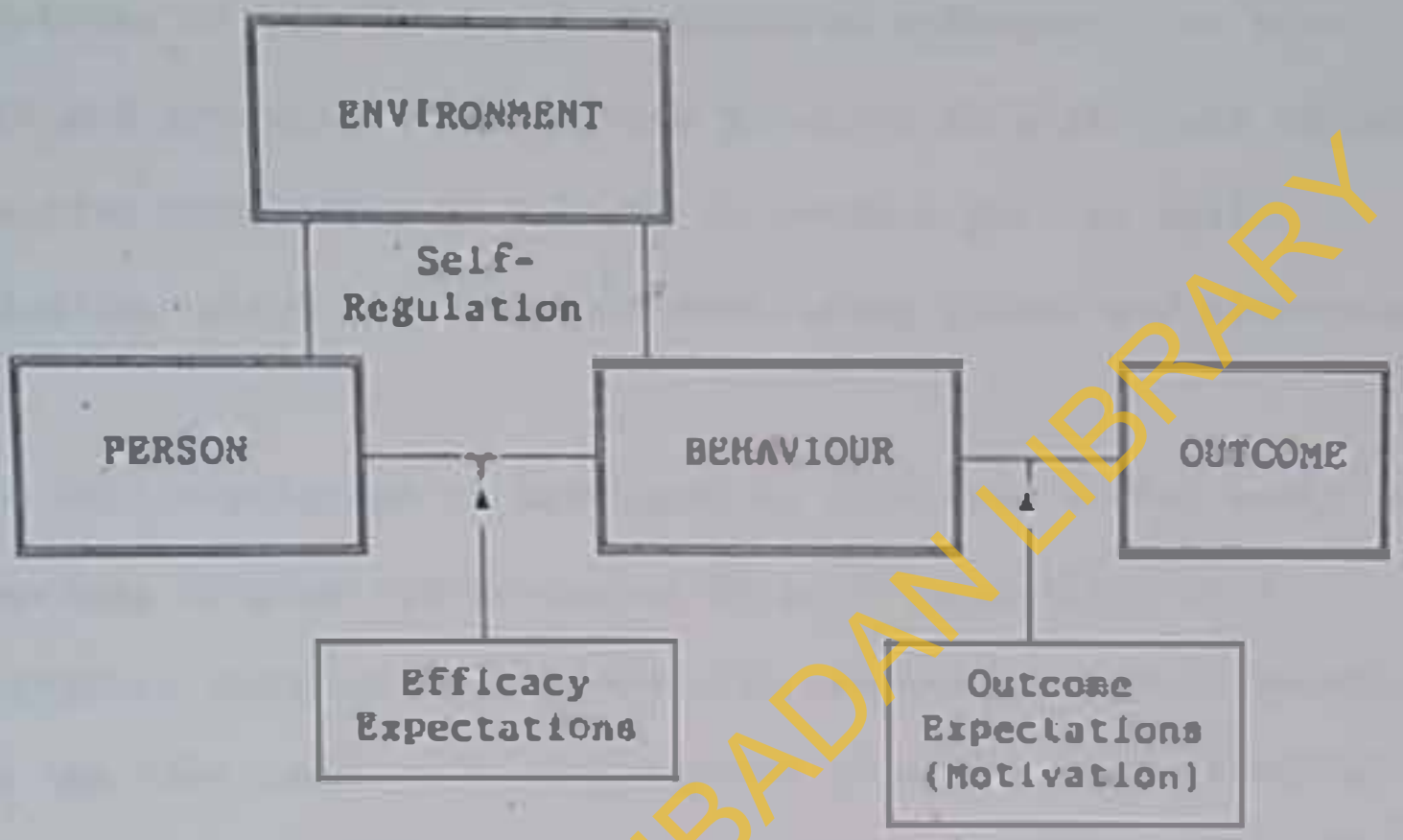
The sick role presents a challenge to the normal social relationships, since the sick person may not be able to perform existing social obligations. If the medical regimen conflicts with social norms and obligations, then compliance may be less than optimal [Kirscht and Rosenstock, 1979]. On the other hand strong, supportive social relationships can enhance compliance [Clark and Zimmerman, 1990].

As a conceptual approach, Social Network Theory lays emphasis on the importance of joint forces, in contrast to focusing solely on the individual patient characteristics that may

produce behavioural outcomes. Thus behaviour is seen to result from an interactive system [Kirscht and Rosenstock, 1979]. The professional who is trying to help the patient shape new behaviours will be most successful if she enables the individual to arrange his social environment in ways that support the behaviour change [Cameron and Best, 1987].

Social Learning Theory (SLT, also Social Cognitive Theory) describes the mechanisms by which individuals bring about change in their own health related actions [Bandura, 1986]. An underlying assumption is that individuals can learn and maintain new behaviours if they make a commitment to take responsibility for changing their behaviour. Behaviour is motivated by the perceived value of its outcome (Figure 5), so that the task for the person who wishes to change his behaviour is to reduce the reward value of an old behaviour and/or establish a high reward value for a new behaviour by means of selective reinforcement and modelling. According to Clark and Zimmerman [1990], self-regulation, inherent in SLT is a concept that holds promise as the basis of educational programmes to aid individuals manage chronic diseases better.

SLT defines human behaviour as reciprocally determined through the interaction of the person, her environment and her behaviour [Clark and Zimmerman, 1986]. Personal influences



[Source: Clark and Zimmerman, 1990; Rosenstock, Becker, DeVellis and Strecher, 1986]

Figure 5: Social Learning (Cognitive) Theory

include cognitive and affective factors. Behavioural influences refer to actions and reactions, that is the feedback inherent in the outcome of behaviour. Environmental influences are both social and physical. The process by which an individual attempts to control this triad of factors to reach a goal is self-regulation, which includes self-monitoring [Clark and Zimmerman, 1990].

Self-regulation is developed by observing social models who themselves display the processes of self-regulation: self-observation (monitoring), judgmental processes and self-reactions. Then the individual must actively try to master these functions [Bandura, 1986]. The self-regulatory process will not continue unless the behaviour produces outcomes that are expected to be beneficial [Clark and Zimmerman, 1990]. Finally the behaviour will not be attempted if the person believes that he is not able to engage in and execute the behaviour [Rosenstock, Becker, Devellis and Strecher, 1986]. Thus self-efficacy is a strong determinant of social learning [Clark and Zimmerman, 1990].

SUMMARY

Stroke incidence is becoming more common in Nigerian society, but no two stroke patients are the same. Hemiplegia and attendant depression, intellectual regression and general physical deterioration are some of the problems facing the patient, her

family and the service provider. Early initiation of rehabilitation, including physiotherapy, has proven to alleviate, to a greater or lesser extent, some of these problems, but not without the full involvement of the patient and significant others. Less than optimal recovery results from late and/or irregular presentation for physiotherapy.

The person suffering from stroke and attendant hemiplegia occupies the sick role, a socially deviant situation. The patient is therefore expected to adopt sick role behaviour aimed at ensuring speedy recovery or at the maintenance of as high a level of normal functioning as possible. Compliance with therapeutic regimen is a key sick role behaviour and includes appointment keeping.

Compliance has been found to be influenced by nature of the disease, patient-provider relationship, age, education, level of income, as well as perceptions about the severity of the problem and beliefs about personal ability to carry out the regimen. The quality of the referral system, complexity of the regimen and inconveniences arising from treatment are other important factors that determine compliance. These are some of the variables that have been explored in the present study in the Physiotherapy Department at the University College Hospital, Ibadan.

CHAPTER THREE

METHODOLOGY

Study Design and Scope

This study employs two major designs. First an historical cohort study was conducted using patient records in the Physiotherapy Department of UCH from 1982 through 1991. The use of records limited the scope of this phase of study to analysis of the potential influence of patient demographic and clinical characteristics on both delay in reporting to the first physiotherapy session and the subsequent number of sessions attended. The records could not yield data on patient beliefs, knowledge and attitudes. Tracing these patients in Ibadan city for interview would be hampered by poor layout of the city and the fact that some of the records were up to ten years old.

Therefore a second mode of study was used. A qualitative approach sought to learn about beliefs and attitudes towards stroke and physiotherapy through in-depth interviews with current patients and physiotherapists. Although this data could not be linked analytically with delay and attendance behaviour, it provided valid perspectives on actual factors that patients and therapists have found to inhibit compliance. Thus one can use

this information to improve the interpretation of quantitative (record) data and to generate variables on the cognitive and affective side of compliance for testing in future studies [Patton, 1980].

Justification of the Study

Prolonging life, apart from preventing disease and promoting health, is one of the aims of public health [University of Leeds, undated]. The goal of prolonging life is one of the major activities of the University College Hospital, which is both an academic and service centre designated to provide the highest quality of care in the locality [Ajayi, 1992]. The goal can only be achieved if the patient complies with rehabilitative therapy and is actively involved in his own care.

One of the components of rehabilitation that requires a high degree of patient involvement is physiotherapy for the paralysis following stroke. The actual use of physiotherapy services by patients then becomes a measure of the quality of health care that needs to be evaluated. As Ademuwagun [1970] explained...

> Evaluation of the use of public health services by the public must be a constant task. This will indicate the effectiveness or ineffectiveness of the health services and the changes necessary in policy-making, planning and administration in order to maximise the

effective use of the health services by the public or the target group. But if there is no evaluation, there will be no way of objectively identifying, consolidating or quantifying the process or failure of any programme. The planners and organisers of any public health programmes must therefore ensure a built-in evaluation procedure to facilitate checking and balance in the operation of the programme, because lack of evaluation may impede its successful running.

The World Health Organization Expert Committee on Disability Prevention and Rehabilitation [WHO, 1981] gave reasons for why rehabilitation of the disabled is important, ranging from the strictly pragmatic and economic to the broadly humanitarian, stating that...

> Whether or not rehabilitation services are provided, the occurrence of disability causes society to incur costs of both economic and social nature, and that these costs can be reduced by effective rehabilitation and support programmes.

The care of the hemiplegic poses a big problem for both therapists and patients. Complications like physical

deterioration, contractural joint deformities, depression and intellectual regression would arise due to the delay in or irregular attendance at physiotherapy sessions [Obiri, 1991; Anderson, 1990]. Enlightened rehabilitation practices applied early to the patient shorten hospital stay and reduce to as much as half the "acute" phase of rehabilitation [Hayes and Carroll, 1986; Cope and Hall, 1982].

Determination of factors that could make stroke patients curtail physiotherapy management is pertinent and necessary in order to avoid "victim blaming," because according to Chapman [1986, as cited in WHO, 1990]...

> ... health related behaviours ... are not simply a matter of discretionary choice; they are often constrained and influenced by social forces which are not individually determined.

Investigation into these factors should prove valuable in several ways. First they may help predict the compliance behaviour of future stroke patients with physiotherapy management, especially attendance at recommended treatment sessions. Secondly, they may form the basis for recommendations for patient education strategies in stroke rehabilitation at UCH. Finally the results should provide a database for planning and administration

of services for stroke patients specifically and physiotherapy services in general.

Objectives

The broad objective of this research was to determine the factors affecting attendance of stroke patients at the recommended physiotherapy sessions at the UCH Physiotherapy Department. This was accomplished through the following specific objectives:

1. To document the registration and level of attendance of stroke patients at recommended out-patient physiotherapy sessions from 1982 through 1991.
2. To determine the influence of socio-demographic and clinical characteristics of stroke patients on their delay in and level of attendance at recommended sessions.
3. To document the beliefs and attitudes of current stroke patients at the UCH Physiotherapy Department concerning stroke itself and physiotherapy services.
4. To recommend patient education strategies for improving attendance of stroke patients at physiotherapy sessions based on the above objectives.

Variables and Hypotheses

Two key patient behaviours related to the utilization of physiotherapy services could be discerned by reviewing patient records at the UCH Physiotherapy Department, and served as

dependent variables. The first was the length of time, in number of days, between referral to out-patient physiotherapy sessions and the date of first attendance. This period of time was referred to as "delay." In this case any patient who came for the first appointment more than two weeks after referral was considered to have delayed. Each patient is prescribed a basic set of 12 physiotherapy sessions, thus a second dependent variable was the total number of these basic sessions that a patient attended.

Both socio-demographic and clinical data could be found on the record cards, and these were studied as independent variables. The former included sex, age, religion and occupation of patient. The latter were side of paralysis and functional level at the time of referral to physiotherapy out-patient services. The levels of functional recovery are assessed by the physiotherapist on the patient's first out-patient visit as described in the review of literature and shown in Appendix A.

Based on the above mentioned variables, the following null hypotheses were framed:

1. Delay in attending the first physiotherapy session is not associated with stroke patients' socio-demographic characteristics.

2. Delay in attending the first physiotherapy session is not

associated with stroke patients' clinical features.

3. Number of recommended physiotherapy sessions attended is not associated with stroke patients' socio-demographic characteristics.

4. Number of recommended physiotherapy sessions attended is not associated with stroke patients' clinical features.

5. Number of recommended physiotherapy sessions attended is not associated with delay in attending the first physiotherapy session.

Study Population and Sample

The Physiotherapy Department is one of 45 specialty service units in UCH. A wide range of patients are referred from surgical, medical and other departments within the hospital. Stroke patients are referred to the Physiotherapy Department from the Neurology Clinic of the Medical Out-Patient Department, although in actuality they are given the referral card directly upon discharge from in-patient care. Stroke patients at the Physiotherapy Department comprise about seven percent of all patients attended to monthly.

Data gathered from the Medical Records Department of UCH from 1982-1991 showed an average annual admission of 9,500 patients of whom an average of 55 were admitted for CVA. However the number of stroke patients discharged from hospital was not

recorded. Within the Physiotherapy Department records for all years except 1985, showed that approximately 500 patients came to the Department's record office to receive an initial appointment date. Subsequent review of patient records identified 313 stroke patients who actually attended at least one session. Based on the relatively small number of total patient record cards available for the ten-year period, the researcher decided to conduct a full population study for the historical cohort aspect of the project.

The qualitative investigations focussed on both current stroke patients and available physiotherapists. As of January 1992, 18 physiotherapists were employed in the Department: Two were on leave, and the Head of Department traditionally is relieved of clinical duties to attend to academic and administrative matters. Thus all 15 of the currently practising professional staff were interviewed. Physiotherapy sessions for stroke patients are scheduled on Tuesday and Thursday. The clinic was visited on eight consecutive sessions in January 1992, and all 20 current patients found in attendance were interviewed. It should be noted that no appointment book is kept for the bi-weekly sessions. Only the appointment given for the very first session is recorded.

It should be noted that there is also a Physiotherapy Department in the State Hospital Ring Road (SHRR), located on the

southwestern side of Ibadan. It employs three physiotherapists who attend to stroke patients on both inpatient and outpatient referral bases. One might have wished to expand the size of the study population by including SMRR in the research, but the procedure for scheduling stroke patients at that facility is not based on a standard policy like UCH's (i.e. 12 sessions minimum), but is left to the discretion of the therapist. Therefore data that could be obtained from the two facilities were not comparable.

MATERIALS AND METHODS

As noted above two major research designs were used. An historical cohort study looked at stroke patients who had attended the UCH Physiotherapy Department clinics over a ten-year period, while qualitative, in-depth interviews gathered views from patients and physiotherapy staff on social and cultural factors that may influence clinic attendance behaviour.

Historical Cohort Study

A review of all available stroke patient records for the period 1982-1991 formed the basis of the historical cohort study. From the front of these cards data could be extracted on the socio-demographic and clinical characteristics of patients as previously described under study variables. Additional progress cards can be attached to the initial card, and from revieving

these, one can count the number of sessions attended. Figure 4 shows the basic layout of the record card which measures 20.5 by 13 cm.

All patient cards are kept in boxes in the Department's Records Office and are arranged serially by hospital number. The Physiotherapy Department employs two clerical officers for the sole purpose of managing the records, but they are not staff of the central UCH Records Department. Current cards on file date back to the 1970s.

The researcher himself manually sorted all patient cards and extracted the 313 stroke patient records for the years under study. He made sure that data in the diagnosis box on the cardclearly listed stroke, CVD, CVA, hemiplegia and/or hemiparesis as the criteria for selection.

Data recording sheets were used to extract the study variables from the patients' cards, thus the cards were never removed from the Physiotherapy Department. The clerical officers noted that a few record cards might be missing because student physiotherapists sometimes took these home to use for writing up case study assignments.

In-Depth Interviews

An interview guide was drawn up to learn from current patients about their perceptions of stroke and physiotherapy.

(front of card)

UNIVERSITY COLLEGE HOSPITAL

REQUEST FOR

PHYSIOTHERAPY

HOSPITAL NUMBER

SURNAME	FIRST NAME(S)	AGE	SEX	OCCUPATION

WARD/CLINIC	PHYSICIAN/SURGEON	ADDRESS

DIAGNOSIS

Relevant Clinical History

TREATMENT

Date of Onset/Injury _____

Date of Operation _____

Date Discharged _____

X-Ray No _____

Date _____ Medical Officer's Signature _____

DATE

PROGRESS

(back of card)

(extra progress cards can be attached)

Figure 4: PHYSIOTHERAPY DEPARTMENT PATIENT RECORD CARD

Appendix B shows that they were asked what they believed caused stroke and whether they thought it was a serious problem. Their opinions on the quality and efficacy of physiotherapy services was also sought. They were specifically asked to identify factors that may make compliance easy or difficult. The researcher conducted all interviews himself.

All staff and records officers in the Physiotherapy Department, where the researcher is a member of staff on study leave, were informed about the nature of the project and requested to give assistance. The physiotherapy sessions for stroke patients are scheduled throughout the day on both Tuesday and Thursday. The researcher stationed himself in the clinic for eight consecutive session days from 2nd January 1992. He requested the records officers to notify him each time a stroke patient arrived for his or her session. The researcher would then check the particular physiotherapist concerned and remind him or her to refer the patient to be interviewed after the session.

A separate consulting room was available to the researcher to conduct the interviews, thus ensuring privacy. The researcher introduced himself and the purpose of the interview, and then asked the patients for their permission to proceed. None refused to be interviewed. Patients' responses were written out by the researcher on separate sheets of paper. Confidentiality was

guaranteed, and only hospital number was recorded. On average each interview took about 45 minutes.

The interview schedule for the physiotherapy staff who are currently providing services in the Department is found in Appendix C. They were asked about their general experiences with the management of stroke patients as well as specific reasons why some patients might have missed appointments or dropped out of therapy. Their suggestions for improving the services for stroke patients were also sought.

An average interview with the staff took 35 minutes. Again these were all conducted by the researcher. Each staff member was interviewed individually in the privacy of his or her office in the late afternoon following the stroke patient clinics during the first full week of January, 1992. As before, all responses were hand recorded on a separate sheet for each therapist. No names were recorded to guarantee anonymity.

Data Analysis

Information from the record cards was precoded when written on the data recording sheets. For example with religion, a 'C' was placed in the column for Christians and an 'M' for Moslems. Likewise an 'L' was put in the column for side affected by hemiplegia when the patient was paralysed on the left and a 'R' for the right side. Only occupation was not precoded. After

revieving the variety of occupations found, and considering the relatively small population size. it was decided to code occupation into three categories. 'B' stood for business people and traders. 'C' denoted civil servants and professional people. 'U' was used for unskilled people like housewives and labourers.

The EPI INFO statistical computer software programme, developed by the U.S. Centres for Disease Control, was used to analyze the data. Frequency tables and simple charts were produced first to determine the distribution and nature of the variables being studied. Both chi-squared and analysis of variance statistical tests were performed to verify or reject the study hypotheses. The five percent probability level was used to reject the null hypotheses.

Validity, Reliability and Limitations

The actual record cards themselves are subject to problems of validity and reliability because of the variety of records officers and physiotherapists over the years who inscribed the information found on the cards. Omissions were the most obvious error observed in the record keeping. Occupation was not recorded for 18.8%, age for 8.3% and religion for 2.5%. Information on the time between referral and first attendance was also not available for 2.5%.

The sorting of the cards and the actual transcribing of the

record data was done solely by the researcher to ensure valid selection of stroke patients and reliability of data transcribing. A computer printout of all data entries was compared with the original data sheet to guarantee accuracy.

The qualitative approach to interviewing enhances validity. Questions were open ended, allowing respondents to speak in their own words. Privacy and confidentiality encouraged respondents to speak freely. The fact that the researcher himself conducted all interviews eliminated the problem of interobserver reliability.

One major limitation is the unknown number of patient records that may have been lost or removed over the years. The actual cards found represent about 60% of all stroke patients who were referred to the clinic and actually showed up to make an appointment. It cannot be determined what proportion of the remaining 40% represent either those who never attended or those whose cards were lost, but conversations with records staff indicate that the former are likely to form the large majority. Only names of patients are recorded in the book for first appointment, so the study is limited in not being able to determine the characteristics of those who did not attend any of the sessions. This limitation itself points to the magnitude of the problems of defaulting and quality of care.

CHAPTER FOUR

RESULTS

Organization of this chapter reflects the different methods used to gather data and the different populations studied. The first section presents findings from the historical cohort study of physiotherapy patient records. The perceptions of current stroke patients about their condition and therapy are found in the second section. Observations from the practising physiotherapists round out the chapter.

HISTORICAL COHORT STUDY

A total of 313 records of stroke patients were found in the Physiotherapy Department for the years 1982 to 1991. Several attempts were made to locate these records, which were not filed centrally. As will be seen below, vital information, such as age, was not recorded on all records. It is suspected that some records may have been lost by physiotherapy students who use them to write up case reports. While an accurate estimate of loss is not possible, the records clerks indicated that it was small.

Registration over the years showed a peak in 1986 with 49 records found and in 1988 with 46 patients. Lowest patient levels were seen in 1982 (15 patients) and 1983 (18 patients). The

N = 313

Figure 7: YEARLY DISTRIBUTION OF STROKE PATIENT REGISTRATION AT PHYSIOTHERAPY CLINIC

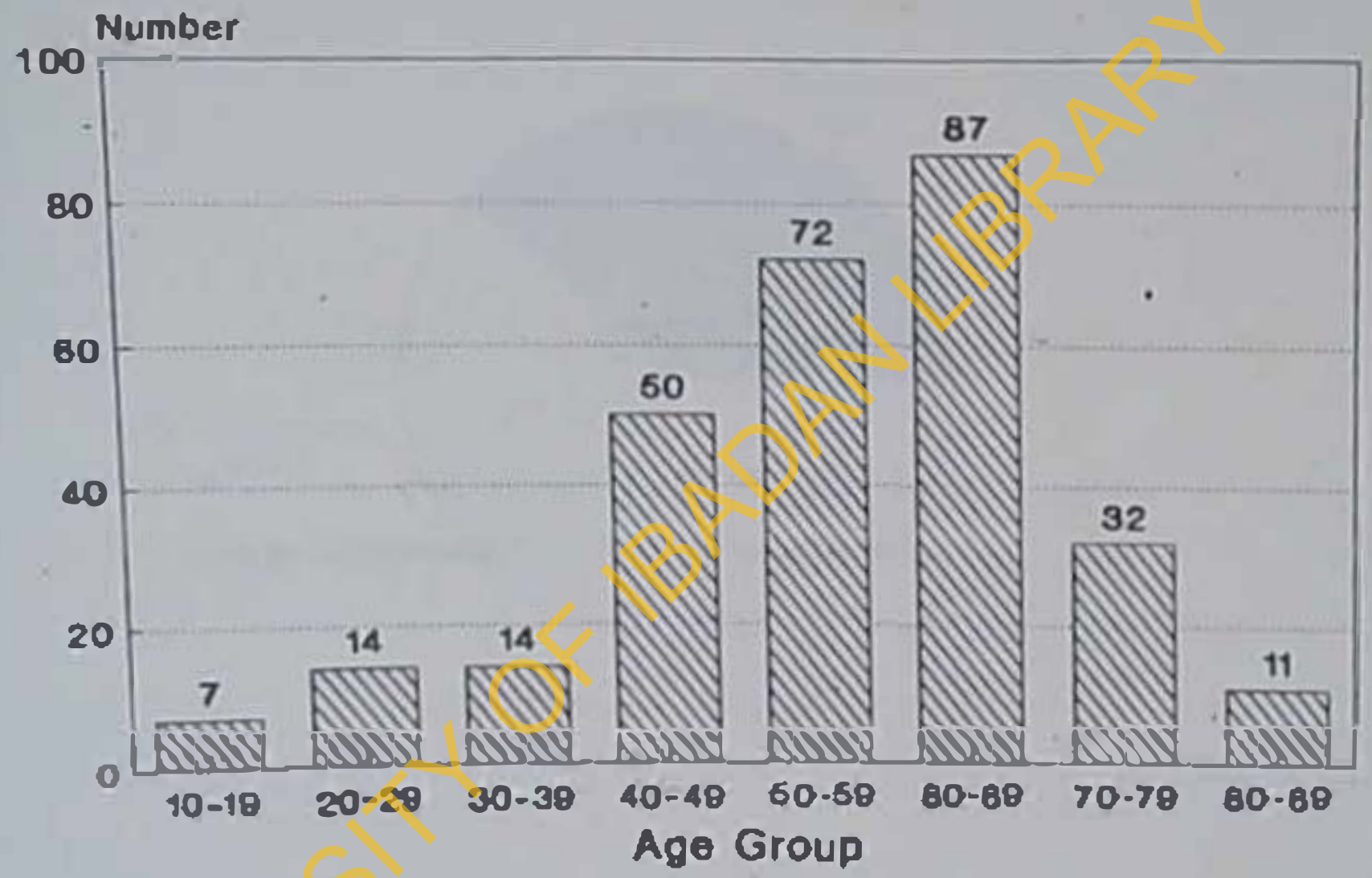
distribution of patient registration by year is seen in Figure 7.

Demographic Characteristics and Illness Background

The patients' ages ranged from 12 to 85 years with a mean of 54.7 years. The peak age group (30.3%) was those 60-69 years old (Figure 8). Fewest were either 10-19 (2.4%) or 80-89 years old (3.8%). No age was recorded for 26 patients. Slightly over half were males (52.4%). Christians accounted for 57.7% of patients, with the rest being Moslem. No religion was recorded for eight.

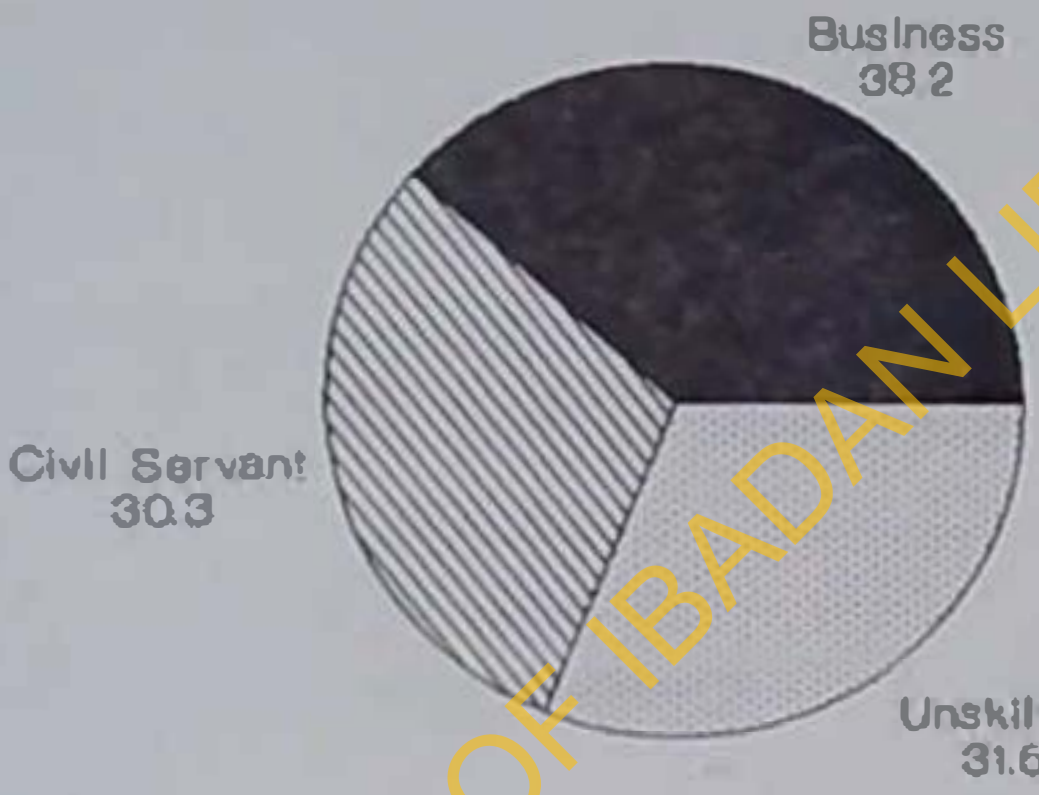
The largest occupational group (38.2%) were the business people, traders and self-employed artisans like tailors. Civil servants, included teachers, policemen and those on civil service pensions, as well as professionals, and accounted for 30.3%. The remainder (31.5%) were unskilled workers such as labourers, farmers and housewives, as shown in Figure 9. No occupation was recorded for 59 patients.

The effect of etroke was divided nearly evenly between right (49.2%) and left (50.8%) side hemiplegia. Information was recorded about the patients' level of functioning on entry into physiotherapy using the Bobath or Oxford Grading. Only 10.3% presented at the highest level (3), having good hand movement and upper arm function and being ambulant with an apparently normal, but somewhat slow gait. A majority were at either level 1 or 2 (66.7%), with fair arm functioning, ability to stand unsupported



N = 287

Figure 8: AGE DISTRIBUTION OF STROKE PATIENTS



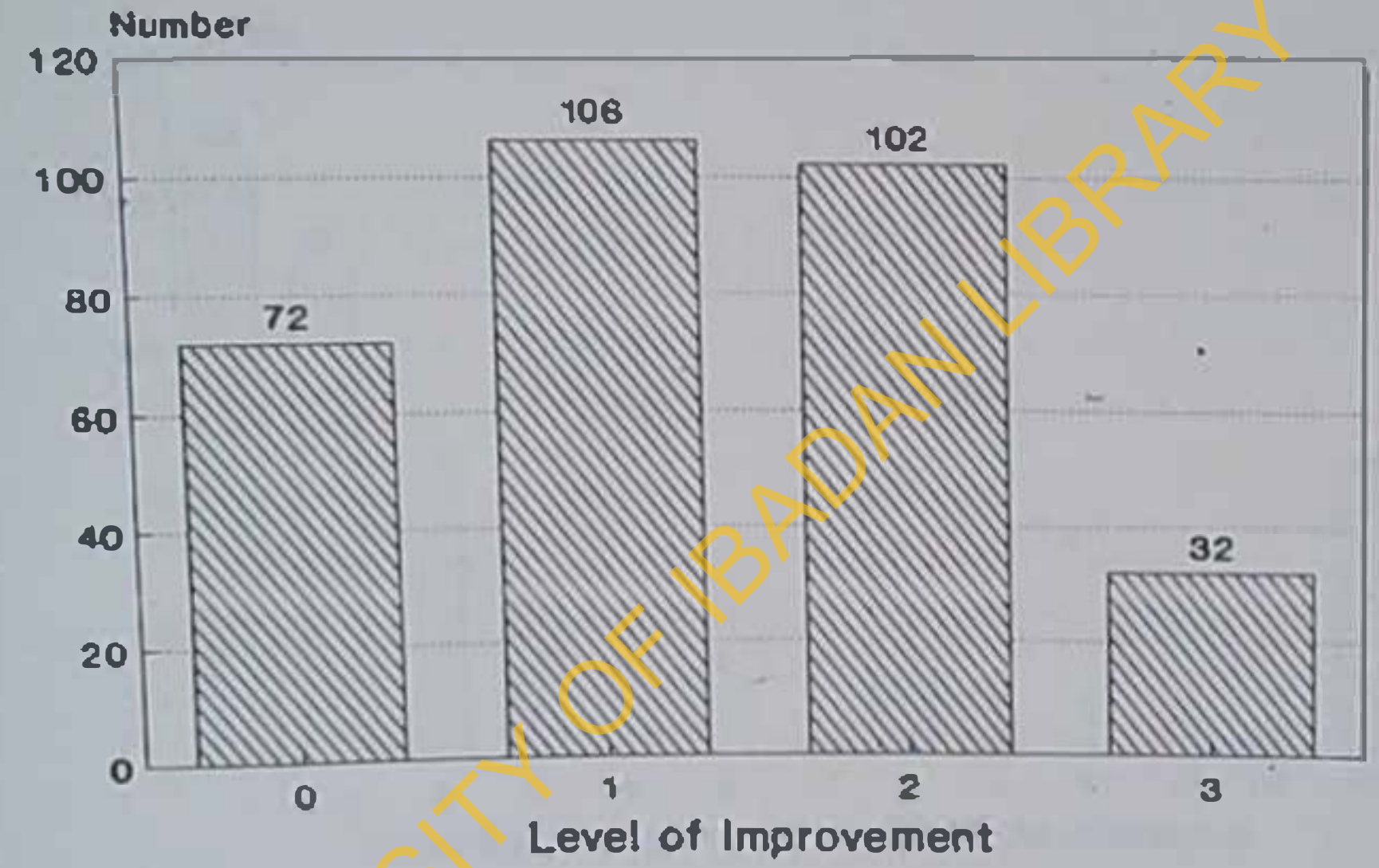
N = 254

Figure 9: RECORDED OCCUPATIONS OF STROKE PATIENTS

and an unsteady gait. Slightly over one-fifth had the lowest level of functioning (0) at registration (see Figure 10).

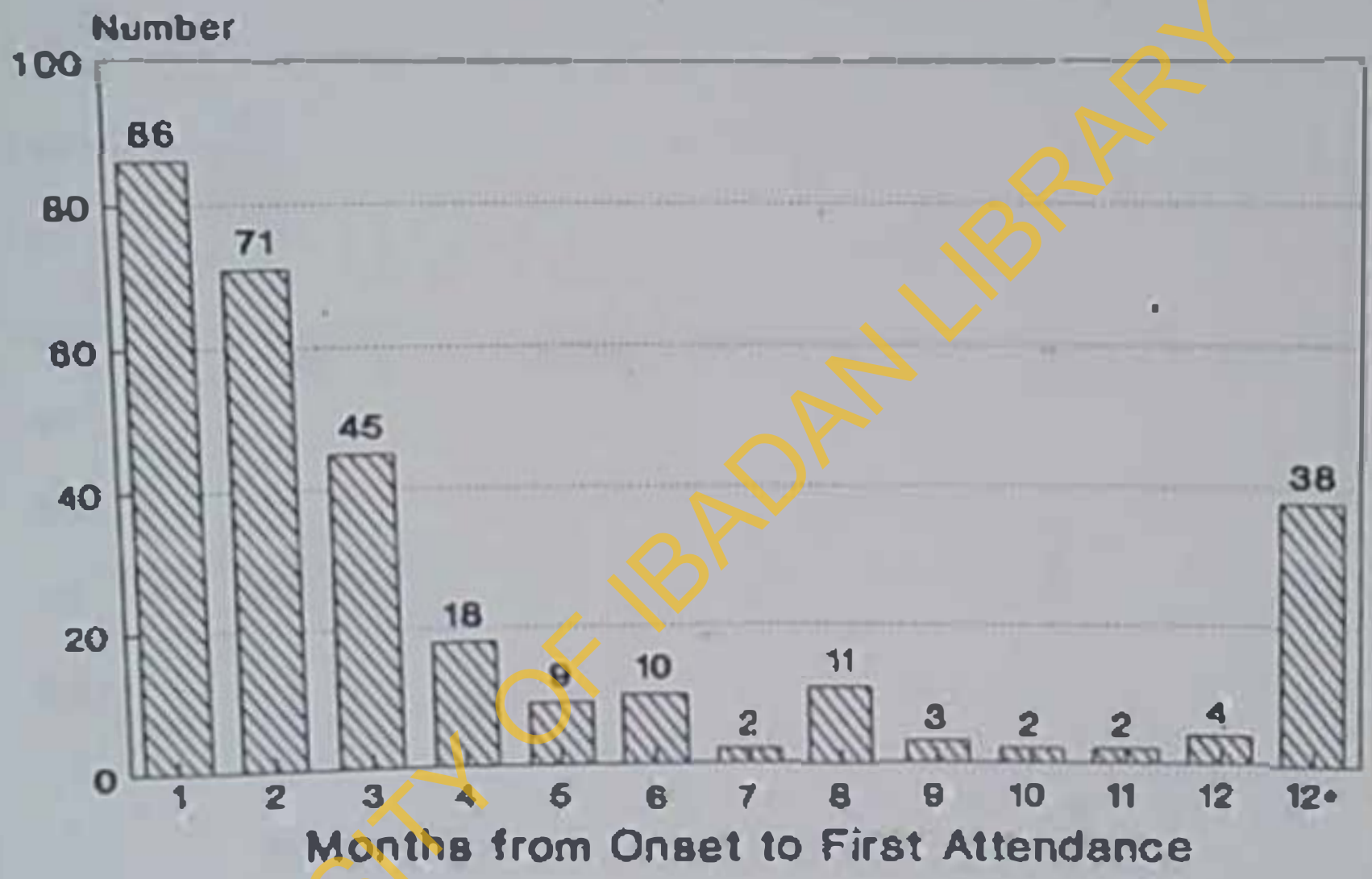
The time from onset of stroke to registration was quite variable, ranging from a few days to over three years. For those patients where this information was recorded (301), less than half (47.8%) began physiotherapy within two-months of their stroke (see Figure 11), while a few took as long as two to three years (6.0%). Mean time between onset and first attendance at physiotherapy clinic was five months. Similarly there was a variation in the time between referral to physiotherapy clinic and first appearance, referred to subsequently as delay time (Figure 12). Of the 305 patients for whom this information was recorded, most (72.8%) came within the first two weeks. Therefore 27.2% "delayed." The time between referral and first attendance ranged from one day to over three months with a mean of 12 days.

Attendance at the twelve initial recommended physiotherapy sessions is depicted in Figure 13. Only 20.1% of patients, who presented for their first scheduled session, completed the full course of twelve. On average patients attended 6.0 sessions. It was possible to obtain from the records clerks information on total new referrals booked for appointment in all years but 1985. This figure, when compared with the record cards for patients who attended at least one session show that 37.6% of patients did not



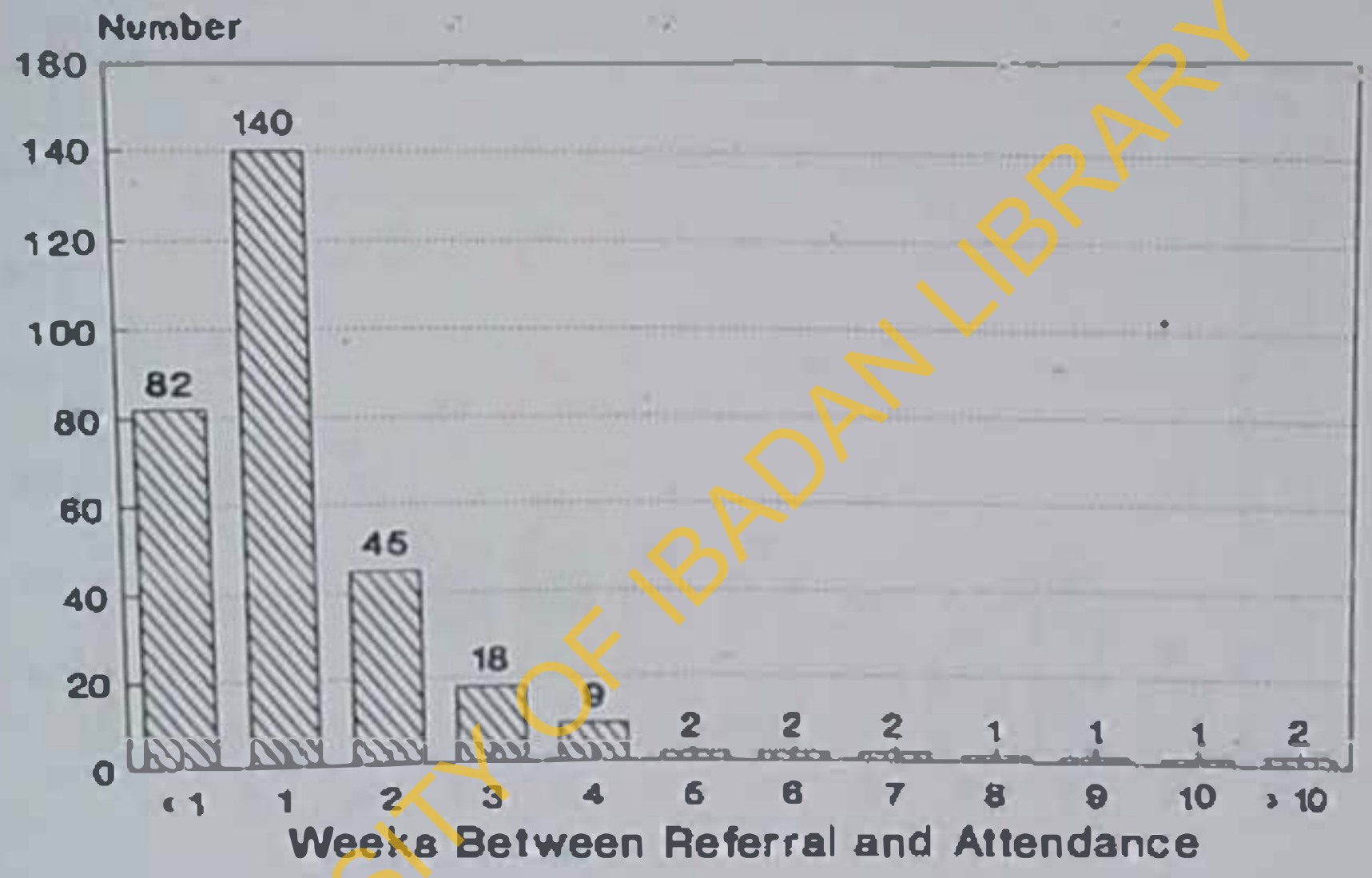
N = 312

Figure 10: FUNCTION LEVEL OF STROKE PATIENTS UPON REFERRAL TO PHYSIOTHERAPY CLINIC



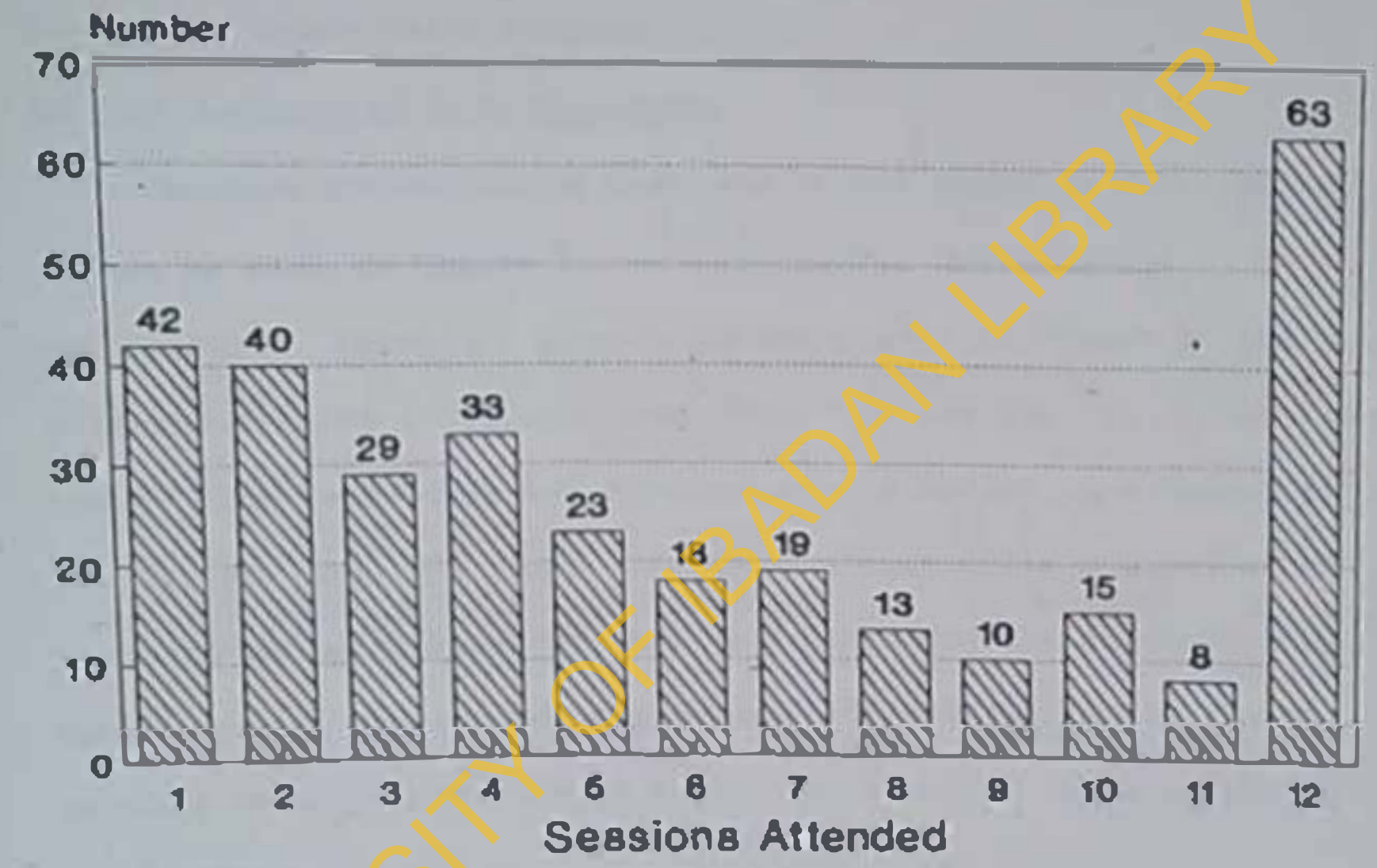
N = 301

Figure 11: TIME BETWEEN ONSET OF STROKE AND FIRST SESSION AT PHYSIOTHERAPY CLINIC



N = 305

Figure 12: TIME BETWEEN, REFERRAL TO PHYSIOTHERAPY CLINIC AND ATTENDANCE AT FIRST SESSION



N - 313

Figure 13: DISTRIBUTION OF PATIENT ATTENDANCE AT RECOMMENDED PHYSIOTHERAPY SESSIONS

even begin physiotherapy in UCH. Table 1 shows that the best rate of presentation at physiotherapy clinic (76.6%) occurred in 1984, while the worst attendance (40.9%) happened in 1983, the only time it dropped below fifty percent.

Factors Associated with Attendance

Because attendance at sessions is not normally distributed, as can be seen in Figure 13, non-parametric analysis was recommended. Therefore attendance was graded as "good" if the patient attended 10-12 sessions, "fair" if she came to clinic 7-9 times, "low" when only 4-6 sessions were attended, and "poor" if the patient came 1-3 times. As noted above, while the number of patients who were referred, but never attended any sessions, can be estimated, records bearing demographic information on those persons is not accessible to include in analysis those attending no sessions.

Male patients had only a slightly higher mean attendance (6.2 sessions) than female patients (5.8). Table 2 shows that the difference is not statistically significant ($p > 0.25$), as a similar proportion of females (28.2%) and males (26.8%) had good attendance, while 39.6% and 31.7% respectively had poor attendance.

Religion did display a statistically significant ($p < 0.03$) influence on attendance as seen in Table 3. Although Christians

Table 1

Number of Patients Booked for Physiotherapy and Rate of Presentation for First Session

YEAR	Number Given Appointment	Number Attending First Session	Rate (%) of Presentation
1982	26	15	57,7
1983	44	18	40.9
1984	47	36	76.6
1985	n/a	34	----
1986	67	49	73.1
1987	46	26	56.5
1988	69	46	66.7
1989	43	26	60.5
1990	54	29	53.7
1991	56	34	60.7
Total*	452	279	61.7

*excluding 1985

Table 2

Comparison of Patient's Sex and

Session Attendance

Attendance	Sex		Total
	Female (%)	Male (%)	
Good	42 (28.2)	44 (26.8)	86
Fair	15 (10.1)	27 (16.5)	42
Low	33 (22.1)	41 (25.0)	74
Poor	59 (39.6)	52 (31.7)	111
Total	149	164	313

$\chi^2 = 4.07$, d.f. = 3, $p > 0.25$

Table 3

Comparison of Patient's Religion and

Session Attendance

Attendance	Religion		Total
	Christian (%)	Moslem (%)	
Good	52 (29.5)	33 (25.6)	85
Fair	20 (11.5)	21 (16.3)	41
Low	52 (29.5)	22 (17.0)	74
Poor	52 (29.5)	53 (41.1)	105
Total	176	129	305*

*excluding eight for whom religion was not recorded

$x^2 = 9.42$, d.f. = 3, $p < 0.03$

had only a slightly higher proportion (29.5%) of "good" attenders than Moslems (25.6%), the proportion of Moslems (41.1%) with poor attendance was observably higher than that of Christians (29.5%).

No association between age and number of session attendance was found as seen in Table 4 ($p > 0.51$). Although the mean age for those with low (56.4 years) and poor (55.1) attendance was slightly higher than for those with good (54.0) and fair (52.2) attendance, no clear pattern was discernable.

There was observed variation in attendance among the three occupational groupings. The civil service group had the highest proportion with good attendance (29.9%), followed by business people (25.8%) and the unskilled (25.0%). In contrast the unskilled had more with poor attendance (42.5%). compared to business people (35.1%) and civil servants (28.5%), but as seen in Table 5, the difference was not significant ($p > 0.22$).

Level of improvement prior to start of therapy was compared with attendance. Little difference was seen among the four function levels concerning proportion with good attendance (from lowest to highest: 29.2%, 27.5%, 27.4% and 25.0%), but poor attendance figures were more variable. Poor attendance was recorded more frequently among those with the most (43.8%) and the least (44.4%) improvement. and less so among those in the middle range was 26.4% (level 1) and 35.3% (level 2) as seen in Table 6.

Table 4

Relationship Between Patient's Age and Session Attendance

Attendance	Obs	Total	Mean	Variance	Std Dev
GOOD	79	4270	54.051	195.126	13.969
FAIR	39	2037	52.231	172.235	13.124
LOW	67	3779	56.403	222.002	14.900
POOR	102	5624	55.137	225.070	15.002

ANOVA: Variation	SS	df	MS	F statistic	p-value
Between	484.482	3	161.494	0.773	0.513026
Within	59148.918	283	209.007		
Total	59633.401	286			

Table 5

Comparison of Patient's Occupation and

Session Attendance

Attendance	Occupation Group (%)			Total
	Business-Traders	Civil Servant-Professionals	Unskilled	
Good	25 (25.8)	23 (29.9)	20 (25.0)	68
Fair	17 (17.5)	14 (18.2)	5 (6.2)	36
Low	21 (21.6)	18 (23.4)	21 (26.3)	60
Poor	34 (35.1)	22 (28.5)	34 (42.5)	90
Total	97	77	80	254*

*excluding those with no recorded occupation

χ^2 = 8.14. d.f. = 6. p > 0.22

Table 6

Comparison of Patient's Level of Improvement at Registration and Session Attendance

Attendance	Function Level* (%)				Total
	0	1	2	3	
Good	21 (29.2)	29 (27.4)	28 (27.4)	8 (25.0)	86
Fair	4 (5.6)	21 (19.8)	12 (11.8)	5 (15.6)	42
Low	15 (20.8)	28 (26.4)	26 (25.5)	5 (15.6)	74
Poor	32 (44.4)	28 (26.4)	36 (35.3)	14 (43.8)	110
Total	72	106	102	32	312

χ^2 = 13.32, d.f. = 9, $p > 0.14$

*See Appendix A

Side of the body affected by stroke showed only a marginal relationship with attendance ($p > 0.08$). A greater proportion of those with right side hemiplegia (32.4%) had good attendance compared with patients affected on the left (22.6%). Figures for poor attendance were quite similar (36.4% and 34.7% respectively) as seen in Table 7.

The delay between onset of stroke and appearance at first physiotherapy session was compared. As with number of sessions, the distribution of delay time was not normal, but skewed to the right. Delay was converted into a discrete variable with three levels: attendance within one week of referral (41.8%), attendance within the second week after referral (36.3%), and first attendance beyond two weeks of referral (12.9%).

Table 8 shows a significant association between delay time and attendance at sessions ($p < 0.04$). Good attendance was more common among those first attending within one (26.8%) or two (31.3%) weeks of referral than for those coming later (19.7%). Poor attendance showed a clear pattern of increase as time from referral day increased (29.1%, 35.7% and 48.5% respectively).

Factors Associated with Delay

Delay in attending the first appointment was not associated with the sex of patient ($p > 0.93$); as almost equal proportions of female (41.7%) and male (41.6%) came within the first week after

Table 7

Comparison of Side Affected by Hemiplegia and Session Attendance

Attendance	Side Affected		Total
	Left (%)	Right (%)	
Good	36 (22.6)	50 (34.4)	86
Fair	22 (13.8)	20 (13.0)	42
Low	46 (28.9)	28 (18.2)	74
Poor	55 (34.7)	56 (36.4)	111
Total	159	144	313

χ^2 = 6.68, d.f. = 3, p > 0.08

Table 8

Comparison of Session Attendance and Delay Time Between Referral and First Attendance

Attendance	Time When Attended First Session			Total
	Within First Week (%)	Within Second Week (%)	After Second Week (%)	
Good	34 (26.8)	35 (31.3)	13 (19.7)	82
Fair	16 (12.6)	15 (13.4)	11 (16.7)	42
Low	40 (31.5)	22 (19.6)	10 (15.1)	72
Poor	37 (29.1)	40 (35.7)	32 (48.5)	109
Total	127	112	66	305*

*Delay time information not available for eight patients

$\chi^2 = 13.25$ d.f. = 6, $p < 0.04$

referral. Likewise 20.8% of females and 22.4% of males delayed beyond the second week from referral (Table 9).

Religion of patient showed a different pattern. Half of Christians attended their first session within a week of referral compared to 30.2% of Moslems. A greater proportion of Moslems than Christians attended in both the second week post-referral (41.3% versus 32.7%) and beyond (28.5% versus 17.0%). Table 10 showed that this difference is significant ($p < 0.002$).

Mean age differences according to time of attendance at first session were minimal (Table 11). Those attending within the first week averaged 54.9 years, within the second week, 55.1 years and for those delaying beyond the second week, the mean was 53.2 years ($p > 0.69$).

Occupation grouping was found to be associated with delay time ($p < 0.05$). A slight majority (55.3%) of civil servants and professionals attended within the first week, compared to 43.0% of unskilled and 33.0% of business people. Conversely, 28.7% of business people reported for the first time later than the second week after referral, in contrast to 19.0% of unskilled workers and 17.1% of civil servants and professionals (Table 12).

Very little difference was observed between improvement level at start of therapy and attendance within the first week (from lowest to highest: 42.9%, 39.4%, 43.9% and 40.6%). The

Table 9

Comparison of Patient's Sex and

Delay Time

Delay Time	Sex		Total
	Female (%)	Male (%)	
Within 1st Week	60 (41.7)	67 (41.6)	127
Within 2nd Weeks	54 (37.5)	58 (36.0)	112
Beyond 2nd Weeks	30 (20.8)	36 (22.4)	66
Total	144	161	305

$X^2 = 0.13$, d.f. = 2. $p > 0.93$

Table 10

Comparison of Patient's Religion and

Delay Time

Delay Time	Religion		Total
	Christian (%)	Moslem (%)	
Within 1st Week	86 (50.3)	38 (30.2)	124
Within 2nd Weeks	56 (32.7)	52 (41.3)	108
Beyond 2nd Weeks	29 (17.0)	36 (28.5)	65
Total	171	126	297*

*excluding where religion and/or delay time not recorded

x^2 = 12.96, d.f. = 2, $p < 0.002$

Table 11

Comparison of Patients' Ages and Delay Time

DELAY	Obs	Total	Mean	Variance	Std Dev
Within First Week	114	6264	54.947	223.342	14.945
Within Second Week	102	5623	55.127	195.677	13.988
Beyond Second Week	64	3408	53.250	220.762	14.858

ANOVA Variation	SS	df	MS	F statistic	p-value
Between	158.598	2	79.299	0.373	0.694682
Within	58909.027	277	212.668		
Total	59067.625	279			

Table 12

Comparison of Patient's Occupation and Delay Time

Delay Time	Occupation Group (%)			Total
	Business-Traders	Civil Servant-Professionals	Unskilled	
Within 1st Week	31 (33.0)	42 (55.3)	34 (43.0)	107
Within 2nd Week	36 (38.3)	21 (27.6)	30 (38.0)	87
Beyond 2nd Week	27 (28.7)	13 (17.1)	15 (19.0)	55
Total	94	76	89	249*

*excluding those with no occupation and/or delay time recorded

$\chi^2 = 9.60$, d.f. = 4, $p < 0.05$

pattern was somewhat different for delay beyond two weeks. The proportion delaying apparently increased with increasing level of functioning (lowest to highest: 18.5%, 22.1%, 20.4% and 31.3%). These differences, however, were not significant ($p > 0.82$) as seen in Table 13.

Finally the side affected by hemiplegia was not associated with delay in first attendance ($p > 0.95$) with nearly equal numbers affected on the right (40.9%) and left (42.3) sides attending during the first week post-referral (Table 14).

IN-DEPTH INTERVIEWS WITH PATIENTS

Qualitative interviews were conducted to learn about stroke patients' attitudes and beliefs about stroke and physiotherapy, and thus to supplement quantitative data available in patient records. Twenty available stroke patients were interviewed at the physiotherapy clinic on their individual appointment days.

All but one of the intervievees were Yoruba. All had been residents of Ibadan prior to the commencement of out-patient physiotherapy sessions at UCH. Ages ranged from 34 to 84 years with a mean of 60.4 years. Two-thirds were males. All in this group had attended physiotherapy sessions in this clinic at least four times, and some were currently on their second or third round of sessions.

Most of these patients were traders or private business

Table 13

Comparison of Patient's Level of Improvement at Registration and Delay Time

Delay Time	Function Level (x)				Total
	0	1	2	3	
Within 1st Week	30 (42.9)	41 (39.4)	43 (43.9)	13 (40.6)	127
Within 2nd Week	27 (38.6)	40 (38.5)	35 (35.7)	9 (28.1)	111
Beyond 2nd Week	13 (18.5)	23 (22.1)	20 (20.4)	10 (31.3)	66
Total	70	104	98	32	304

$X^2 = 2.84$, d.f. = 6, $p > 0.82$

Table 14

Comparison of Side Affected by Hemiplegia and Delay Time

Delay Time	Side Affected		Total
	Left (%)	Right (%)	
Within First Week	66 (42.3)	61 (40.9)	127
Within Second Week	56 (38.9)	56 (37.6)	112
Beyond Second Week	34 (21.8)	32 (21.5)	66
Total	156	149	305

χ^2 = 0.10, d.f. = 2, p > 0.95

people and few had formal education. The latter included a school teacher, a banker and a quantity surveyor. Two-thirds were Moslems, while the rest were Christians.

A majority had not been able to return to their former jobs because of the disability posed by weakness or paralysis on the affected side. One who worked in a money exchange shop had returned to the job, while a mechanic was able to go to his shop to oversee his apprentices. All except three retired civil servants, were dependent on charity from their children, friends, neighbours or philanthropic organizations.

Most of the patients had poor hand movements and upper arm functions on the affected side, coupled with spasticity and unsteady gait (grade 1 or 2 on the adapted Motor Assessment Scale). Two currently functioned at level zero, and none were at level three. All but one, who experienced gradual onset, had been hospitalized following an acute attack of unconsciousness and attendant paralysis on one side of the body. Two-thirds presented with right sided hemiplegia.

Beliefs and Perceptions

Patients were asked to state the Yoruba name for stroke. Romoloyo-romoleese was the most common response. This literally means paralysis of hand and leg, thus expressing the visible manifestation of the disorder. The same term, it should be noted,

is also used to refer to poliomyelitis. Other names included ewon-oode, aisan egba and igbalode. The latter means a transition in life time, while the former imply indigenous beliefs about the cause of the problem. Traditionally people believe that a charmed chain of cowries (ewon-oode), when used to beat someone, would result in paralysis of the extremities. Egba literally means taking something away, while aisan is illness. Stroke certainly is an illness that takes away a person's ability to walk, speak and perform other daily living skills. The one non-Yoruba patient, a Hausa man, did not provide different answers, but having lived in Ibadan over 30 years, responded in a similar vein with the others.

A majority of patients said they had never seen a victim of stroke prior to their own illness. Three had heard of stroke before, but only two reported having actually seen another person with stroke. Others learned about the condition during their recent hospitalization when they saw other victims of the same condition. They were also informed at this time by visiting neighbours, relatives and medical staff.

Patient's knowledge of the nature and cause of stroke varied. A majority said that evil forces and the powers of men, through wizardry and witchcraft (whose curses travelled in the form of whirlwinds and gentle breezes), caused stroke. Others

mentioned as a cause being struck down by ewon-oode, though none could recall that this had happened personally to them. A few felt stroke might be due to underlying hypertension. This could happen if the patient was unaware of his condition, or being aware, was careless in self-management.

Many other individual ideas were presented. Some mentioned heredity, too much sex, fatty foods and diabetes. Others said God's wish, restlessness and harmattan, with the latter showing a link with Soponna, the Yoruba divinity representing the wrath of the Supreme Being, who is most active during the dry season. Most of the interviewees, including the known hypertensive patients, could not categorically attribute the cause of their own stroke to a particular factor.

About two-thirds of the patients were hypertensive prior to onset, but only one of these reported regular taking of anti-hypertensive drugs prescribed by her physician. One other patient was a diabetic and had been taking regular medication as ordered by his physician. Possibly because of the lack of premorbid signs, most patients concluded that "Only God would know the cause," but a few of the hypertensive patients did seem convinced that neglect of this underlying condition had contributed to their current problem.

Modes of Treatment

Patients were aware that both indigenous and western treatment modalities were available in the community. All but two had tried both forms of treatment, even during their hospitalization. Most lost interest in indigenous medicines after they did not see remarkable improvement within the time stipulated by the indigenous healers. One patient noted, "Most indigenous healers are liars, and the very good ones are hard to find." Oral administration of locally prepared concoctions eventually put off some patients who did not like the taste or were worried about what ingredients might be inside the turbid liquid. Scarification was seen as preferable to oral indigenous medicines.

In the end, four patients held strongly to the view that both forms of treatment are valuable and complimentary. According to one of these patients, "Indigenous medicine will attack the cause of the illness, and western medicine, including the exercises (i.e. physiotherapy), will bring strength back to the affected limbs."

The two patients who refused to use indigenous medicine were both Christians. Although they were not educated themselves, they both had at least one child attending university, and this child was around at the time of onset. They noted, "A good Christian does not serve other gods and perform rituals." They thought that

people who employed indigenous healing were "unbelievers." Also one of these two had actually seen another stroke victim before who had recovered with only western medicine, including physiotherapy. The other had a relative who suffered from a road traffic accident, and had benefitted from physiotherapy.

Only one respondent ever saw a completely recovered stroke patient who was cured only by indigenous medicine. A majority had heard of completely recovered stroke patients, but did not know what had helped these patients most. Three patients, however, expressed the belief that stroke could yield effectively to indigenous medicine if western medicine, in the form of injectibles, was not taken "too much." Indigenous healers, they said, believed that indigenous medicines and injections do not go together, but rather that the combination worsens the condition.

Besides the two patients who refused indigenous medicine, only one other said he had heard about physiotherapy before his illness. He had personally benefitted from physiotherapy after sustaining a fracture following a road traffic accident.

Three people had not received physiotherapy on an in-patient basis prior to referral to the UCH Physiotherapy Department. One was the woman who experienced gradual onset and was not hospitalized. Two others had been hospitalized at private clinics where physiotherapy services were not available.

Appointments and Compliance

Only three patients had not missed any appointments since their referral to the physiotherapy out-patient clinic. Lack of transportation was the most common reason mentioned, as only one-third said they had private cars. Patients are faced with between one and three bus changes in public transport, making the physical aspect of travel challenging to a paralyzed or weakened person. The high cost of transportation was another facet of the problem. Another cost issue mentioned was paying for the therapy itself. Patients are charged N 120.00 in advance for the set of 12 sessions. This has risen in the past year from N 30.00.

Only three indicated that personal and business obligations caused them to miss appointments. Seventeen complained that other medical appointments within the hospital on the same day as their physiotherapy session caused them to miss the latter. After a long wait in the Medical Out-patient Department, and a subsequent delay at the pharmacy, many had either missed the actual physiotherapy appointment, or were too tired to stay around the hospital.

Patients perceived several factors that might cause them to drop out of therapy. Two-thirds noted that they might eventually feel too tired or frustrated to carry on, especially if visible improvement is not soon forthcoming. Others complained that staff

attitudes and behaviour could influence their future attendance. One specifically said that staff were "unfriendly," and another observed the therapists to be "inconsiderate." One patient said that the staff are "fussy and commanding," which she found to be discouraging.

A few claimed that "physiotherapy exercises are child's play, and once the basic technique is grasped, there will be no need to waste time in the hospital." Another was annoyed that "drugs are not prescribed." Five expressed dislike for group treatment sessions (which commence when the patient is assessed to be at functional grade two), saying they received less personal attention during this aspect of their treatment. These group sessions, called "Hemiplegic Class," are composed of about ten patients supervised by one physiotherapist.

All patients claimed that they carry out their recommended home treatment programmes with assistance from a child or spouse. Three said they rely on these relatives to remind them of clinic appointment days, while the rest said they are capable of remembering by themselves.

Patients complained about the time when sessions are scheduled. These begin by 2:00 p.m. in expectation that by this time patients would have finished with other appointments in the hospital. One said that by this time of day, "the weather is too

hot to perform the exercises." Another complained that by the time the sessions finish, "it is rushing time for taxis and buses," as commuters are closing from work or parents are out to collect their children from school, making it difficult to find transportation, thus putting stress on the very people who need a less stressful environment.

Patients were asked what purpose they thought physiotherapy sessions served in stroke management. Four claimed the sessions helped them learn something new at each visit. Another said it afforded opportunity for regular check-up and evaluation of progress. One 84-year old patient said, in English, that although the exercises were "terrifying," they were still necessary for his recovery. One woman noted that with regular attendance she might improve more quickly, and that the treatment was meant to strengthen her limbs. Similarly, other respondents noted that without regular attendance their physical condition would deteriorate, leading perhaps to "an earlier call into the grave." One man was sure that the exercises will enable him to walk again.

Patients' motivation for seeking treatment generally was to enable them to return to their normal occupations and to be functioning individuals in the society, or at least to be less dependent. Their commitment to the physiotherapy component of treatment was somewhat less strong. As one respondent observed:

patients would not mind forgoing a physiotherapy session for another medical appointment because, "physiotherapy is an ongoing activity, but seeing the doctor for medication is once in a while, and patients would not like to miss this opportunity."

The intervievees commented on whether they had perceived any improvement in their condition since beginning physiotherapy sessions. One patient described how his perception changed over time. At first he thought "it was all fun, meant to make us happy, but with time and more practice, I realize that it strengthens my arms and legs and improves the grip of my hand." A negative comment was offered by one woman who said, "You spend so much money on it, with no evident improvement. It only prevents further damage. The condition may never improve completely. There will always be some paralysis." Overall respondents appeared to be equally divided in their views, with some seeing "new improvements daily," while others lamented that "improvement is too slow."

Respondents were aware of the possible complications that might arise in untreated or neglected stroke cases. All were convinced that the paralysis would remain or even worsen. Most felt that muscle contractures and joint deformities were inevitable in stroke, but that the paralysed limbs could be strengthened through physiotherapy.

The general impression conveyed by patients was that they were not expecting a return to perfect condition, but that they remained hopeful. As one man put it, "We are waiting for miracles, but we are still putting in the effort because heaven helps those who help themselves." The only really negative attitude was expressed by a caretaker of one patient who stated that stroke patients never recover fully, and that there would always remain some paralysis no matter how much effort was put into treatment.

PHYSIOTHERAPY STAFF PERSPECTIVES

All fifteen physiotherapy staff had experience in working with stroke patients. This ranged from one to 29 years with a mean of eleven. On average a physiotherapist attended to two stroke patients during a week.

When asked about the specific problems stroke patients encounter during rehabilitation, the physiotherapists mentioned depression or emotional disturbances and lack of motivation most commonly. Another problem they perceived was patients' beliefs that indigenous medicine offered a better cure, especially since patients often attributed stroke to the evil actions of other people. Another difficulty was inability to afford therapy and attendant costs because many patients become dependent as a result of the stroke, or as elderly citizens were already financially

dependent on others.

Some aspects of the condition and the care process were seen as intrinsically problematic. The complicated nature of stroke disability was blamed by some for making rehabilitation difficult. Another inhibiting factor was seen as the limited treatment facilities available to help the patients. Pains that occur naturally during some exercises were felt to lead to uncooperative attitudes in patients.

Many patients were said to lack knowledge on the benefits of physiotherapy. It was noted that family, friends and neighbours often failed to provide social support. Elderly patients were thought to be "lazy" and particularly troublesome. One therapist gave a specific example to back up this point.

> Mrs. S. is a 54 year old woman who suffered a right cerebrovascular accident three weeks ago. She has been receiving physical therapy for two and a half weeks. High muscle tone is beginning to develop in her left upper extremity (the affected side) and passive-range-of-motion exercises are becoming painful. She is getting excellent neurological return in her lower trunk and left upper extremity, and she is already able to ambulate 100 feet with only contact guarding. One day when she came to therapy, she

refused all treatment to her left upper extremity, "because it hurts too much, and it isn't worth it." She stated, "At least I can walk. Besides, it's only my left arm. I'm probably not going to get much use out of it anyway. I know. My mother had a stroke, and her arm never got better. I can get by without being able to use it. Let's just concentrate on improving my balance so I can walk better."

When asked about the specific roles that physiotherapists play in stroke management, all indicated that only the physiotherapist can take effective care of the neuro-muscular system rehabilitation, ambulation and gait retraining and also retraining of hand movements and upper arm functions. One-third (five) added further that counselling is part of the physiotherapist's role.

Concerning patient defaulting from physiotherapy appointments, all responded that a majority of their stroke patients did not come regularly or even absconded after a couple of attendances. When asked to adduce reasons for this behaviour, they ranked poverty highest. This debarred patients from paying hospital bills and the cost of transportation, and echoed other problems mentioned as causing difficulty to patients during

rehabilitation.

They felt that lack of motivation and lack of social support led to another factor that encouraged defaulting, perceived delay in recovery. This in turn could is related to an additional reason for defaulting, the seeking of alternative forms of treatment in the hopes of finding a cure. Only one therapist mentioned private physiotherapy services as one of these alternatives. Two members of staff had the insight that the quality of their own interaction with the patient might influence absconding.

All therapists had seen fully recovered stroke patients. They were therefore asked what factors led to the success of physiotherapy in stroke management. The first and most common responses focussed the extent of brain damage, the time of presentation for rehabilitation exercises and the frequency of exercises. Eight indicated that the patient's motivation and zeal to recover also played some role in the prognosis.

Specific recommendations on improving the quality of care given stroke patients and on enhancing patient attendance were suggested by the therapists. The latter, they thought, could be achieved by encouraging the patients to persevere, to be hopeful and to adhere to regular physiotherapy. Only one person specifically recommended educating the stroke patients as early as

possible about the likely course of improvement and prognosis for recovery.

Several recommendations were directed to the Department and Hospital. They saw a need for more trained staff to decrease the patient-therapist ratio and for better treatment facilities. Better facilities and more staff were thought capable of producing better management of stroke cases and good patient-therapist relationships, such that long treatment time could be reduced and quality of care improved.

Almost all therapists commented on the Hemiplegic Class, and suggested that group therapy should be discouraged. They noted that patients in this class did not always receive the best treatment, partly because patients were not always properly screened before their introduction to the class. Tho less than optimal treatment in the group setting was blamed on the fact that usually only one therapist is available to conduct the class, where ideally two or three should be involved. One person does not have the time and strength to attend to ten disabled patients effectively.

Finally the staff expressed a desire for continuing education. In particular they would like skill development in stroke rehabilitation and seminars on neurology, since stroke is primarily a neurological disease entity.

SUMMARY

Records from the UCH Physiotherapy clinic indicate that upwards to one-third of referred stroke patients never attend at least one recommended physiotherapy session. Records on actual attenders show that attendance is associated with only one demographic or clinical variable, religion. Moslems were found to display poorer attendance behaviour than Christians. No association was found between attendance pattern and sex, occupation and age of patient, nor her entry level of functioning or the side affected by hemiplegia. Attendance was found to have a significant association with delay time from referral to first attendance. Those who attended sooner had better attendance records. Delay itself was also found to be associated with religion and occupation. Moslems were more likely to attend their first session more than two weeks from the referral date. Business people and traders were also more likely to delay than civil servants/professionals and unskilled workers.

Qualitative interviews with current patients and staff shed some light on reasons for defaulting. These included lack of visible or timely signs of improvement, assignment to group physiotherapy classes, costs of treatment and transportation, indigenous beliefs about cause that led to seeking indigenous treatment alternatives, lack of social support from family,

friends and neighbours, inconvenient scheduling, less than adequate patient-staff relationships, lack of understanding of or experience with physiotherapy on the part of patients, a higher value placed by them on medical interventions, and a less than ideal patient-therapist ratio.

The implications of these findings for physiotherapy and patient health education are discussed in the next chapter.

CHAPTER FIVE

DISCUSSION

Two research methods have been combined in this study to shed light on the extent and nature of the behaviour of stroke patients concerning attendance at recommended rehabilitative physiotherapy sessions. While both methods have their limitations, the discussion below shows how their concurrent use in this research has been able to identify ways of improving service management and targeting patient health education.

The peak age group of stroke patients in this study (60-69 years) tends to support the findings of Osuntokun et al [1979] and Walker et al [1979] that incidence of stroke escalates with advancing age. It should be noted that although patients over 69 years were less of the total, in terms of incidence, that age group in the overall population is also smaller.

The nearly equal proportions of male and female patients may support the projection of Osuntokun et al [1979] that the predominance of male stroke patients some years ago (a ratio of 5:2) would tend to reduce and be more in line with the fairly equal distribution seen in industrial countries [Walker et al, 1981]. The registration at physiotherapy clinic alone can not be

taken as conclusive evidence of this trend, since at least one-third of referred patients never reported for their first session, but the data obtained from the cards of attenders show no significant difference in dropping out after registration. It is therefore unlikely that the rate of initial absconding would differ greatly between the sexes.

Osuntokun [1988] observed that the occupation of an individual would not necessarily predispose him or her to stroke. Although incidence rates for the various occupational groupings can not be calculated from the available data, it is useful to note that those patients who did attend physiotherapy clinic come from a wide variety of vocations.

The issue of occupation does point to some of the problems of record keeping concerning stroke patients. In nearly 19% of cards the occupation of patient was not recorded. A few cards also lacked vital data on age and religion. More importantly, no background information was obtained at time of booking for first appointment, so that it is not possible to learn about the characteristics of those who refused to attend clinic at UCH. This information is not only of academic interest, but could be invaluable in planning and targeting educational programmes to reduce the problem of absconding.

It should be noted that all who attended at least one

session listed Ibadan as their current address. One wonders whether some of those who did not attend at all lived outside the city and could not find temporary accommodation in town from where they could continue with physiotherapy on an out-patient basis. Transportation difficulties have been documented as an inhibitor to health service utilization generally [Hertroilis, 1974], and the problem of distance has been implicated in dropping out of physiotherapy treatment specifically [Adanlawo, Ajibola, Akpan, Malomo, Olovolafe and Tejumola, 1988].

The records in their present form point to a major quality of service problem. As noted, one-third of those who make a first appointment never show up. Subsequently another third of these original referrals never complete more than half of their recommended 12 rehabilitative physiotherapy sessions. Thus a majority of stroke patients do not benefit from the full range of services offered by the Physiotherapy Department. While it is not possible to comment on the characteristics of those who did not show up for sessions, the discussion that follows examines what was learned about those who dropped out of therapy and the implications for patient health education.

Only one demographic variable, religion, was found to be associated with attendance at recommended physiotherapy sessions, with Christians having better attendance records than Moslems.

Although records do not include data on educational level (an important omission in itself), one might infer from Mabogunje [1971] that religion may be an indicator of educational level because he noted in Ibadan that Moslems have less formal western education than Christians. Studies by Tagliacozzo and Ima [1970] and Baekeland and Lundwall [1975] found a positive association between educational level and health service utilization. They inferred that higher levels of education would be associated with a greater understanding of modern disease concepts and a better acceptance of modern health care.

A useful predictor of overall attendance is delay time from referral to first session attended. Hertroijis [1974] observed that the health service itself could cause delay by its own appointment making procedures, and that such delay was responsible for patients not showing up at all. In the case of the UCH Physiotherapy Department, the first out-patient appointment is usually set within the first week after discharge, but not later than the second week. Thus one could say that any patient coming within the first two weeks after discharge from hospital was attending early, while those attending after two weeks delayed. Nearly half of those who delayed attended only 1-3 sessions compared to only one-third of early attenders. Conversely, over a quarter of early attenders participated in 10-12 sessions compared

to less than one-fifth of later arrivals.

At a general level one can say that opportunities to encourage early attendance during initial booking are not fully realized. Specifically, the study identified certain groups of patients who are more likely to delay their first attendance, and these should be identified by those making appointments and especially targeted for counselling.

Again, religion was associated with delay, and one may adduce the same factor of educational level to explain this behaviour. Educational level is also implicated in the fact that occupational grouping was associated with delay, as the group of civil servants and professionals would, by the requirements and nature of their employment, be expected to have a higher educational attainment than business people and unskilled workers.

Delay in treatment itself has a negative influence on recovery [Anderson, 1990; Sobath, 1990; Dardier, 1980]. This in turn may lead to depression and emotionalism over the continued functional impairment, which itself can discourage a patient from attending rehabilitation services [Wade, 1992]. Delay is associated with preventable complications [Mulley, 1982; Anderson, 1990] that have a negative effect on functional level at initial presentation for out-patient services. The literature thereby portrays a chain of events beginning with delay, and leading to

lower functioning that produces more severe depression and a greater likelihood of dropping out of therapy. In this study it was possible to test the association between functional level and attendance, but no relationship was detected, as a nearly equal proportion from each functional category registered good attendance (10-12 sessions).

Awareness, Beliefs and Attitudes

Simpson [1980] has observed that many Yoruba illnesses are what modern medical practitioners call symptoms (_oyi_ for dizziness and _iko_ for various forms of cough), and are thus descriptive of the condition. In this vein, the name commonly given by the UCH patients for stroke, _romolowo-romolese_, is a literal description of the withering (_ro_) that occurs to the hands (_owo_) and legs (_ese_).

Other names of illnesses may reflect the notion of causation, especially when a supernatural force is involved. For example, smallpox is often referred to as _olode_, one of the names used for the Yoruba divinity, _Soponna_, who represents the wrath of the Supreme Being [Idowu, 1962]. In this case _ewon-ogde_ refers to the charmed chain of cowries that was used to inflict the disease.

The dual naming of stroke may reflect patients' individual experiences. Most were unfamiliar with the condition prior to their attack, and thus may have been inclined initially to name it

as they first experienced the symptoms. As the sufferers began to face the reality of their condition, they may have begun a search for an explanation. While some who knew they were hypertensive could see a link between the stroke and that condition, others were encouraged to seek explanation in the supernatural realm, especially because of the suddenness of the attack.

These different points of view may influence receptivity to modern rehabilitation and treatment, including physiotherapy. For example, one patient sought indigenous treatment because she linked her stroke with a dream that she had a few days before the incident, that someone had tied her up so she could not move. Level of formal education may be associated with such beliefs, and as implied above, indicators for lower levels of education were associated with dropping out by patients at UCH Physiotherapy Department.

One patient thought that Sopona was in fact responsible and observed that the incidence of stroke has been increasing in the country ever since smallpox, his major weapon, had been eliminated in 1978. Interestingly this observation concurs with Osuntokun's [1988] own reports of increasing incidence to levels found in industrialized countries. This demonstrates how people try to explain disease occurrence within the context of their own culture.

Approximately half of the patients interviewed felt that their progress was slow and cited this as a potential reason for dropping out of treatment. This conforms with the Health Belief Model that considers perceptions of treatment efficacy as a factor that will influence health action [Becker, 1974; Rosenstock, 1975; Clark and Zimmerman, 1990]. In fact physiotherapists reported that some patients curtailed treatment because of pain, an observable effect that, according to Protection Motivation Theory, would increase maladaptive responses [Prentice-Dunn and Rogers, 1986].

Patients also identified barriers [Becker, 1974] or response costs [Prentice-Dunn and Rogers, 1986], such as transportation costs and difficulties, that would discourage them from attending clinic. Inconvenient clinic time is a barrier that is part of the environment where patients learn [Bandura, 1986; Kinsman, 1989] and could actually be modified by the therapists themselves.

The importance of social support [Clark and Zimmerman, 1990] was demonstrated with all patients describing one form of assistance or another that they required from family members. This included financial assistance, reminders to attend clinic, and accompaniment during the trip from home to clinic. Leventhal and Cameron [1987] noted that adequacy of financial support is one of the most powerful predictors of health action. Family members

are also part of the "lay referral system" described by Fishbein and Adjzen [1980] and contribute to perceptions of normative behaviour which may lead to utilization of indigenous healers.

More attention is needed, therefore, on those providers of various forms of support. At UCH, when family members accompany the patient to therapy, they usually sit in the waiting area. The high level of dependence on family members reported by patients implies a need to involve them in the therapy, too [Evans, Matlock, Bishop, Stranahan and Pederson, 1988].

Attitudes and behaviour of health (physiotherapy) staff are important influences on patient compliance, either due to the resulting level of patient satisfaction with the service provided [Becker et al 1974; Korsch and Negrete, 1972] or to the quality and content of patient-provider communication [Leventhal and Cameron, 1987]. Domatob [1979] observed at the UCH Physiotherapy Department that the communication style employed by physiotherapists was that of telling patients what they should know and do, rather than counselling that encourages active participation of the patient in thinking about and resolving his own problems. She attributed the low level of knowledge in parents whose children were brought to clinic for rehabilitation from polio about their child's condition to the more directive form of health teaching. This is confirmed by Evans et al [1988]

who note that information alone is not enough to sustain behaviour change in stroke patients, but must be reinforced through counselling.

Only one-third of the UCH staff used the word "counselling" in reference to their roles in caring for stroke patients, but only one of these has actually had formal training in counselling skills. This gap was recognized as most expressed a desire for in-service education on counselling.

One might assume from previous study that Group learning situations could provide positive reinforcement for change by individual participants [Brieger, Oke and George, 1983]. In contrast the UCH patients complained about their group training classes, feeling that they received less individual attention. The intensive work and assistance required of the group trainer in physiotherapy is more than that needed for group education on diabetes or hypertension, and may account for the patients' dissatisfaction.

UCH patients' views contrast with that of Sanford [1989] who felt that group physiotherapy sessions for patients with common conditions were not only economical, but also created new enthusiasm in them. The difference in perceived benefits may arise because, while the UCH Physiotherapy Department assigns three staff to group sessions, the actual practice adopted by the

physiotherapists is to rotate the duty among those three, not for all three to work at once. Ideally there should be enough therapists to assist each patient perform the exercises, but in the present arrangement it is only possible for the one attending physiotherapist to give instructions to the class as a whole. The explanation given for this was the heavy workload, which has arisen because six staff positions are currently vacant. In addition, of the 15 available staff, only seven or eight are assigned to out-patient duty at any given time.

A few staff hinted that the desire for individual therapy may have encouraged some patients to drop out from group sessions and seek physiotherapy from private sources. Considering that many patients complain about high costs of treatment, and private therapists may charge at least three times the UCH rate, it is not likely that a great number of patients can take advantage of this option.

Implications for Health Education

Several focal points for patient health education have been identified in this study which would improve both compliance and quality of care for stroke patients receiving physiotherapy. These include the in-patient period, time of booking for first appointment, the first appointment itself, the group hemiplegia classes, the accompanying family members and the continuing

education needs of the staff themselves.

During initial hospitalization the patient should receive information on the nature of the disease and its prognosis. They desire to know the cause of their own stroke. They also need to know what to expect from the upcoming out-patient physiotherapy rehabilitation services. This educational intervention should be provided through individual counselling and family counselling performed by physiotherapy and nursing staff. Special attention should be paid in all educational interventions to patients with less formal education that is sensitive to their cultural beliefs.

Since many patients who book an appointment with out-patient physiotherapy never attend sessions, and those who delay in their first attendance are more likely to drop out, a major missed opportunity for patient education can be found during the booking process. At this point the patient is met by both the records clerk as well as one physiotherapist who sets the actual date. This is a crucial time for emphasizing the need for timely action to prevent complications and deterioration with both patients and accompanying family members. Patients and family members should be encouraged to ask questions and seek clarification. Not only should the therapists provide the counseling, but so too should the clerks, who are the actual first point of contact with the out-patient service.

On arrival for first appointment the patient is again met by the clerks. They should reinforce the patient's attendance behaviour by praising her for coming and reminding her of future appointments. During the first session the therapist needs to learn more about the patient's beliefs and concerns, and engage the patient actively in finding solutions to any potential barriers to full participation in rehabilitation. Any time a family member is present, he or she should be involved, so that with a fuller understanding of the regimen, he can reinforce patient compliance at home and remind her to attend future sessions.

As noted, group education of hemiplegic patients is demanding, such that the full compliment of assigned staff is needed to make these sessions effective. In the absence of more staff, the sessions could emphasize for functional tasks instead of traditional exercises as a way of enhancing involvement [Levitt, 1988]. The group leaders should do more than instruct. He or she should encourage interaction among the participants to share concerns and problem solving ideas. More experienced patients can be encouraged to model new behaviours as a way of enhancing self-efficacy [Bandura, 1986]. Family members can be involved in the group sessions td increase the amount of assistance available. There they will learn valuable helping

techniques to apply at home.

Stroke is not only stressful to the patient. The whole family is affected, as life patterns are interrupted and extra expenses are incurred (Holbrook, 1982). Family members themselves may need counselling apart from their hemiplegic relative. They may need to confide in someone about the problems they face out of earshot of the patient. They also need preparation on home care tasks and truthful information on prognosis and patient needs (Editorial, 1974).

In order to accomplish all of the above educational interventions, the professional and support staff of the Physiotherapy Department need in-service training in individual, family and group education and counselling methods.

Conclusions

Since this is a study based in large part on patient records, the first conclusion reached is that record keeping at the beginning of the referral process is inadequate. No basic information was available on patients who booked a first appointment, but then failed to attend. Another major gap was inconsistent recording of occupational data, and no information was collected on educational status. This inhibits full analysis of factors that influence absconding and dropping out of therapy. Major opportunities for patient health education are missed

during both in-patient care and at the time first appointment is booked. Approximately one-third of referred patients are lost to out-patient rehabilitation, and another third never attend more than half of the recommended sessions. This poor attendance was associated with delay in attending the first appointed out-patient session.

This problem might have been avoided if patients had been encouraged not to delay when coming for their first appointment and if religious and occupational indicators of lower educational status had been heeded as triggers for more intensive health education by records and professional staff. The study concluded that Moslem patients were more likely both to delay in coming for their first appointment and subsequently to attend less sessions than their Christian counterparts. Similarly delay was more common among those whose occupations were business and trading and less among civil servants and professionals.

Qualitative research greatly enhanced the understanding of compliance behaviour. As noted, educational status was indirectly implicated in delay and poor attendance behaviour. In-depth interviews with both patients and physiotherapists found the persistence of strong traditional beliefs about causation and concurrent preference for indigenous treatment. These are barriers to the acceptance of modern therapy that could be

alleviated through education. Fortunately some known hypertensive patients, possibly because of their previous contact with modern health facilities were more likely to accept, if not initially, at least later in the course of recovery, that neglect of this underlying condition may have been responsible for the stroke.

Few patients had previous experience with or understanding of physiotherapy. Not surprisingly, some were disappointed with their current level of progress and were resistent to the initial pain and inconvenience of rehabilitation. In-depth interviews were valuable in identifying other potential and real causes of defaulting including transportation problems, treatment costs, inconvenient session times, dislike for group sessions, and in some cases poor patient-provider communication. Views of the practising physiotherapists confirmed the beliefs and experiences of the patients. They were able to identify the scarcity of human and material resources in the Physiotherapy Department that might have contributed to patient dissatisfaction.

All patients were found to be dependent on family members for some aspect of their care and therapy. However, family members are not actively involved in the therapy and education.

In conclusion several targets and opportunities for patient health education for stroke patients were identified, beginning during hospitalization and continuing through booking and

rehabilitation in the out-patient department. The need for continuing education for professional and support staff was also confirmed.

Recommendations

Based on the findings and their implications, several recommendations are offered below to improve the quality of stroke rehabilitation and patient health education at UCH.

1. Patient counselling in the Physiotherapy Department should begin from the moment the stroke patient is hospitalized and be reinforced when the patient first presents himself to make an appointment for out-patient sessions.

2. Family members should be actively involved in both individual and group therapy sessions, and be targeted for individual counselling themselves to address their own needs for support and encouragement.

3. Hemiplegic classes should be fully staffed and focus on functional skills, sharing of experiences and modeling among participants.

4. In-service training workshops should be planned for professional and support staff in the Physiotherapy Department. The following topics are recommended based on observations and interviews with the physiotherapists themselves: a) stroke management principles, b) counselling

skills and c) record keeping. Resources for continuing education in patient education and counselling may be found at the African Regional Health Education Centre (ARHEC) of the Department of Preventive and Social Medicine, located within the same premises as the Physiotherapy Department.

5. The professional physiotherapy curriculum should incorporate formal courses on patient health education, with assistance from ARHEC, and clinical psychology.

6. A longitudinal study would enable future researchers to ascertain the role of patient knowledge, attitudes, resources and other factors on compliance behaviour.

7. The Physiotherapy Department UCH should develop community-based services in line with the National Health Policy that emphasizes Primary Health Care. This would involve providing in-service training for a variety of community and village based health workers in appropriate physiotherapy skills and knowledge. More accessible, community-based services would make it easier for stroke patients to comply with the recommended number of therapy sessions.

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APPENDIX A

FUNCTIONAL IMPROVEMENT SCALES

1. Level of Functional Improvement of Stroke Patients at Discharge from Hospitalization/Presentation for Out-Patient Physiotherapy

GRADE	ASSESSMENT OF MUSCLE STRENGTH AND LIMB FUNCTIONS
0	Zero function or mass motion in the affected upper and lower limbs (MRC[1] Scale < 2); patient gets to standing with a standby help, but not ambulant.
1	Mass motion of affected upper and lower limbs; hand and upper arm movements (MRC Scale < 3); patient ambulant with or without aid, unstable affected lower limb joints, unsteady gait and standby help from one person.
2	Useful hand movements and upper arm functions (MRC Scale = 3); patient is ambulant with or without aid and no standby support.
3	Functional hand and upper arm movements (MRC Scale 3-5); patient is ambulant with apparently normal but slow gait.
4	Normal functions and use of arm and hand, and correct gait pattern.

[Source: Carr, Shepard, Nordholm, Lynne. 1985; Medical research Council, 1976]

[1]Medical Research Council Scale - see next page

2. Medical Research Council Scale For Muscle Strength

GRADE	FINDING ON ASSESSMENT OF MUSCLE STRENGTH	% of STRENGTH
0	No Contraction	0
1	Trace or flicker of contraction without actual movement	10
2	Poor strength, muscle moves through complete range of motion when gravity is eliminated	25
3	Fair strength, muscle moves through complete range of motion against gravity	50
4	Good strength, muscle completes motion against gravity with varying amounts of resistance	75
5	Normal strength, muscle goes through complete range of motion against gravity with full resistance and no signs of fatigue	100

[Source: Medical Research Council, 1976]

APPENDIX B

INTERVIEW GUIDE FOR CURRENT STROKE PATIENTS

1. Socio-demographic Characteristics:

age, sex, tribe, religion, marital status, premorbid condition, post-ictal occupation, onset time of stroke, date of first attendance at out-patient physiotherapy sessions.

2. Knowledge and Beliefs about Stroke:

- name used for stroke in this community.
- when, how, from whom first heard about stroke.
- what different things cause stroke.
- what responsible for own particular stroke.
- what explanation given patient by doctor.
- agreement with doctor's explanation.
- previous diagnosis of hypertension.
- knowledge of various ways to care for stroke patient in this community.
- expectations about percent of recovery possible, and time this will take.
- prior familiarity with someone who had stroke.
- if familiar, thoughts about what treatment helped him/her most.

3. Knowledge and Attitudes Toward Physiotherapy Services:

- when, how, through whom first heard about physiotherapy.
- when commence physiotherapy for stroke management.
- whether any appointments have been missed.
- if any missed, reasons for not attending.

4. Dissatisfaction with Physiotherapy Services and Perception of Problems with Treatment Programmes:

- does patient perform home treatment exercises.
- who reminds patient of physiotherapy appointments.
- who assists patient in coming to physiotherapy sessions.
- convenience of appointment times and reasons.
- ease of performing exercises at home without assistance.

5. Impact of Physiotherapy:

- roles attendance at physiotherapy sessions play in patient's management and recovery.
- perception of whether physiotherapy is helpful.

6. Health Beliefs Regarding Severity of Stroke:

- why sought treatment for stroke.
- whether would forego physiotherapy sessions for other medical appointments and reasons.
- how serious was patient's own stroke and reasons.
- ideas of possible complications that might develop if stroke patient neglects treatment.

APPENDIX C

INTERVIEW GUIDE FOR PHYSIOTHERAPISTS ON ON THEIR PERSPECTIVES ABOUT STROKE PATIENTS

1. Years of experience in physiotherapy service managing stroke patients.
2. Average number of stroke patients tended to in a month.
3. Specific problems usually encountered with the stroke patients during their rehabilitation.
4. Special roles that physiotherapists play in the rehabilitation of stroke patients.
5. Whether any of own stroke patients have missed treatment sessions or dropped out and reasons.
6. Whether any of own stroke patients have fully recovered, and what factors enhanced his/her full recovery.
7. Judgement on how well stroke patients are managed in the Physiotherapy Department of UCH and specific recommendations to improve the quality of care.

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