A STUDY OF RECOVERY IN PATIENTS WITH CONDITIONS INVOLVING SPECIFIC PHYSICAL DISABILITY

by

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CONTENTS

SUMMARY

A series of studies were undertaken to investigate the process of recovery in patients with conditions involving physical disability, with particular emphasis on the relationship between physical and psychological factors.

Observation and description were undertaken in Study I and II, methods of measurement were developed with two specific groups of patients in Study III and detailed monitoring using these methods was undertaken in Study IV.

A total of 157 patients who were referred for physiotherapy formed the study population with the 118 therapists who were treating them. The patient population in Studies III and IV had either suffered a cerebro vascular accident with resultant hemiplegia (29), or sustained a wrist fracture (33).

The findings demonstrated that for these patients, there was little relationship between objective severity and patients' perceptions of severity, and initial measurements of severity showed little relationship to the result achieved. There was little congruence between patients and therapists perceptions of patients' problems and considerable differences in their perceptions of progress during the recovery period. Patients appeared to use different coping strategies but what was adaptive for any one individual was difficult to evaluate because of the many different viewpoints on what was adaptive.

Differing levels of emotional response to the onset of their condition were demonstrated, higher levels of disturbed mood state being associated with more extreme perceptions rather than higher levels of objectively measured severity. Disturbed mood state was also found to be associated with ratings of personal constructs, restriction of activity, levels of independent personal care and of physical attainment scores.

Verbal and non-verbal communication formed an integral part of all therapeutic sessions, however monitoring compliance revealed that very little information about instructions was retained by most patients and compliance with instructions was below 20%. Methods of exploring expectations were not entirely satisfactory, but did demonstrate that both patients and therapists formed expectations about the patients progress, and that these expectations were subject to a number of different influences.

Perceived locus of control was an important aspect for many patients. Scores on the Recovery Locus of Control Scale were related to a number of important aspects, beliefs in more personal control were associated with higher personal care, and attainment of gross body movement scores, and negatively related to the number of attendances, and the restriction of activities.

The complex nature of motivation was investigated and factors that might influence motivation, such as differing perceptions of success and failure, perceived control, attributions about progress or lack of progress, the setting of goals and feedback of information were identified through observation and analysis of interview material. It is suggested that more attention to these factors might result in improved motivation.

Interrelationships between physical and psychological factors in recovery were demonstrated in the study population and recommendations were made at the end of each section that should help to facilitate the process of recovery of patients with conditions involving physical disability.

PREFACE

Because of the scarcity of research into patients receiving physiotherapy, much of the work of the study was exploratory. It soon became evident that few reliable and valid methods of assessment and measurement were available to monitor any important aspects of the patients ~~or their~~ [illegible] symptoms, and therefore a substantial amount of time would have to be spent on developing ~~these~~ [illegible] methods. Because of these constraints a sequence of four studies was planned; Study IV to be based on the information obtained and the methods refined and developed during the previous three stages.

As information in depth was sought only small numbers of patients and therapists were studied, though the number was considerably larger than originally intended in all, 157 patients 118 therapists were interviewed in 7 hospitals. This was because the four studies were each carried out in different hospitals so that earlier work and observations would not contaminate later ones. The aim throughout was to study the naturally occurring situation.

The timetable was originally for a three-year study but in 1978 the research worker was asked to take on an advisory role in relation to research in the remedial professions - the amount of time time spent on this soon amounting to 50% of total working time and therefore the study which has now taken approximately five years part-time is the equivalent of two and a half to three years full-time.

The use of video recording was time consuming but it provided a method of using independent assessors to establish the reliability of different methods of measurement; its use was not continued in Study IV but tools of measurement whose reliability had been established by the use of video recording in Studies II and III were used in Study IV.

In Studies I and II, aspects of non-verbal patient/therapist interaction such as touch and eye contact were investigated, this was not continued in the later studies, not because they were seen as having little influence but from the many different factors which were considered to be influential it was necessary to select those which could be studied by one research worker with the equipment and in the time available. Because of these constraints, the patient formed the central focus for Study III and IV, the therapists themselves and patient/therapist interaction could form the basis for further studies.

Patients were not selected on the basis of their diagnosis in Studies I and II but following the development of a Classification for Evaluation (see Appendix A p.1) a decision was made to select patients on the basis of diagnostic categories so that tools of measurement could be developed to monitor changes in specific symptoms associated with the condition for which physiotherapy was being given.

INTRODUCTION

The little research that has been undertaken into physiotherapy so far has concentrated on the physical aspects of treatment and this is understandable as physiotherapy claims to treat disease by physical means. Most studies of effectiveness to date have been clinical trials which have compared patients with the same diagnosis receiving different physiotherapy techniques or different schedules of treatment. The results in most cases have shown few significant differences between patients in the different treatment groups (Kendall and Jenkins, 1968; Brewerton, 1966; Doran and Newell, 1975; Mathews and Hickling, 1975; Graham and Bradley, 1976). However, though physiotherapy is given against the background of the patient's diagnosis, the focus of treatment is on the symptoms and problems arising from it rather than the underlying pathology. Therefore, the medical model of the clinical trial with the emphasis on pathological changes may not be altogether appropriate for investigating the problems of patients receiving physiotherapy.

The important effect of different psychological factors in the field of health and illness has been demonstrated in a number of different fields. The expectations of both patients and professional staff, Beecher et al. (1953), Lasagna et al. (1954), Pincus (1966), Wolff (1954), the effect of anxiety in patients undergoing surgery Wolfer Davis (1970), Johnston (1970), Johnson et al. (1975), Sime (1976), work in the field of communication between doctors and patients Ley and Spelman (1967), Francis et al. (1969), Korsch et al. (1972) and Reynolds (1981) and perceived locus of control Platt (1968), Steffy (1970), Balch (1975), Manno (1972), Harvey (1976). The way a patient appraises their condition and the threat it poses for them may influence the way they cope with it

Lazarus (1974), Cohen et al. (1980), Folkman and Lazarus (1980).

The results of these studies though undertaken in other health settings have implications for the practice of physiotherapy where little formal account is taken of psychological factors.

People with diseases and conditions that involve defects and loss of bodily function are often referred for physiotherapy to help them to regain or maintain improved levels of functioning. The extent and degree of improvement during the period when they are receiving physiotherapy varies widely and may be influenced by a number of different factors. The natural history of the disease itself, and the extent of damage to the tissues of the body will decide some absolute limits to recovery, and the amount and type of treatment and management the patient receives may also be influential. However, even when these two aspects are objectively similar individual patients progress at different rates and achieve different levels of recovery.

It is commonly accepted in clinical practice that the assessed severity of a condition is not of itself a reliable predictor of the eventual level of functioning; Shontz (1971) and McDaniel (1976) emphasise the differences in the behaviour of physically handicapped individuals with objectively similar conditions and Cohen and Lazarus (1980) suggest that there is much clinical evidence that despite similarities in medical condition patients differ greatly in the course of medical recovery.

Physiotherapists frequently discuss psychological aspects of the patients they are treating and often attribute success or failure in treatment to them. Their importance in the therapeutic situation is noted by Rosillo (1970) and Lincoln (1976) but little research to date has explored the relationship between these factors and the process and outcome of patients receiving physiotherapy.

The psychological stress imposed by illness has been explored by Janis (1958) and Lazarus (1974). Their studies and others investigating the relationship between pre-operative stress and post operative adaptation - Johnson and Leventhal (1971), Langer (1975) suggest that psychological factors can have an important influence on the process of recovery and the strategies the individual adopts to cope with the stress of their condition.

Lipowski (1970) emphasises the threat that the onset of a condition which involves physical impairment and altered functional ability poses for the individual and discusses the relationship between the perceived threat and the way the individual copes with his environment. Janis (1958) in a series of studies of surgical patients found a correlation between the level of anticipatory fear in response to the threat of operation and post-operative adjustment. Other studies, Langer et al. (1975) and Johnston (1980) have looked at ways of reducing stress for patients undergoing surgery in order to improve post-operative recovery.

Lazarus (1966) explored the way in which individuals appraise threat and respond emotionally, and relates this to their behaviour and the way in which they cope with stressful situations. Some of the variability in the way in which individuals with the same type of impairment function may reflect their differing perceptions of the threat imposed by their condition.

Both Lazarus (1966) and Lipowski (1970) discuss the multi-faceted nature of coping, Lipowski defines it as 'all cognitive and motor activities used to preserve bodily and psychic integrity to recover reversibly impaired function and compensate to the limit for irreversible impairment'. Lazarus uses the term coping to refer to strategies, and sees these strategies being employed by the individual in response to threat, the type of perceived threat influencing the strategies used. In this study coping is seen as contending successfully or dealing competently with the situation involving physical disability and the focus is on the strategies that are associated with higher levels of functional ability, and independence.

George Kelly's personal construct theory (1955) posits the notion of man as a scientist striving to make sense of his environment. If the onset of a condition involving physical impairment is construed in an individual way, different ways of construing may produce different results. The basis philosophical assumption of Kelly's theory is constructive alternativism, that there are many different ways for an individual to construe his world, these different personal constructs influencing behaviour.

There will be many factors which may influence the recovery of patients with conditions involving physical impairment whether reversible or irreversible but the objective in this study is to concentrate on those aspects which are not immutable and where there is the possibility of change with further knowledge. What is adaptive or maximal for any one patient is difficult to decide and may be different from different perspectives but in our present state of knowledge individual variation in the response of patients with objectively similar conditions is not taken into consideration except on an intuitive basis.

An investigation of some of the psychological aspects of the situation where the patient is receiving physiotherapy for a condition involving physical impairment should give a greater understanding of the variability observed in the recovery of these patients and provide predictions about the association between psychological factors and the type and extent of recovery achieved, this enabling more appropriate treatment to be given to patients referred for physiotherapy.

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THE STUDY POPULATION

The patients

All the patients (157) who formed the study population had been referred for physiotherapy by the medical staff of the hospitals in which they were seen, and were receiving treatment. Patients who were observed and interviewed in Studies I and II were not selected on the basis of their diagnosis and their conditions covered a wide range including a large number involving soft tissue, both injuries and conditions, also respiratory, neurological, circulatory, orthopaedic, and other conditions. The overall age range of the men and women in the study was from 16 to 98 years.

Patients in both Study III and IV were selected on the basis of their condition and formed two separate groups, those who had suffered a cerebro-vascular accident and those who had a fracture of the wrist. These groups selected from Groups 2 and 3 in the Classification for Evaluation (Appendix A p.1) were commonly found in physiotherapy departments and shared a common characteristic that the onset of their condition resulted in physical disability. In other aspects they differed widely and will therefore be discussed separately.

Group I patients (29)

The patients in this group were all in-patients and were selected on the basis of having suffered a cerebrovascular accident with a residual hemiplegia or hemiparesis. The diagnosis as given by the referring doctor was used to select patients but the definition of stroke used by Weddell and Beresford (1979) comes nearest to describing their condition. 'A focal neurological deficit of sudden onset caused by a local disturbance in blood supply to the brain'.

The criteria for selecting patients for the study excluded those with severe problems of comprehension or communication, but the following deficits were found in varying degrees of severity in the study population, changes in normal muscle tone with interference in the performance of movement of the affected side of the body; flaccidity, a decrease in tone with little or no muscle activity, spasticity, increased tone with affected muscles in a state of spasm or co-contraction. A number of different sensory changes were present, a changed sensation of touch, and of normal joint position sense, disturbances in body schema, with a lack of awareness of body structure and a failure to recognise the relationship between limb segments, unilateral neglect of the affected side, and hemianopia - a restriction of the visual field of the eye on the affected side. These types of sensory deficit for which few reliable tools of measurement are available for use in clinical practice can have a profound effect on performance (Kussoffsky et al., 1982). Bladder control was sometimes lost temporarily and some emotional lability was present.

It was routine procedure for all patients in the selected hospitals with a cerebro-vascular accident involving hemiplegia or hemiparesis to be referred for physiotherapy. All those who fulfilled the study criteria during the study period were included.

Group II (33)

Patients in this group had suffered a fracture of the lower third of the forearm and were referred to physiotherapy following the removal of the plaster of paris splint which had immobilised their wrist for a period of from four to six weeks, all attended the department as out-patients. Again patients were of both sexes and aged from 41-89 years. The patients symptoms included limitation of movement, lack of muscle strength with reported restriction of usual activities, pain both at rest and on the performance of activities. The most common fracture in this group was of the lower one third of the radius (32) a Colles fracture, one patient sustained a Smith's fracture. Referral to physiotherapy for this condition was not a routine procedure in the chosen hospitals, selection was made by the referring doctors, but no common criteria could be found as a basis for referral by any one referrer or between those who referred. Reasons given for referring patients were - 'very stiff', 'painful' as well as the more general 'needs encouraging' or 'needs bullying'. So, though all patients attending the hand class with a fractured wrist and fulfilling criteria were included, this group may not be representative of patients who have suffered a wrist fracture.

The therapists

The 118 therapists covered a wide age range from 21 to over 40 years of age, with some students of under 21 years. Years of professional experience often corresponding to age varied greatly from the students working under supervision to those who had been practising for 20 years or more. Areas of specialisation were considered important but there were few objective criteria within physiotherapy for deciding the degree of skill or specialisation of an individual therapist (Partridge and Warren, 1977). Therapists themselves were not selected in Studies II, III and IV, rather those therapists who were treating the selected patients were included in the study.

Hospitals

The 7 hospitals selected provided different types of physiotherapy departments, two London teaching hospitals, four district general hospitals, one of which was in an urban and three in rural areas, and one specialised stroke unit. The differences were in the type of patients who might be referred to the hospital and the staffing and organisation of departments.

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RECOVERY

Central to any discussion of the process of recovery from illness is a consideration of the differing concepts of health and illness. From a medical viewpoint, illness implies a pathological state and the presence of disease, the opposite state - that of health - being one where disease is absent; the positive state in the medical model being that of disease, its absence denoting health. To be healthy is generally seen as good and desirable. 'A sound mind in a sound body is a thing to be prayed for' Juvenal (c. 100). Because of differing concepts of health, different criteria are used to decide what is healthy and what is not. Durkheim relates normality in health to statistical frequency, the state most frequently found used as the criterion for normal health; that infrequently found regarded as abnormal.

Objective criteria for defining health and illness are not always consistent with an individual's perceptions of his own state of health and Carguilhen (1950) felt it was futile to treat health as a single concept, the medical framework is clearly too narrow for examining an individual's reactions to his own state of health or illness. Herzlich (1973) in a study in France found very wide variation in individual perceptions of health and illness and the use of different criteria on which to base decisions about differing states of health. It was evident that the people in Herzlich's study defined states of health or illness cognitively in terms of individually perceived characteristics, illness was frequently discussed in terms of its seriousness but there was considerable individual variation in the criteria used to define seriousness. Herzlich found five dimensions used by the people in her study to define the seriousness of illness - the extent to which it was life threatening, its duration, whether it was curable or not, its longer term consequences and the restriction of activities that occurred as a result of the illness, one or more of these criteria were used - the ones used depending on the individual not on the condition or conditions under discussion. The study population were members of the general public not those who were seeking health care at that time.

Each individual perceives his own state or that of others as one of relative illness or health, and physical symptoms per se do not necessarily represent a state of illness to an individual. The extent to which an individual classifies himself as healthy or not will influence his behaviour and the extent to which others classify him as sick or healthy will effect the expectations they will have about him. The differing individual perceptions may lead to conflict and an understanding of the differences and the basis on which they are made is important in considering recovery.

The process of recovery from illness is multifaceted involving a complex interaction between physical and psychological factors, though the term implies a return to a former state of health and bodily function this may not always be the case. Medically recovery usually refers to a diminution of the pathological signs and symptoms that indicated the presence of the disease, with a return to a state where these signs and symptoms are absent, a state of health. There are a wide range of different conditions where a return to a pre-morbid state of health is expected, but there are also many where recovery may only be partial, some return being made towards a pre-morbid state but because of irreversible damage to body systems or structures or a continuing disease state, a full return is not possible.

For the individual the process may have a different emphasis a return to a pre-morbid state is usually seen in terms of activity, of 'feeling well' and regaining the ability to perform usual functions in daily life; the individual perspective differing from the medical one. Clinical signs may indicate recovery but the patient may still not 'feel themselves' or be able to resume former activities.

Where a condition involves longer term restriction of physical activities, the disease model is not appropriate for examining recovery and the concepts of impairment, disability and handicap put forward in the International Classification of Impairments, Disabilities and Handicaps by the W.H.O. (1980) provide a more suitable framework. Impairment referring to loss or abnormality of structure or function; disability being any restriction or lack of ability to perform an activity in the manner or within the range considered normal; handicap the disadvantage for a given individual resulting from an impairment or disability. These concepts are discussed more fully in Section 11, p.1 on Measurement.

Because of the complex nature of recovery there is little general agreement on factors which should be used to monitor the process. The particular nature of the condition will decide some changes that should be monitored at the level of disease, but for other aspects the situation is less clear, Mayou et al. (1978a) used a wide range of factors to indicate recovery in patients who had suffered myocardial infarction including changes in activity patterns, social and marital relationships and return to work. Recovery after surgery has been investigated extensively and here again a wide range of indicators have been used including number of analgesics requested, wound complications, and self report ratings of patients, Wolfer and Davis (1970) emotional reactions, Spielberger (1973) length of hospital stay, pain measures and independent self care, Johnston and Carpenter (1980) and minor complications and negative psychological reactions, Cohen and Lazarus (1973).

Recognising the many different perspectives of recovery the particular interest in the present study was on the interrelationships between physical and psychological variables. Changes in the level of physical disability, the performance of movements and functions, forming the dependent variables, psychological factors such as mood state, perceived locus of control, and patients perceptions and expectations, the independent variables. A model of factors influencing recovery of patients with conditions involving physical disability is proposed in Table 1 p. 9 , Appendix A

Physical indices of recovery

Because two groups of patients in Study III and IV suffered from different conditions the resulting impairment and disability used as physical indices of recovery will be discussed separately.

Group I

Patients with residual hemiplegia or hemiparesis

Initial assessments of impairment and disability were the starting points for monitoring recovery. The exact extent and type of damage that has occurred during a cerebro-vascular accident is difficult to assess accurately, even though computerised tomography scans can indicate the location of damaged areas, assessments of impairment are still made largely through clinical examination of changes observed and elicited peripherally. Because the damage effects the central nervous system control centres may be damaged and the effects widespread affecting many body systems. Since sensitive tools are lacking to measure and monitor change in many of the symptoms occurring in these patients the following were considered as threshold phenomenon and either present or absent, disturbances of sensation and perception, incontinence, and hemianopia, the direction of altered muscle tone was noted. Since no direct measurement of cerebral impairment was possible, physical disability was assessed and measured in three ways by monitoring the quality of arm and leg movement - this more directly reflecting impairment -the performance of gross body movements and the performance of activities related to self care.

The method of scoring for the measurement of physical indices was that the desired movement had or had not occurred or that it had occurred independently or not. This dichotomous type of scoring is not altogether satisfactory when it clearly does not represent the clinically well recognised gradual progress from being unable to perform a movement, through needing a lot of assistance, a little assistance, perhaps with instruction only and then performing independently. A reliable method of monitoring this type of progress with good inter-rater reliability could not be found. The dichotomous method of measurement is suitable for measuring outcome at a given point in time, for deciding whether an individual has attained a pre-set level or not but is less satisfactory for monitoring progress in a therapeutic situation.

Group II

Patients who had suffered a wrist fracture

Some monitoring at the level of impairment was possible for these patients X-ray of the fracture site gave an indication of the extent and type of the fracture, with information about displacement, and alignment post-immobilisation in plaster. However, information about soft tissue injuries could not be obtained from X-rays and the physical signs and symptoms of patients referred for physiotherapy came under four headings:

1) limitation of movement
2) lack of strength
3) restriction of activities
4) reports of pain

The first two being a more direct though still inexact reflection of impairment.

Factors selected to monitor as indices of recovery, were the following: wrist movements of flexion extension, pronation and supination, radial and ulnar deviation, strength of grip, reports of pain and reports of activity restriction.

Psychological indices of recovery

Psychological indices of recovery used in this study were the same for both groups of patients and included affective changes in the form of mood states, patients perceptions of their problems and the progress they were making and their ratings of personal constructs about aspects closely related to their physical condition.

Perceptions of recovery

The starting point for examining perceptions of the patients recovery was to consider the patients own perception of their condition, and that of their therapists on referral for treatment. The responses to the question asking about the patients main problems revealed considerable differences, sixty two per cent of patients reporting limitation of function as their main problem, only four therapists even mentioned this as a problem. Therapists saw the patients main problems in terms of physical symptoms - fifty-five per cent seeing it as the main problem.

Perceptions of progress towards recovery would be expected to relate to changes in aspects considered as central to the condition. Therefore, the perceptions of recovery of patients and therapists will be examined separately before considering their interrelationship.

Because the two groups of patients suffered from different conditions and therefore had different symptoms and different restrictions arising from these symptoms, they will be considered separately.

Patients perceptions

Group I

Whatever the length of time in hospital or the rate of recovery of physical function, all patients commented that recovery was a slow process. In the early stages many when asked how they were getting on replied - 'they say I'm better but I can't see any change'. Praise for recovery by staff in the early stages when no recovery was apparent was described as unhelpful by most patients. Nine patients saw no change in their condition within the first few weeks though within the same time interval therapists saw all patients as having made either a little (18) or a lot (2) of progress. All but three patients could see themselves as having made progress by the second report. The correlation between progress as assessed by measurements of physical indices and patients perceptions is given in Table 3 p. 14 Appendix

The work of Parkes (1972) on bereavement suggests seven features that are major aspects of many bereavement reactions (see Appendix A p. 16) and analysis of taperecorded interviews revealed that many of the patients were experiencing similar reactions. A process of realisation moving from denial or avoidance of recognition of the loss, towards acceptance. In the early stages patients reported experiencing alarm reactions, feelings of restlessness and other physiological accompaniments of fear, and also the variants of grief deemed pathological, either inhibition or excessive reactions Wright (1960) discusses mourning and realisation of loss following the onset of physical disability, a positive psychological value is assigned to the process of mourning but this is not based on experimental evidence. After the initial shock of the onset of the condition a period of considerable uncertainly followed, first into the extent of recovery that was going to occur and secondly the likelihood of a further similar attack, this was mentioned by most patients. The period of adjustment often appeared to be lengthy, the individual continually appraising the situation and assessing their individual coping resources.

Studies of bereavement have investigated behaviour following the death of a loved one, the grief and the sense of loss. A sense of loss is also experienced by those who through their condition are suddenly deprived of their independence in a number of crucial aspects of their life, they may also lose either temporarily or permanently their home environment. Their relationships with others and their prospects of employment may also be materially altered. This is particularly so for those patients in Group I.

What people said in the early period of adjustment may not have reflected their inner thoughts. Staff often commented on the 'unrealistic' attitudes of patients. An example of this was Mr E. who was unable to stand or walk unaided but repeatedly said 'Don't worry, I'll be back at work inside 2 weeks'. Some weeks later he commented 'I knew when I was saying it it wasn't true but it helped for a while to keep saying it, coming to terms with these things has to be gradual'. This is analagous to 'middle knowledge' as described in relation to dying by Weisman (1972). 'Somewhere between open acknowledgement of death and its utter repudiation is an area of uncertain certainty called middle knowledge.' 'It is marked by unpredictable shifts in the margin between what is observed and what is inferred. Patients know about their condition yet they often talk as if they did not know.'

Recovery for many patients who do not fully regain former functions and activities is difficult and usually means striving to achieve a state of equilibrium that encompasses changed physical status. Piaget's (1957) notion of accommodation and assimilation provided a useful analogy, where a state of equilibrium is seen as necessary for the individual to function effectively. Halford (1972) describes Piaget's proposition thus, 'the system would deal with its environment by assimilating new objects to itself then accommodating (or developing) its own structure so as to include the new object, the equilibrium is achieved by balancing assimilation and accommodation'. Disequilibrium occurs following the onset of the condition, the individual must then assimilate the changes that have occurred within his system, and alter his method of functioning because of these changes an endeavour must then be made to accommodate these changes within his total life style. Mr G. spoke of everyone 'adapting in an individual way' and of adapting 'going on for a very long time'; he also spoke of 'adjusting to whats happened and then assimilating it into your way of life'.

The stage at which patients did achieve a state of equilibrium with their condition varied considerably and would be difficult to assess in an objective way, however managing to achieve a state of equilibrium appeared to be characterised by lower and more stable levels of emotional arousal, objective appraisal of individual deficits, and some optimism for the future.

The recovery of function and the ability to be mobile and perform activities were the indicators used by patients to signify that recovery was taking place, small gains unrelated to performance were rarely interpreted as recovery.

The therapists perceptions

Group I

The patients main problems as seen by the therapists were concerned with physical signs and symptoms and recovery was seen as a diminution in these signs and symptoms, improvement in the quality of movements, in balance, gait and the achieving of goals set during treatment. In the first progress report all therapists saw the patients as making progress - two as having made a lot of progress, this very different from the patients report, nine seeing themselves as having made no progress at all. There may be an element of self-interest in the therapists reports - if a patient makes no progress this may reflect on the therapist treating them. Another reason for the discrepancy may have been the original differences in the perception of the patients' problems, changes in signs and symptoms and recovery of movements which were the therapists focus of interest, might be expected before changes in performance of more complex functions and activities. There was little relationship between reports of perceived progress and measurement of change in physical performance see Table 3, p.14 , Appendix A.

Patients perceptions

Group II

A number of different indices of recovery were used by these patients. Perhaps the most widely used was that of resumption of former activities and the independent performance of self care tasks. Many thought their progress was slow at first and some reported becoming depressed and anxious because of a perceived lack of progress. Lack of confidence and anxiety about going outside the house was reported initially by many patients and returning confidence indicated 'getting over it'. A few patients were concerned about the appearance of their hands. Mrs W. found the changed appearance of her hand the most disturbing aspect of her condition and until swelling and bruising subsided did not feel any real progress was being made. Pain was an important symptom for many patients and being 'able to do more without it hurting' indicated progress. Recovery occurred in some aspects more quickly than others so overall recovery was more difficult to assess. 'I can move my hand more and its stronger but its still just as painful'. 'The pain is better but the strength isn't there yet.'

As in Group I some patients found it difficult to see any recovery in the early stages and responded to questions about progress by saying 'J. (the therapist) says its better so I suppose it is'.

Though most patients saw themselves as making considerable recovery during the 4 week period of monitoring only one reported being 'back to normal' in Study IV, and even those monitored for a 12 week period in Study III did not report being 'back to normal'. Though activities were reported as 'no problem', they were said to take longer than before.

Patients found it reassuring to see continuing progress 'I'm getting a little better all the time', 'Each week I can see I'm doing a bit more'. Others who could see no progress became frustrated and angry and queried the early management of their fracture, 'it should have been X-rayed again', or the plasters that had been applied, 'I don't think the plaster was in the right position from the start.' The therapists evaluation of the situation was seen by some as a yardstick of their progress, 'V. is very pleased with the way I'm getting on so I'm sure its alright.'

The extent to which recovery was conforming to expectations about recovery might be expected to influence perceptions and this appeared to be the case. Mr J. '6 months from when I did it, that's the figure I have in mind - virtually back to normal by then so I'm not too bothered just yet' - this at 3 weeks after starting treatment. Mrs B. 'I don't expect it to even look the same or to be 100% only 70% or so, so I think I'm doing alright'.

Relationship between patients' and therapists' perceptions

Differing perceptions of recovery were demonstrated in the patients and therapists reports of progress in recovery. At the first report overall congruence between perceptions of recovery was 50%, 40% for patients in Group I, 60% for Group II. The overall congruence dropped by the second report to 37% again a higher congruence of 40% for Group II. See Table 4, p. 17 .

Patients overall perceptions of their recovery were lower than those of the therapists, particularly for Group I patients, in all 10 patients saw no change in their condition at the first progress report but all therapists saw the patients as making some progress.

This may reflect the differing focus of the patient and the therapist; therapists concentrating on physical symptoms where change may have occurred first before it might be expected to be reflected in performance of functions and activities, the problems perceived as important by most patients. It may also have reflected the value placed by therapists on their patients making progress, lack of progress in a patient may reflect unfavourably on the therapist.

Less information was available about satisfaction with recovery because 18 therapists felt unable to comment as they had not been treating the patient consistently, of those who replied fewer therapists than patients were very satisfied, 5% as against 15% three patients were not at all satisfied with their recovery, no therapists reported this. See Table 5, p. 20, Appendix A.

To examine the way in which therapists and patients saw the others satisfaction with the recovery each was asked to rate the satisfaction of the other. Nearly half of both patients and therapists felt unable to comment again here changing therapists was a problem. Both more therapists and more patients perceived the level of the others satisfaction correctly than incorrectly but 36% of therapists and 43% of patients rated the satisfaction of the other as either higher or lower see Table 6 p.22 .

The relationship between perceived progress in recovery and satisfaction was not straightforward; of the patients who perceived themselves as a lot better (5) only two pronounced themselves as very satisfied, and of those who said they were not satisfied at all (3), two said that they thought they were making some progress. Though some progress is perceived it may not be fast enough or progress may be perceived in some areas but not in others for example Group I patients might have recovery of leg movement but little return of arm movement, Group II patients increase in range of movement but little change in pain.

Given that initial perceptions of the patients main problems differed, differences in perceptions of progress might be expected but a mismatch at any level would interfere with the patient/therapist relationship - more accurate understanding by the therapists of the patients perceptions should facilitate a more effective therapeutic relationship.

Discussion of findings

The original hypothesis of the study that initial measurement of objective severity provided few predictions about eventual recovery was supported by the data. Though change in the GBM Disability score for Group I patients (see section on Measurement p.11.6 for details of scales of measurement) was correlated with initial GBM Disability score there were no significant correlations between GBM Independence score and either the CBM Change score of the GBM Attainment score (see Section 11, p. 59) nor between the GBM Disability score (for correlations see Tables in Appendix A, p.75, 76).

For Group II patients there were no significant correlations between initial movement or grip scores and Attainment scores. This indicated that in the present study initial measurement of symptoms which indicated the presence of the condition and formed the focus of physical treatment were poor predictors of progress that was going to be achieved.

The interrelationship between measurements of physical symptoms showed positive correlations for Group I patients, both quality of arm and leg movement being significantly (.01 level of significance) correlated with GBM Independence scores, the correlation with GBM scores was not significant for quality of arm movement but significant (.01 level) for quality of leg movement. Quality of arm and leg movement were significantly correlated at the .05 level.

Neither changes in physical symptoms, nor Attainment scores, that is the score derived from what was achieved taking into account the starting score, showed significant relationships with progress as perceived by the patient in Group I on the first report, and only progress and Attainment GBM Disability scores being related to the patients second progress report, neither measurements of change in GBM Independence scores nor Personal Care scores showing significant correlations. For patients in Group II there were even fewer correlations between patient reports and measured change of physical indices see Table 2, Appendix A, p. 10 .

It was clear that for both groups of patients in the study changes in physical indices did not of themselves represent progress to the patient. For progress to be seen changes must be perceived in aspects important to the individual, patients initial problems caused by the onset of their condition related to the restriction in the performance of activities and functions in their daily lives; their goals being associated with a return towards a pre-morbid level of functioning, therefore changes in physical symptoms per se were not perceived as progress.

More surprisingly therapists perceptions of progress were not related to measured physical change. See Table 3 Appendix A, p.14 . A possible explanation for this is that though therapists initially assess aspects such as gross body movement and quality of arm and leg movement, during the treatment programme attention is focussed on different problems at different times perhaps an aspect of arm movement, or sitting balance, and perceptions of progress relate more to the achieving of these shorter term goals than to the initial global assessment.

Few significant relationships were found between patients and therapists perceptions of progress; see Table 4 in Appendix A, p.17 this is not surprising considering the initial differences in their initial perceptions of the patients' problems; progress being perceived as a diminution of those problems. Patient and therapist satisfaction showed few significant relationships with changes in physical indices or in Attainment scores in either Group I or Group II patients.

The relationships between physical indices of recovery and psychological factors such as mood state, locus of control and personal constructs are discussed in the sections on these factors.

Recommendations

An understanding of the multifaceted nature of the process of recovery and the differing perceptions of patients and therapists is essential if therapists are to help each patient to achieve an optimal level of recovery.

Treatment plans should be based on agreed goals both in the short term and long term; for these goals to be effective they must relate to aspects seen as important by the patient and the relationship between specific treatment approaches and the agreed goals must be fully explained. It is the therapists responsibility both to investigate the patients perceptions and understanding of their condition and to make the patient aware of the aims and purpose of treatment.

It was clear from analysis of interview material that patients frequently did not understand the purpose of many treatment approaches. In the later stages many patients commented on how they now realised 'what it was all about' but in the beginning 'couldn't see the reason for doing those things', 'it all seemed so silly'. Problems of communication discussed in Section 4 may have exacerbated difficulties here, with patients being reluctant to ask about the purpose of treatment, and only a small amount of information and explanation by the therapist having been understood and remembered.

If the outcome of treatment is to be assessed initial measurements must be repeated in the same manner throughout the period of recovery, because the process of recovery is rarely straightforward with similar changes in all symptoms, treatment is dynamic responding to changes in the patient, monitoring these dynamic changes is important for the therapist but overall monitoring of the level the patient attains at different stages during their recovery period is essential, if the effectiveness of different approaches to treatment and management are to be assessed. Recovery must be monitored at at least two levels if physical intervention is to be assessed, at the level of performance of movements, both individual joint movement and gross body movements and the level of the performances of functions and activities in daily life.

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Recovery

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COPING

The situation where illness or trauma causes the sudden onset of physical disability would usually be perceived as stressful; the threat extending beyond that of immediate physical wellbeing to such things as belief systems, self concepts and emotional equilibrium. Many authors emphasise that cognitive factors are central in determining the impact of stressful events - Weisman and Sobel (1979); Lazarus and Launier (1978) and Lazarus (1966). Lipowski (1970) contended that the way in which the individual responds to the threat of illness will affect the process of recovery and 'can spell the difference between optimal recovery for the individual or psychological invalidism'.

Coping as a response to threat has been examined by many authors and investigated as coping in response to illness. Some - Kroeber (1963); Haan (1977) - separate defences and coping, coping 10 being seen as flexible, adaptive, oriented to reality, looking to the future, whereas defences are rigid, distort reality and are pulled from the past. The concept of coping as positive and adaptive is supported by other authors including Rose (1975) and 29 Wright (1960). Ray (1982) challenges this assumption that coping is 22 23 by definition reality based and adaptive and suggests it can refer to any action taken with the aim of minimising the adverse impact of a problematic situation. Though this is the aim of coping, results may vary widely. The multifaceted nature of coping is also supported by Lazarus and Launier (1978), coping and defences 24 are intertwined, coping being efforts both action oriented and intra psychic to manage environmental and internal demands and conflicts among them, which tax or exceed a person's resources.

Different threats may result from the onset of physical illness, their relevance differing with individual appraisal. On the basis of work by Hamburg et al. (1953); Moos and Tsu (1977); Visotsky (1961). Cohen and Lazarus (1980) categorise the threats as follows:

1. Threats to life itself - and fears of dying.
2. Threats to bodily integrity and comfort (from the illness, the diagnostic procedures or the medical treatment itself);
    a) bodily injury or disability
    b) permanent physical changes
    c) physical pain and discomfort
    d) incapacitation.
3. Threats to self concept and future plans;
    a) necessity to alter one's self image or belief systems
    b) uncertainty about the course of illness
    c) endangering life's goals and values
    d) loss of autonomy and control.
4. Threats to one's emotional equilibrium.
5. Threats to fulfilment of customs, social roles and activities;
    a) separation from family and friends
    b) necessity to depend on others.
6. Threats involving need to adjust to new physical or social environment;
    a) adjustment to hospital setting
    b) problems understanding medical terminology and customs
    c) necessity for making decisions in stressful unfamiliar situations.

Any one of these threats may be uppermost in the patient's mind at any one time and there may be a hierarchical structure of the threats; when one is removed or minimised another takes over as the central source of stress. However the stress imposed by illness or any other event cannot be exclusively defined by the situation because the capacity of any situation to produce stress reactions depends on the characteristics of the individual (Bettelhein (1960)).

The stress imposed by illness or physical trauma depends to a great extent on the individuals' appraisal of that event. Appraisal - a cognitive process through which the event is evaluated is seen by Lazarus (1966) as two fold - primary appraisal an immediate response; secondary appraisal a reflective judgement which follows later and may be repeated as changes occur. The relationship between the two is not necessarily sequential and each may in turn affect the other, their essential difference is that they are based on different information. Primary appraisal of the perception of the nature of the harmful confrontation, how serious is this for me?, secondary appraisal a more lengthy process based on the consequences of action tendencies, consideration of the extent of any particular action to relieve the harm. Lazarus (1966) also emphasised that both primary and secondary appraisal need not be an accurate reflection of reality, or represent sound judgement on the part of the individual. The process of appraisal is not directly observable but is closely linked to emotion, to ways of coping with stressful events, and to the concept of perceived locus of control.

Appraisal in illness involves primary appraisal of the condition at onset and an emotional response, secondary appraisal takes into account the primary appraisal but also evaluates coping resources and options, this may result in action which will affect the relationship between the individual and the environment then the situation will be reappraised. Lazarus (1966) stresses that these processes of primary and secondary appraisal may be conscious and deliberate, unconscious or on the fringe of consciousness. Ray (1982) suggests that not only does reappraisal provide feedback on the success of coping but can of itself be a form of coping. Appraisal is seen as a critical determinant of coping by Lazarus and Launier (1978); Lazarus (1966); Folkman et al. (1979).

Differences in coping due to appraisal studied by Folkman and Lazarus (1980) identified two types of coping problem focused and emotion focused. In situations which were appraised as holding few possibilities for beneficial change, emotion focused modes of coping were used, when a situation was appraised as having potential for alleviation by action problem focused coping was used; where control was seen as possible this facilitated problem focused coping. Folkman and Lazarus (1980) in their study of coping in a middle aged population found that how an event was appraised and its context were the most potent factors accounting for coping variability. In laboratory studies under conditions of 'no control' emotion focused forms of coping increased and appeared successful in lowering distress and somatic disturbance Folkman (1970); Monat et al. (1972).

The dynamic quality of appraisal and coping is stressed by Folkman and Lazarus (1980) and this was a characteristic of the present study. Patients appeared to be appraising and reappraising their situation on a continuing basis. Appraisal of both actual change, physical recovery of movements and functions lost at the onset and of the full implications of their condition on their life at present and in the future. The Folkman and Lazarus (1980) model of appraisal proposes harm, loss, threat or challenge as stimulating coping efforts, these efforts causing a change in the person/environment relationship by altering the relationship itself, and regulating emotional stress by emotion focused coping.

The two aspects of coping, the dispositional or coping style of an individual and the modes or strategies used in a particular situation have both been investigated. Cognitive style characterises an individual's cognitive functioning and is discernible in both his perceptual and intellectual abilities - Witkin and Oltman (1967). But the assumption that an individual displays characteristic ways of problem solving and acting when they develop organic disease is challenged by Lipowski (1970). Interpretation of the literature on coping styles is difficult because of the different terms used to describe dispositions such as vigilance and sensitisation. These dispositions are usually assessed independently of the stressful situation by questionnaires or projective techniques. While recognising the problems of interpreting the literature, Hoffman (1970) and Cohen and Lazarus (1973) found only weak or non-significant associations between coping dispositions and actual coping behaviour.

The present study did not attempt to examine patients coping dispositions or styles though recognising that these dispositions or styles may have influenced behaviour during the recovery period, because it was not possible to investigate them before the onset of the patients condition./ Coping strategies - the actual behaviour of individuals following the appraisal of threat is conceptualised by Pless and Pinkerton (1975) as all techniques employed by the 28
individual to deal with the illness and its consequences. Many authors stress the individual nature of response to illness and the different strategies used by those with similar medical conditions (Lipowski (1970); Lazarus (1978); Moos (1977)). Not only is 29 30
individual variation stressed but the fact that strategies are not inherently adaptive or maladaptive and what is appropriate and adaptive at one stage of an illness may not be so at another stage. The extent to which any behaviour is adaptive always involves a value judgement and can only be answered from a particular viewpoint concerning a point in time and in reference to a particular situation. Behaviour deemed to be adaptive by staff may not be so from the patients point of view.

The problem-solving nature of strategies used to cope with physical illness is seen by Lipowski (1970) as all cognitive and 31 motor activities which a sick person employs to preserve his bodily and psychic integrity to recover reversibly impaired function and compensate to the limit for an irreversible impairment, this again stresses the positive nature of the aim of coping.

Each individual's response to illness will reflect the personal meaning of the illness for them, among those listed by Lipowski (1970) are illness as a challenge, and as an enemy. Common coping strategies found in medical settings listed by various authors include reversal of affect, confrontation, tension reduction, disowning responsibility, compliance and self-pity (Weisman and Wolden (1976-77)). Others list seeking information, requesting reassurance, setting concrete limited goals, and finding a general purpose or pattern of meaning in events - Moos and Tsu (1977).

The present study

Patients strategies were examined ~~by content~~ analysis of interview material. Though the two conditions of stroke and wrist fracture appeared disparate, some elements were similar, in both, hand function was affected, and as most self care tasks normally involve the use of both hands patients with either the dominant or non-dominant hand affected had some interference with self care functions.

It was clear that the onset of both conditions cerebrovascular accident and fracture of the wrist was appraised as stressful by most patients. Patients were asked to rate how they had appraised the seriousness of their condition when it first happened and on referral for physiotherapy. While recognising that a number of different individual concepts of seriousness might underlie the ratings (see Herzlich in Recovery p2.1) the change in ratings clearly supported the existence of a first immediate reaction and second and subsequent appraisals based on further information. The appraisals of both groups of patients are discussed separately though there was considerable overlap.

Group I patients

Initial perceptions of seriousness varied from very serious (3) serious (4) to not very serious (5) and not serious at all (1). Seven patients were unconscious at the time of onset. However by the time of referrals for physiotherapy there had been a considerable change - 8 patients now appraised their condition as very serious 12 as serious. This change can in part be explained by the reasons patients gave for their first rating of seriousness. Those who rated their condition less serious thought that bodily changes that had occurred were transient, they were encouraged in this by their doctors: 'of course its not a stroke', 'its probably the 24-hour kind'. For others the onset was slow over a period of 12-24 hours and similar symptoms had been experienced previously in transient form.

Group II patients

Initially only one patient appraised her condition as very serious, 12 as serious, 5 not very serious and 2 not serious at all. It was clear from the reasons given that ratings were based on individual appraisal, in objective terms the same reason - 'because I've broken my wrist' was given for rating the condition as serious and not serious at all. On referral for physiotherapy between 5 and 6 weeks after onset, one patient still perceived her condition as very serious, 13 as serious, 5 not serious, and only 1 not serious at all. (See Table 7, p.23 Appendix A.)

Perceptions of perceived seriousness showed few relationships to seriousness as measured by physical indices. (See Table 8, Appendix A. p.24)

Discussion of findings

Material obtained from patient interviews demonstrated the many different ways in which the individuals tried to cope with the onset of their condition and the problems it posed for them.

The differing nature of primary and secondary appraisal was demonstrated with most patients changing their appraisal over time; some seeing it as more serious, this mainly in Group I, others as less, mainly in Group II, see Table 7, Appendix A, p.23.

Individual appraisal in terms of extreme responses to the onset of their condition showed little relationship to measured severity of changes that had occurred in either Group I or Group II patients, with no correlation between secondary appraisal and Gross Body Movement Independence or Disability scores in Group I or the restriction of movements of flexion/pronation, ulnar/radial deviation or grip strength in Group II.

Individual appraisal of the seriousness of their condition by patients showed no significant correlations in Group I patients with objectively measured severity, for patients in Group II only two of the objective measurements were related to the subjective ratings of seriousness, the movement extension/supination correlated .63 (.01 level of significance) with perceived seriousness on referral for treatment and initial measurement of grip strength .42 (.05 level). These two objective measurements were correlated .42 (.05 level), it appears that objective measurements of grip strength were related to the patients' subjective appraisal of their condition.

There were numerous instances of the differing individual appraisal of objectively similar phenomena, demonstrated clearly by the reports of two patients in Group II, Mrs. S. rating her fracture as very serious 'because my arm is broken', while Miss E. gave the same reason for rating her condition as not serious at all. Many of the threats listed by Lazarus and Cohen, (see page 32) were mentioned by patients, but the differing values put by some individuals on the same aspects were surprising, for example most patients considered dependence to be both stressful and undesirable but Mrs. W. did not see it like this. 'I'm not at all independent and don't want to be. I'm dependent on my husband and that's as it should be.' For her any increased dependence caused by her condition was no problem.

Group II patients who saw the problems caused by their condition in terms of activity restriction, particularly in relation to self care and daily living tasks appeared to adopt three different strategies, avoidance of the task, adaptation using a problem solving approach and seeking help. These three approaches identified through analysis of interview material are illustrated in the examples given below:

<u>Task dressing</u> For women fastening a brassiere was particularly difficult.

Avoidance - stopped wearing a brassiere for the time being

Adaptation - managed usually by putting on back to front fastening in front and pulling round to the correct position.

Seeking help - asking husband/neighbour to do it up.

Household tasks Preparing food.

Avoidance - change diet, eat only those foods that need little or no preparation, use of packaged pre-cooked foods.

Adaptation - bought special wall can opener, developed gadget for holding food for cutting, arranged a board to slide saucepans from stove without lifting.

Seeking help - asked husband/neighbour to do it.

Though most patients appeared to adopt one of these strategies to most tasks and the value of the task to the individual might alter their strategy, for example Mrs. H. who used mainly avoidance as a coping strategy, particularly liked home made bread and managed to continue to make her own using a number of problem solving adaptations to her bread making equipment.

Ray (1982) has suggested six coping themes and has 34 analysed their characteristics in breast cancer patients, the themes are Rejection, Control, Resignation, Minimisation, Avoidance and Dependency. Examining the interview material in relation to these themes as described by Ray for 23 patients six of the themes were clearly illustrated. Of the three strategies used in Group II patients described earlier, adaptation seems similar to the theme of Control, and seeking help to Dependency - avoidance in these patients though it referred only to selective avoidance of tasks not to overall avoidance, was clearly related to the general theme of avoidance.

Patients in both Groups used different strategies to cope with their problems but it was not possible to make any conclusions about the effectiveness of different strategies for different patients. There were no correlations between the use of any of the strategies and Attainment scores or Change scores, that is no particular stretegy appeared to result in a greater change in physical symptoms nor in personal care scores. This is not unexpected as strategies are used by the individual to help them to cope with their problems, what is adaptive for one patient may not be so for another, an individual may use different strategies at different times and also different strategies depending on the issue involved.

Recommendations

Appraisal is an integral part of any coping process and perhaps it is here that the therapist can help the patient to appraise their situation in a different way if the coping strategies involved do not appear to be effective in achieving mutually agreed goals.

An understanding of the complex nature of coping and the different styles and strategies that can be used would be helpful for therapists. It is also important that the dichotomy of methods of coping into adaptive and maladaptive is expanded to consider that what may seem maladaptive to the professional onlooker may at a particular point in time be helpful for that patient. The patient who is discussed in the section on Recovery p. 2.8 illustrates this well. Mr. E. avoided discussing or even considering the fact that he might not be able to go back to work in the early stages, he wanted to come to this fact gradually. Staff thought he was being unrealistic and that his attitude was maladaptive, however it was only a temporary phase and appeared to be very adaptive, during the early period of adjustment for this particular patient who went on to make good progress both in his own estimation and that of the staff.

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EMOTION

The phenomenon of emotion has always posed a problem for both the experimentalist and the clinician Arnold and Gasson (1954), differing concepts of emotion and methods of measurement for the researcher and the interpretation of emotional states and their control for the clinician. Early concepts of emotion have included Darwin's (1873) of emotion as a remnant of once serviceable habits, and William James' (1884) where the feeling of bodily change itself 'is the emotion', bodily changes following from the individual's perceptions. The psychoanalytic approach links emotion with instincts, Freud (1936) interpreting emotion as consciously experienced affect changes of the twin instincts of love and aggression while Jung (1935) viewed emotions as the conscious accompaniment of unconscious archetypal forces. By 1928 Claparède was stating that 'the psychology of affective processes is the most confused chapter in all psychology where psychologists agree neither on facts or words'.

It was not until the late 1950s that emotion was being considered as an 'organised response' Arnold and Gasson (op cit.) and the physiological investigations undertaken in the 1960s challenged the previously accepted viewpoint of differentiation between emotional states. Physiological differences between emotions were considered to be non-significant, the general level of activation being most important Duffy (1962); Lindsley (1950) emphasising the importance of the reticular activating systems Schachter (1962) providing support for the unitary concept by demonstrating that the same state of physiological arousal could be interpreted as anger, joy or other emotions depending on the situational context.

The problems of definition were still apparent in 1970 Lazarus, Averill and Opton (1970) comment in a review of the topic 'emotions are notoriously difficult to define', Averill (1968b) suggests it is because emotion words 'do not refer to things in the sense that a table or even an atom is a thing but rather to syndromes in the sense that disease is a syndrome'.

Though subjective experience cannot define emotion it may serve an important function in emotion bridging information gaps for the individual McLean (1960) and provide diagnostic signs for assessment by others Simonov (1969). Three dimensions of emotional reactivity are integral parts of the emotional response, motor behavioural, physiological and cognitive subjective. Each emotional reaction is a function of a particular kind of cognition or appraisal as man continually searches for cues about the environment its personal relevance and significance for him, Lazarus et al. (1970) also Kelly (1955). The concept of appraisal first suggested by Arnold (1960) was that most emotions involve intuitive appraisal of a stimulus as good or bad, beneficial or harmful. Lazarus (1966) and others have elaborated the concept of appraisal as an integral part of an emotional response especially in the context of threat or stress.

The three aspects of emotion of particular interest in the present study were the overall intensity of emotional response following primary appraisal of the onset of the condition, and the closely allied responses of anxiety, fear and depression.

Anxiety and fear

Anxiety and allied concepts are constructs, the invention of the behavioural scientist and used to explain observable behaviour but they have no clear physical existence in themselves. The distinction between fear and anxiety is sometimes difficult to define, it is suggested that fear is proportional to a perceived objective danger whereas anxiety is a disproportionately intense reaction, this argument holds at the extremes but it is difficult to distinguish fear and anxiety in many specific circumstances that are in the middle range. For example, at what point is the decision made that rational anxiety about an objective situation become disproportionate and lacks reality orientation. The terms fear and anxiety are used interchangeably by many authors and no matter how they are conceptualised fear and anxiety cannot be distinguished physiologically, Levitt (1977) concludes the distinction between fear and anxiety is no more than theoretical at present, and for all practical and experimental purposes 'fear and anxiety are indistinguishable'.

Two characteristics of anxiety have been investigated the dispositional or relatively enduring characteristic and the more transitory situational response. Spielberger (1972) differentiated between the trait of anxiety (A trait) and the state of anxiety (A state). A-trait reflecting the individual differences in anxiety proneness a relatively stable personality disposition and A-state the transitory level of anxiety which varies with the circumstance, being low under circumstances of low threat raised under high threat conditions.

Anxiety was conceptualised by Spence (1960) as an acquired drive which had the capacity to energise an organism, and this has been supported by laboratory experiments such as those by Miller (1948) and Dollard and Miller (1950); where only one response possible, anxiety was found to have an energising effect and facilitated learning. The Yale theory advanced by Mandler and Sarason (1952) and Sarason et al. (1960) proposes anxiety as a situationally determined reaction. A particular circumstance or class of circumstances may evoke anxiety in an individual but individuals may react differently to the same circumstances. An individual has learned characteristic responses to anxiety which he brings to any situation, these learned responses may be task relevant in which case they will facilitate performance, or task irrelevant in which case they may be disruptive, however the distinction between learning and performance is equivocal, learning must be operationally defined by performance but it is not always certain when performance indicates learning.

The Yerkes Dodson law (1908) is one of the earliest experimentally based statements on the relationships between drive and learning, the relationship between fear and learning is seen as curvilinear a low level of drive facilitates learning only slightly, possibly because the motivation it provides is inadequate to effect performance. A high level of drive interferes with the learning process so that performance is similar to or worse than that obtained with low drive level. The level of drive that stimulates optimum performance is in the middle range. The law further states that the relationship between drive and performance is a function of task complexity. A drive level that facilitates performance on a simple task may disrupt it when the task is more difficult.

Sime (1976) proposes that 'anxiety may be a predictor or even a determinant of various forms of physical and psychological distress and influence the success of surgical procedures'. Janis (1958) proposed a curvilinear relationship between pre-operative anxiety and post-operative recovery, either very high, or very low levels being associated with lower indices of recovery, a moderate level of anxiety being associated with more favourable recovery. These findings have not often been replicated and a linear relationship between anxiety and indices of recovery has been demonstrated by Egbert et al. (1964), Wolfer Davis (1970), Chapman and Cox (1977), Johnston (1980). Sime (1976) and Johnson et al. (1971) found a linear relationship between pre-operative fear and post-operative measures of recovery. In many studies fear and anxiety are considered as conceptually similar.

Depression

The term depression refers primarily to mood and can vary from feelings of slight sadness to utter misery and dejection, it is conceptualised as being of two types, endogenous and reactive. Fluctuations in mood are a common experience but certain characteristic physical and psychological changes are associated with the two types, endogenous depression where there is no obvious external cause for a shift of mood to sadness, misery, increasing gloom and finally despair, described by Dominian (1976) as 'an invasion of personality by a disintegrating force with multiple psychological and physical characteristics subtly intertwined'.

Associated symptoms which together form the syndrome of depression are psychomotor retardation and agitation, deterioration of memory, diminution of mental functioning, decrease in physical activity, lassitude, tiredness, lethargy, loss of self esteem and feelings of inadequacy and inferiority. Physical symptoms include loss of sleep, energy, appetite and sexual drive.

Depression is said to be reactive when there is an obvious external cause such as death of a loved one, or loss of job. Reactive depression tends to be milder with symptoms less marked, and to be a temporary condition. The major symptom is often anxiety with physiological changes such as excessive sweating and palpitations, excessive tiredness unrelated to activity is also frequently present. Though interference with concentration and memory is not so noticeable in reactive depression a loss of self esteem, lack of confidence and feelings of inadequacy are found.

The distinction between the two types of depression is not clear-cut, and some psychiatrists have found no clear distinction between reactive and endogenous depression - Lewis (1936), Curran (1937) Garmany (1958) this supported by experimental evidence, Kendell and Gourlay (1970). Others support the existence of two distinctive entities Yellowlees (1932) Rogerson (1940). Experimental work by Carney et al. (1965) and Kilch et al. (1972) supports this. The position is summed up by Mowbray (1972) 'the controversy about the nature of depression can be reduced to a single illness with differing manifestations or as a number of illnesses with at least one common symptom, depression of affect'.

For the purposes of the present study interest was on the reactions of the individual to the onset of a condition involving physical disability and this would come more readily under the heading of reactive depression.

The present study

The patients' emotional response to the onset of their condition was examined using the Profile of Mood States POMS which is discussed fully in the section on Measurement p.11.29. The 41 item scale provides scores on the 5 factors of Tension, Anger, Fatigue, Vigor and Depression, the subject indicating the extent to which they have felt as the adjective describes both now and during the past week.

Recognising that self reports may be influenced by a number of factors, patients were taperecorded while completing the POMS. Some patients who appeared distressed reported little or no adverse mood change and frequently commented "I mustn't let myself feel ...". Because of this the Marlowe Crowne Social Desirability Inventory see section on Measurement p.11.36 was given to the remaining 22 patients. For them a negative correlation at the .05 level of significance was found between scores on the Marlowe Crowne Inventory and scores on the POMS for the factors Tension, Anger and Depression. This suggests that social desirability did influence the responses of some patients, higher social desirability being linked to lower reported mood distrubance scores.

Despite this, significant correlations were found between the different POMS factors, for Group I patients Tension with Depression .67 (.001) Group II .89 (.001). The correlations between Fatigue and Tension and Fatigue and Depression just failed to reach significance at .05 level .36 and .34 in Group I, but for Group II were .7 (.001) and .73 (.001) respectively, these intercorrelations validated the use of the Total Mood Disturbance score TMD.

Tape recording patients while they completed the POMS also revealed different interpretations of the item 'ready to fight'. Some patients seeing it as a form of unpleasant aggression others as a readiness to fight and overcome the difficulties of their present situation.

Discussion of results

A number of variables showed a significant correlation with both the individual mood factors and the TMD scores. Secondary appraisal of the situation involving physical disability was significantly correlated for both groups of patients with TMD, .54 (.05) for Group I, .4 (.05) for Group II. Those who appraised the situation in more extreme terms also reported more disturbed emotions. Ratings of self on referral for physiotherapy on the 10 constructs - see section 11 on Measurement - were also positively correlated with TMD .49 (.05) Group I and .64 (.01) Group II. Ratings were also correlated with Depression .49 (.05) Group I and .5 (.05) Group II. Tension was significantly related to ratings only for Group II patients .5 (.05). This suggests that for these patients perceiving oneself as more changed was disturbing, individual perceptions rather than measured changes or severity being the basis for an increased emotional response. In Group II patients sensory loss often thought to be a bar to progress in recovery was significantly correlated with Fatigue .4 (.05) this may have reflected the effort needed in the performance of movements and functions when sensory input is lacking.

Activity restriction in Group II patients demonstrated a significant positive correlation with three mood factors, Tension, .6 (.01), Fatigue, .6 (.01) and Depression .55 (.05), this suggests that for these patients raised emotional response was linked to greater restriction of activities, those who reported less emotional response also reporting less restriction of activities. A check list of activities was also used and it appeared that reported restriction was related to actual restriction i.e. the number of activities reported as restricted related to reported level of restriction. The range of activity restriction showed a very wide variation, some patients reporting nearly all activities as restricted others hardly any, one patient had continued to make her own bread throughout the period, as well as all other household tasks,another reported undertaking no household tasks at all.

Personal care scores were related to mood factors, for Group I patients being negatively correlated with Fatigue -.45 (.05) and with TMD -.42 (.05), for Group II patients with TMD -.39 (.05). Raised mood disturbance being related to less independent personal care.

Attainment of Gross Body Movement Independence scores were negatively correlated for Group I patients with Fatigue -.45 (.05). For Group II patients total number of attendances were significantly positively related to TMD .5 (.05).

Conclusions and recommendations

The patients emotional response to their condition varied widely and increases in reported mood disturbance were related to the individual's perceptions of their condition rather than to objective assessments of severity; perceiving oneself as changed through the onset of the condition was related to more reported mood disturbance. The physical indicators used by therapists both for assessing initial severity and monitoring recovery were not related to mood disturbance. A realisation by therapists that mood disturbance is often related to individual perceptions rather than to objective assessment of symptoms could lead to a greater understanding of the patients problems and lessen the likelihood of therapists being insensitive to emotional responses seen as inappropriate because of their lack of relationship to objective symptoms. The starting point for being able to offer appropriate therapeutic help and support within a treatment regimen is for the therapist to have a full understanding of the patient, their symptoms and problems the understanding based on both knowledge obtained from objective assessments but also information about the individuals subjective response to these symptoms and problems.

Patients with stroke who have sensory problems are recognised clinically as a group for whom regaining of lost movements and functions is often slower, in the present study in Group I patients a significant relationship was found between the factor Fatigue and sensory loss, the difficulty of performing movements and functions with impaired sensory input may induce feelings of fatigue which further limit progress. Treatment specifically directed towards increasing sensory input may help to alleviate this.

The work of Johnson et al. (1971), Johnston (1980) and others suggest that mood factors may be influential in the process of recovery and the results of this study support this, with a significant relationship being found between emotional factors and measures of performance in both groups of patients. If emotional factors are an important influence during recovery then more consideration should be given to the patients' emotional state. Sime (1976) and Wolfer and Davis (1970) suggest that a number of different methods can be used to reduce emotional disturbance for patients undergoing surgery, and to increase positive recovery post surgery.

Patients emotional state is given little formal attention in most therapeutic sessions; an understanding of methods which can be used first to understand the patients' emotional responses such as mood adjective check lists and repertory grids of personal constructs, and then methods of reducing mood disturbance when it is found, should facilitate the process of recovery and enable each patient to achieve his or her optimal result.

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Emotion

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COMMUNICATION AND COMPLIANCE

Though communication forms an intrinsic part of the therapeutic encounter, there have been few studies which have attempted to examine it though some writers, Conine (1969) and Croft (1980), stress the importance of student training in this area. There is, however, evidence from the considerable volume of research on doctor/patient communication, Ley and Spelman (1965), Joyce et al. (1969), Francis et al. (1969), Ley et al. (1973), Reynolds et al. (1981) and Korsch et al. (1968) that different effects are produced by different methods of communication, different attributes of the communicator, and by the content of the communication. This is not unexpected in the light of the extensive body of psychological research on communication and attitude change. The three essential components of communication - the communicator, the message and the receiver of the message - have all been investigated. Research has demonstrated that a number of variables associated with the communicator such as credibility and reliability - Hovland and Weiss (1952), status Hurwitz et al. (1960) and perceived similarity between subject and communicator Triandis (1960) do influence the attitudes of the receiver of the message. The effect of primacy in giving of information has been examined and what is said first tends to have more effect - McGuire (1969) - though the recency effect may, under some conditions, be more influential - Lana (1964).

These aspects and others have been examined in communication between doctors and patients. The medical consultation appears to differ somewhat from that of the therapist/patient consultation. Byrne and Long (1976) found most doctors 'ideal' consultation consisted of the doctor making a clear cut diagnosis and instituting rapid and efficacious curative procedures. In the therapist situation, assessment is a continuing process with treatment involving a number of sessions over a period of time. The emphasis in most medical consultations is on diagnosis and pathological change while in therapy the emphases are on assessment of the patients symptoms and problems and the treatment in which the therapist participates on each occasion, in most cases advice about behaviour between sessions is given.

However, despite these differences the doctor/patient situation is the one that is most analagous to that of therapist/ patient interaction that has been the subject of investigation. There are important similarities in that both take place in a hospital setting, the fact that the receiver of the communication is a patient seeking treatment, that in most medical regimens the patient is required to carry out some instructions given by the doctor often in the form of medication, though other behavioural requirements may also be part of the treatment recommended by the doctor.

Any dyadic interaction can have both verbal and non-verbal components, the verbal components being either written or spoken, non-verbal communication can be at the conscious or unconscious level. At the conscious level, gestures and general body positioning are usually conscious but the communicator may be unaware of other things such as facial expression and body orientation. Though the main interest here is in the communicator the therapist, and the effectiveness of the communication for the receiver, the patient, communication is a two-way process with the receiver being effected by both the message and the communicator and in turn influencing the communicator.

Non-verbal communication

Argyle (1975) includes gestures, head and other body movements, posture, facial expression, direction of gaze, proximity and spatial position, bodily contact, orientation, tones of voice and other non-verbal aspects of speech under the heading of non-verbal communication. Studies of doctor/patient communication have tended to concentrate on verbal communication but it is clear that the importance of non-verbal communication is recognised in the interaction between doctors and patients. Byrne and Long (1976) discuss body positioning orientation, and direction of gaze in their studies of general practitioners, and in educational programmes for medical students consideration is given to body orientation, gaze, and eye contact - McQuire et al. (1977) - and seating position, vocal tone and other non-verbal cues - Poole et al. (1979). The reason for the lack of studies to investigate non-verbal communication in medical settings may reflect the difficulty of monitoring in a hospital setting, and also the considerable amount of time necessary to analyse this type of behaviour. Birdwhistell (1970) reported that it took two to three hours to analyse 2 minutes of non-verbal communication.

The importance of this type of communication may even be more influential in therapist/patient interaction than in that of the doctor and patient because of the nature of therapeutic sessions. During the period of treatment, therapy sessions may take place daily or two or three times a week over a period of weeks or months and there is ample opportunity for communication. Perry (1975) in one of the first reported studies of non-verbal communication in physical therapy examined such things as eye contact, gesture and touch.

Touch is the most basic and primitive form of communication, and its importance is stressed in dependence, affiliation and aggression by Argyle (1975). Developmentally it precedes language, the child learns to communicate by touching others, himself and other objects before he can speak. The amount and type of bodily contact between adults varies with age, sex and social conditions but body contact between adults tends to be seen as an invasion of privacy in most western societies though there are ethnic differences between different cultures; Watson (1972) was able to differentiate between contact and non-contact cultures, north Europeans being a non-contact group. It is however accepted that members of certain professional groups touch people in the course of their work - hairdressers, tailors, doctors and dentists are all expected to touch others, the bodily area being defined by their work.

Verbal communication

In the medical setting verbal communication has three main aspects obtaining information from the patient, informing them about their condition and giving advice or instructions about following a course of treatment. Reassurance may also be given to the patient and their requests for information may be answered. Patients have usually been told about their condition before being referred to physiotherapy but physiotherapy treatment very often involves giving instructions not only to be followed during the treatment session but behaviour to be carried out between treatment sessions. Research on doctor/patient communication has shown a number of factors associated with the communicator to be influential, positive affect on the part of the communicator being associated with both increased satisfaction and compliance on the part of the patient - Freemon et al. (1971). Earlier research by Hovland and Weiss (1952) demonstrated the influence of the credibility of the communicator on attitude change and when doctors talked more and facilitated a more active interchange a better outcome was achieved Korsch and Negrete (1972). Studies by Reynolds et al. (1981), Korsch et al. (1968), Cartwright (1964), and Ley (1977) all indicate that doctors often lack the necessary skills of communication. Few studies have investigated patient/therapist communication and communication per se does not at present form a part of basic training.

The present study

Communication between therapists and patients was monitored in Study II and it was clear that verbal interchanges formed a major component of all therapeutic sessions, the therapist often talking during every minute of patient/therapist contact time (see Table 10Appendix A p. 27. The content of the therapists' communications as identified by independent observers included teaching, giving instructions, reinforcement of patient behaviour, reassurance, feedback of information about patient performance and social interchanges, percentages of each varying both with different therapists and the same therapist with different patients. Some indication of differences between first, and later treatment sessions was found.

Attempts to monitor gaze and eye contact thought to be indicators of liking and disliking by Exline and Winters (1965) and Mehrabian (1969) were not successful. Touching of patients which was not part of specific treatment procedures identified by different observers varied with different therapists and appeared to be part of individual style; it remained relatively constant in each therapist observed when treating different patients. Observers found it possible to classify therapists in an overall warm-cold dimension (Asch, 1946) but there was not agreement between the different observers.

Perry (1975) proposed that non-verbal communication was used to facilitate a good therapeutic relationship but the basis for these assumptions is not clear from the report. While recognizing the importance of non-verbal communication between patients and therapists it was not possible within the broader framework of the study and with the restraints of time and equipment available to monitor it in the later studies of this series.

Therapists instructions to patients with physical disability, about their behaviour between treatment sessions forms an integral part of the treatment programme and therefore the extent of the patient's compliance with these instructions may have an influence on the process and outcome of therapy. These instructions may involve general advice about levels of activity and also more detailed instructions to perform specific movements and activities on a regular basis; it may also included advice about refraining from activities or avoiding postures.

COMPLIANCE

Research into patient compliance with medical and drug regimens has been extensive, Porter (1969) found that compliance could never be assumed and every patient was a potential defaulter. Blackwell (1973) in an extensive review found a constellation of factors associated with non-compliance with a medical regimen (listed in full in Appendix A p.28). To summarise, where the consequences of non-compliance were delayed and the condition was relatively mild, when the patients lived alone or were at either extreme of age or where unpleasant side effects occurred, non-compliance was more frequently found; whereas a good doctor/patient relationship and a physician who believed in the treatment he was prescribing had a beneficial effect on compliance.

Ways of monitoring compliance with drug taking have involved patient reports, counting the number of tablets left after a specific interval and examining this total against what should have remained had the full dosage been taken, and laboratory tests examining blood, urine or other body substances for residue of medication. There are sources of error in the first two methods, patients may be socially constrained to state greater compliance than has in fact occurred, in the second medication can be lost or deliberately thrown away, the third method can give more reliable indications of the extent of compliance. This method though is not appropriate for monitoring behavioural activities. Blackwell's (1973) conclusions in his overview of the topic were that the most important contribution to compliance is the understanding a patient has of his illness, the need for treatment and the likely consequences of both. Time spent explaining these issues should result in a sense of collaboration and an alliance between patient and doctor; the simplest regimen compatible with the patient's everday habits is desirable.

Other factors found to be associated with compliance include family discord, Elling (1960) psychological factors such as coping mechanisms Cobb (1954) and externalisation Hellmuth (1966).

Though understanding and recall of instructions do not ensure compliance, they are prerequisites. Ley and Spelman (1965) and Ley (1972b) found that diagnostic statements made by doctors were the material best remembered from interviews, instructions and advice were most likely to be forgotton - in the second study there was clear evidence of primacy effect in the recall of medical statements; with both volunteers and patients in an experimental study there was a relationship between rated importance of information and recall. Joyce et al. (1969) and Ley et al. (1972b) found that instructions were least well remembered of the information given, but stressing the importance of instructions could increase the memory of them by a factor of 45%.

Meaningfulness of the statements increased both memory and learning - Kintsch (1979)-and comprehensibility and specificity of statements also increased recall - Bradshaw et al. (1975), Ley (1973). The use of medical jargon and the failure to listen to the patients account of their condition was associated with patient dissatisfaction - Korsch et al. (1968). A fundamental problem in physiotherapy as in other clinical areas is encouraging patients to carry out instructions - Wagstaff (1982).

Discussion of results

In Study III and IV the extent of compliance with physiotherapy instructions of 62 patients was explored. In Study III 22 patients were asked whether they had been given advice and the extent to which they followed it, the majority of patients (20) said they had been given advice but only 5 reported that they had followed it frequently. In Study IV more specific information was obtained. In the first instance patients were asked if they had been given advice by the therapist, if they affirmed that they had, they were then asked to give details of the instructions, if they could recall instructions they were asked in a non-threatening way about the extent to which they had been able to follow them.

With this method of questioning it was found that only 8 out of the 40 patients (20%) were able to recall any detailed advice or instructions that they had been given about their behaviour between treatment sessions. Of these 8 patients 2 reported that they had followed instructions frequently, 4 said they did them sometimes and 2 reported only occasional performance of prescribed activities. The therapists in each case reported giving instructions to patients, and were observed to do so by the research worker. The therapists also reported that they felt performance of prescribed movements and activities was an extremely important part of the patients' management.

It was expected that patients would see it as socially desirable to report compliance with instructions and in Study III where specific information was not requested about instructions a higher percentage (40%) reported following the instructions. The method used in Study IV where recall of specific information was requested before patients were asked about the extent of compliance made results obtained more reliable and cut down the number of false positive results obtained, the non-threatening way in which questions about compliance were asked appeared to reduce the problem of patients feeling constrained to report compliance.

Though so few patients reported performing the prescribed movements did not mean they were not actively striving to facilitate their own recovery. Group II patients reporting this more frequently. Both groups spoke of striving to perform lost activities but Group II patients reported detailed programmes of activitity and other 'treatments' they had worked out for themselves or heard about from friends. These included putting on rubber gloves and immersing the hands in hot water, passive movements of the affected with the unaffected hand, massaging with oil, following a routine of 'yoga-type' exercises, setting a plan for themselves of tackling something new every day and consciously seeking household tasks that would use the affected hand, and using it for opening doors, wringing clothes and other tasks they found difficult. Though some of these activities may have been suggested by the therapists, patients reported them as their own ideas. The contrast between the enthusiasm for these self-generated ideas and that reported in following the therapists instructions was marked. White (1959) and De Charms (1968) have suggested that determining ones own behaviour is a powerful motivating force. All the patients were attending a class in Group II and instructions given to all patients may have lacked personal appeal. Involving each patient personally in a plan for their own performance for recovery might produce an improvement. Patients in Group I were in a less favourable position to initiate and carry out individual programmes, but many reported massaging and stroking the affected limbs and this they felt would be helpful. Most attempts to perform movements of activities were said to need the help of another and this was not usually available (see Appendix A, p.68).

The very poor overall rate of compliance needs some explanation and since behaviour between treatment sessions and practising movements is thought by therapists to be an essential part of physiotherapy management the extent of patient compliance with physiotherapy instructions is a matter of some importance and a potential source of influence on both the process and outcome of treatment. In Study III and IV all sessions were not monitored and recorded and therefore it is not possible to explain the extent of compliance or non-compliance in each case, however studies of compliance with medical regimens suggest some possible causes. It was clear from the very small number of patients (8) who could recall instructions that memory played a part, this may have been through the process of forgetting or because the instructions had not been clearly understood in the first place. Three patients said they could not remember what to do and felt that written instructions would be helpful.

The effect of primacy and recency may also have effected recall, what is said first and last is remembered best. Ley (1965) also found that in medical encounters patients remembered instructions less well than other information, on average only 43% of information about instructions was recalled. Another critical factor found by Ley (1980) was the amount of information given at any one time, a linear relationship was found between the number of statements made and the amount recalled. Comprehensibility and specificity were found to increase recall of medical advice, Bradshaw et al. (1975)

using simple words - as defined by a readability formula - and giving specific instructions rather than general rules, found that both increased recall. The accuracy with which doctors can predict non-compliance is not in general high, Caron and Roth (1968) found a zero correlation between physicians predictions and patients adherence to an antacid regimen. Therapists in the present study thought that in general patients followed their instructions and the level of compliance would be much higher than that reported by patients. They felt that they had given adequate instructions to all patients.

There is no reason to think that the therapists and patients in the present study were atypical and perhaps monitoring by an observer might have been expected to have an influence in the direction of greater carefulness in patient/therapist interaction. Therefore, the results of this study have important implications for practice. On the basis of the findings of the present study, that compliance with physiotherapy instructions is at a very low level, and taking into account the results of studies examining patient compliance with medical regimens the following suggestions are made.

Recommendations and suggestions for increasing patient compliance with physiotherapy instructions

1. Avoid giving too much information at any one time.
2. Check that information given is understood and remembered. This may have to be done on a number of occasions.
3. Explain the purpose of the instructions, their importance and the possible consequences of compliance and non-compliance for the patient.
4. Give most important instructions first.
5. Elderly patients may need to have explanations and instructions given in small amounts frequently repeated, checking how much has been understood and remembered.
6. Attention should be paid to patients daily routine so that required performance of movements or activities can be related to this.
7. Where effects of performance of movements are not directly related to activities the link should be fully explained.
8. Where possible involve members of the patient's family or friends in the patient's physiotherapy regimen.
9. Setting of short-term agreed achievable goals should encourage compliance.
10. A warm patient/therapist relationship encourages compliance.
11. Written material may help to supplement information given during the treatment session.
12. Clear simple language should be used throughout, jargon words should be avoided.

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Communication and Compliance

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EXPECTATIONS

There is considerable evidence to suggest that the expectations an individual holds about himself and about others can effect both his own behaviour and that of others with whom he interacts, the so-called self-fulfilling prophesy defined by Merton (1957), as 'a false definition of a situation evoking new behaviour which makes the original false conception come true'; and by Jones (1977) who omits the concept of falseness and gives a wider definition 'an expectation that leads to its own fulfillment'.

In a very wide range of circumstances the expectations held by groups of people such as teachers, hospital staff and experimenters have been demonstrated to have an effect on the performance of their pupils, patients and subjects. In Rosenthal and Jacobson's (1968) study where teachers were informed that a group of children, selected on a random basis, would improve intellectually over a specified period the group did in fact show more growth over that period. Though these results were challenged by Snow (1969) and Thorndike (1968) on a number of issues including the fact that the tests were not standardised for the age of the pupils, many other studies have demonstrated a similar effect, Rubovits and Maehr (1971), Chaikin et al. (1974), Beez (1968); Baker and Crist (1971) suggest that the question for the future is not whether there are expectancy effects but how they operate.

The expectancies of hospital staff appears to effect patients' progress, Loranger et al. (1961) reported that when the entire staff of a hospital were led to believe that a new tranquilliser - which was in fact an inert substance - had been introduced, staff reports indicated that some 70% of patients had been helped by the tranquilliser, reports may have reflected staff perceptions of patient improvement or actual improvement. Strupp and Luborsky (1962) proposed that therapists' expectations about prognosis might of itself be a determinant of that prognosis as did Shapiro (1964). Jones (1977) suggested that the results of psychodiagnostic testing indicate that the expectations of the examiner play a significant role in determining the outcome of testing and Beecher (1961) reported a higher success rate for physicians enthusiastic about the treatment they prescribed than those who were sceptical. Rosenthal (1966) reported the effects of experimenters on their subjects, in well controlled laboratory settings experimenters who expected subjects to respond in certain ways were more likely to obtain these responses than experimenters with no such prior expectations.

Implicit in studies which examine the effects of expectations on subjects, pupils or patients is that they are alert to cues about desirable behaviours given by experimenters, teachers or medical staff and Rosenberg (1965) termed this evaluation apprehension. In many situations the pupil, patient or subject is concerned to win positive evaluation, Minor (1970) demonstrated that subjects not concerned about their performance failed to respond to expectancy cues, those who were concerned did respond (p. 331).

Impression management - how one attempts to define the relationship between oneself and the other may have important consequences. When a person perceives that he or she is liked or respected, this may have different consequences from the situation when he or she perceives dislike; this being so however groundless initial perceptions may have been.

Another example of the extent of the influence of an individual's expectations is the so called placebo effect. A focus of considerable interest during the 1950s - Shapiro (1960) reporting more articles on the placebo in medical literature from 1954-1957 than in the whole of the first half of the twentieth century. Numerous studies report the effectiveness of placebos in relieving symptoms, Beecher et al. (1953) post-operative pain, Jellinck (1946) pain relief, and Fisher et al. (1964) psychiatric outpatients. Not only is relief of symptoms reported when patients receive an inert substance which they believe will help to relieve their symptoms but patients also report side effects from these placebos. Wolff (1954) reported major toxic reactions to a placebo; in some patients further physiological changes were found in patients who had received the placebo and no physiological changes were identified in the patients who had received the pharmacologically active substance. Pincus (1966) in a study of patients taking Enovid, a contraceptive pill, found that expecting side effects had an important influence in their occurrence, this in those who were receiving the active substance and those who received only the placebo. Beecher (1953) reported an overall placebo effectiveness of 35% in a number of studies, and claimed that the expectation of pain relief was a key variable in reducing pain.

How the expectations of others are communicated so that they can influence the performance is not completely understood. In a study by Chaikin et al. (1974) teachers were led to believe that pupils came into three groups, one bright, one slow and a third on which no information was given. The teachers were monitored while teaching the three groups and significant differences in their non-verbal behaviour were found. Wiener and Mehrabian (1968) reviewed several studies and found that vocal patterns used to communicate different feelings were reliably (though not perfectly) interpreted by the addressees though it is subtle and difficult to define the message that gets across. Rosenthal (1966) found these effects could still be obtained even when the subjects were unable to see the experimenter.

Individual success and failure in a specific situation has been related to the individuals' expectations about the probability of success or failure. The most important determinant of subjective probability of success on familiar tasks is ones own past experience on the task, in unfamiliar circumstances evidence suggests that individuals evaluate their chances of success by comparing themselves with others Jones (1977). Evidence also suggests that the value of the goal and the effort involved will influence the subjective probability of success Kelley (1971). Ryckman, Gold and Rodder (1971) found the subjective probability of success related to initial performance on an unfamiliar task. Zajonc and Brickman (1969) in a study of reaction time found feedback of information an important variable in altering performance, in general subjects tended to raise expectations for future performance after success and lower them after failure, but interestingly those in the failure group who resisted lowering expectations improved more than those who lowered their expectations.

Expectations of uncontrollability have been shown by Abramson et al. (1978) and others to be related to depression (see section on Emotion p 4.5) and changes in expectations of future success or failure are primarily influenced by ascription of causes for past success or failure on the dimension of stability Weiner et al. (1972). This is discussed further in the section on Attribution p. 8.1. Expectations and motivation are also linked see section on Motivation p.   .

Discussion of findings

The expectations of both patients and therapists were explored and seen as potentially influential to the process of recovery. In informal discussions in Study I and II both patients and therapists were reluctant to discuss their expectations but referred to them indirectly, patients spoke of having done 'better than I expected' or being disappointed because they had not done 'as well as expected', therapists talked about expecting certain patients to 'do well' and appeared to plan treatment programmes according to their expectations for each individual patient.

In Study III therapists were asked to state their expectations in terms of how well they expected the patient to progress rated from 'very well' through four points to 'not very well at all'. These statements were to some extent value laden for the therapists as admitting someone might not 'do well' perhaps implied that the therapist lacked the necessary skills - all but one patient was rated as either going to do 'well' or 'very well'. Patients were asked about the expectations they held about their recovery. Patients were very reluctant to state definite expectations for the future. They were obviously uncertain about the future and did not wish to commit themselves. This was particularly so for patients in Group II. In response to questions about expectations for the future, patients replied in very general terms about 'hoping for the best','hoping to be out of hospital in 4 weeks.' It was not possible to analyse this data in a meaningful way and different methods were used in Study IV.

In Study IV more specific information was requested and was different for Group I and II patients items, specific to the different types of condition were included.

Group I patients

Therapists and patients were asked about their expectations for the patients' recovery at the two time intervals of 6 weeks and 12 weeks. These being time periods at which these patients' progress would be monitored. Specific activities were listed and each was asked whether they would expect the patient to be performing the activity independently at 6 and 12 weeks. The patients who replied were on the whole more optimistic than the therapists but 9 patients still felt unable to indicate their expectations for the future. Therapists seemed to find this way of examining expectations less threatening and all completed the form. (See Appendix [illegible] IV).

Group II patients

Patients were asked about their expectations about their recovery at 2 and 4 weeks from their first appointment. Here again patients were on the whole more optimistic in their expectations than therapists. For 7 patients therapists expectations were not available this because of frequent staff changes, 3 patients felt unable to state their expectations because they said that 'this has never happened to me before so I can't say'.

The expectations of both patients and therapists were explored when they were first referred at the start of their course of treatment. From observation and from analysis of interview material it was clear that events during the process of recovery altered expectations. Perceptions about and evidence of a quicker progress raised the level of expectations, slower progress lowered it. Apart from objectively observed recovery the attitudes and comments of the staff also effected expectations. Mr. C. reported that he hadn't expected to do particularly well and could see little progress but on overhearing the doctor remarking 'this chap's going to do well' he raised his expectations and proceeded to make increased progress. Later he found that the remarks had been about another patient. Mr. S. remarked 'at first I thought I was going to do so well, I got better rapidly for the first few days, now there seems no change so maybe I won't get any better now'. Patients reported the following as affecting their expectations what staff said, what other patients did, what their relatives/friends told them, how they were feeling, and their perceptions of their progress to date.

It was clear from patient reports that expectations were not fixed, were effected by many more influences and fluctuated more than therapists expectations. Though there was some reluctance on the part of both patients and therapists to be explicit about their expectations at an early stage, it was clear that expectations were formed at an early stage, this evidenced by later reports, 'I'm very disappointed I'd thought I would be so much better'. 'Mrs S. has done so much better than I thought she would at first'.

Discussion of results

The number of responses to questions about expectations were not as high as might have been hoped, this may have reflected both the reluctance of therapists and patients to discuss their expectations, possibly for different reasons, and the form in which they were investigated. From the responses collected in Group I therapists had higher expectations than patients, but the reverse was true in Group II, this may have reflected the more complex nature of the patients' condition in Group I where therapists would have had considerable previous experience, therapists expectations were more often accurate in that patients achieved what they expected them to achieve, this objectively assessed, therapists expectations here may have of themselves been influential, the extent to which expectations were realised for Group I patients is given in Table 11 in Appendix A, p. 30 . Therapists overall expectations as to whether the patient would do well did not show any positive correlations with attainment scores in either group, that is therapists higher expectations for patients were not linked to patients who made more progress on measured physical indices than might have been expected taking other physical aspects into account, though for Group I patients measured change in Gross Body Movement Disability scores were related to therapist expectations. In Group II but not in Group I therapists expectations were highly significantly correlated .64 (.01 level of significance) with therapist satisfaction. Expecting a patient to do well and then being satisfied with the result may have reflected a global reaction to the patient seen as a 'good' patient.

When asked about the extent to which their expectations had been realised, patients in both groups reported in approximately similar proportions. 12 patients in Group I and 10 in Group II saw the result either as expected or better than expected, 13 patients fairly equally divided between groups saw themselves as worse than expected. There was no significant relationship between satisfaction, Attainment scores and expectations in either Group I or Group II.

Conclusions and recommendations

Though expectations have been shown to be influential in many situations their influence was not strongly demonstrated in the present study. This may have been because of the changing nature of expectations which were examined at set intervals.

Since expectations have been demonstrated in other studies to have such a marked effect in many different situations, therapists should be aware of the possible influence of their expectations for individual patients, this is of course related to goal setting, having goals that are too high and unrealistic for a patient may result in disappointment at failure and depression, but having too low an expectation with low goals may mean the patient does not achieve their potential.

In the interview material obtained from patients it was clear that therapists expectations were an important source of information to patients in setting their aspirations. 'She expects me to do it, so I do', 'I know she wouldn't ask me to do it if she thought I couldn't'. Patients reported being able to do more because they were expected to do more.

References

Expectations

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CONTROL

Control is an important concomitant of maturation and is generally valued by both the individual and by society. It is associated with developmental stages in the infant and child, purposeful movements start when the infant can control his limbs, and locomotion when balance is achieved. Control of bladder and bowel function marks a desirable step in development, and temper tantrums of the young child are usually controlled as the child grows older. In adult life being 'in control' is seen as desirable in most situations and 'losing control' considered reprehensible. Psychologists have been interested in the concept of control since the early 1950s and it has generated a large volume of research. Throop and McDonald (1971) reviewed 169 published and 170 unpublished articles on the topic, and Rotter (1975) an early theorist mentions with some surprise well over 600 different investigations and theses over the last 15 years, covering a very wide range of topics related to perceived locus of control. Early work demonstrated differences in performance in situations where either skill or chance was emphasised (Phares, 1957; Blackmen, 1962; Bortner, 1964; Cold, 1967 and Schneider, 1968). Where skill is emphasised individuals perceive that some control is possible whereas when chance is operating the individual is perceived as having little control. Two aspects of perceived locus of control have been proposed, the dispositional aspect where people believe either that events in their lives are controlled by chance, fate or powerful others, external control, or that they themselves can exert control over these events, internal control. This belief in internal or external control is thought to be influential in many aspects of life, and has been investigated experimentally in a number of situations where different effects were found for those who held 'internal' beliefs about control, from those who held 'external' beliefs, and reactions to frustration and achievement Butterfield (1964) authoritatianism and risk Baron (1968) interpersonal evaluation Jones and Schrauger (1968), Machiavellianism Miller and Minton (1969) and verbal fluency Brecher and Denmark (1969).

A problem of interpreting these and other studies is that the researchers have made assumptions about the distribution of perceived locus of control as a dispositional variable, not by the original theorists. Studies such as those of Hersch and Scheibe (1967), Julian and Katz (1967) and Biondo and MacDonald (1970) described their study populations in terms of 'internals' and 'externals'. However both Rotter (1975) and Phares (1976) state that they did not put forward the concept as having a bimodal distribution or as being a typology, rather as following a normal distribution within the population, therefore it is misleading to designate individuals as internals or externals without further explanation.

In the present study which was investigating recovery in patients with conditions involving physical disability control appeared to be an important aspect for them which had changed since the onset of their condition. Seventy five percent of the 95 patients in Study I and II spontaneously mentioned loss of control as an important result of the onset of their condition involving physical disability, though the extent of perceived control showed considerable individual variation. Measurement of beliefs about locus of control is discussed before experimental work is examined in relation to aspects of particular interest in the present study.

Measurement of locus of control

In a review of locus of control Throop and McDonald (1971) list 13 scales of measurement. The first instrument developed by Phares in 1955 consisted of 13 skill and 13 chance items presented in a Likert-type format. This was later revised by James in 1957. Several scales have been developed specifically for use with children (Bailer, 1961; Battle and Rotter, 1963; Cozali and Bialer, 1968; Nowicki and Strickland, 1973). Others by Dean (1961) on powerlessness and normlessness. The intellectual achievement responsibility questionnaire (Crandall et al., 1964) examined control more directly and Dies (1968) developed a projective measure of perceived locus of control. However the internal-external scale first produced by Rotter in 1966 is still the most widely used. (See Appendix B III)

This scale originally consisted of 60 items but was reduced to a 29-forced-choice scale which included six filler items. Rotter states that his test can be considered as a measure of generalised expectancy, the items dealing with beliefs about internal-external control and not about preferences, and the scale provides a measurement of the subject's beliefs about the nature of the world. The test data were obtained for the Rotter scale from a series of samples of university psychology students and a prison population. Internal consistency varied between .65 split half, .79 Spearman Brown and .70 Kuder Richardson. The scale is additive, the items sampling internal and external beliefs are not arranged in a difficulty hierarchy, but as samples of attitudes in a wide variety of different situations. Items are not comparable and consequently split half and matched half reliability tend to underestimate internal consistency. Test re-test for 1 month varied between .60 and .83 given under group conditions, and .49 and .61 at 2 months given individually. Rotter comments that with the relatively homogenous sample studied the test is limited in its ability to discriminate individuals and may be more suitable for the investigation of group differences than for individual prediction.

The situation specific aspect of locus of control is discussed by Phares (1976), he mentions the lack of research into locus of control in specific situations and stresses that the goal of the Rotter E-I scale is to predict across a number of situations and therefore its broadness is necessary. However, if a prediction of behaviour in one situation or a homogenous class of situations was desired then it would be advantageous to develop a scale of items essentially directed to that situation.

Though the Rotter (1966) scale is the most widely used in the general area of locus of control, others have been developed for more specific use. Wallston et al. (1976) produced a health locus of control (HLC) scale as 'an area specific measure of expectancies regarding locus of control for prediction of health related behaviour'. The scale consists of 11 items, five internal and six external which are presented using a 6-point Likert-type format, the subject being asked to express the extent of their agreement or disagreement with each item on a 6-point scale from strongly agree to strongly disagree.

Kasl and Cobb (1966) conceptualise health-related behaviour as behaviour related to prevention, termed health behaviour, behaviour once symptoms appear, termed illness behaviour and behaviour following diagnosis, termed sick role behaviour. Wallston (1978) comments on the lack of published research in illness behaviour and locus of control. Most of the published work using the HLC refers to preventive aspects of health care, smoking Platt and Eisenmann (1969); Steffy et al. (1970). birth control Harvey (1976); McDonald (1970), weight loss Manno and Marston (1972) and Balch and Ross (1975). These and other studies demonstrated differences in behaviour in those deemed to be internal (as measured by HLC scale) and those deemed to be external. The items are broadly related to health and illness for example 1) if I take care of myself I can avoid illness and 3) good health is largely a matter of good fortune, and does not relate to specific aspects of health, illness, or disability.

Anxiety

Hypotheses about the relationship between perceived locus of control and anxiety have been tested in a number of studies. Butterfield (1964) reported a significant relationship between locus of control and scores on the Alpert Haber achievement anxiety test (AAT, 1960), Watson (1967) examined the relationship between manifest anxiety (MA) Taylors Manifest Anxiety (1953) and the AAT and found significant relationships between the MA, Locus of Control, and AAT subscales. These studies and those of Mandler and Watson (1966) and Ray and Katahn (1968) all support the proposition that anxiety scales and the locus of control scale are measuring conceptually different variables which correlate with each other, and that this correlation is not due to a hidden factor within the locus of control instrument.

Studies by Mandler and Watson (1966) and Watson (1967) support the hypothesis that actual or appraised lack of control, that is high external locus of control, produces anxiety. The authors maintained that if the organism had some control over a potentially stressful situation or expects to have such control there is likely to be less anxiety and this hypothesis was supported. Nelson and Phares (1971) discusses the importance of considering internal-external control within a social learning view of anxiety, and not just anxiety scales as such, he hypothesised that a relationship should exist between EI scores, anxiety and discrepancy between need for academic recognition and expectations for satisfaction of this need, and in general the findings of the study supported this relationship.

Perception of disability

In studies which examined the perceptions of others to the disabled Lipp et al. (1968) and McDonald and Hall (1971) a significant correlation between locus of control and ratings of the seriousness of emotional disorders was found; emotional disorders being seen as more seriously debilitating by subjects who perceived that they had more internal control. However subjects who perceived that control was more external rated physical disabilities as more disabling, these studies did not examine either locus of control or perceptions of disability of those who were themselves disabled.

Learned helplessness

Learned helplessness has been defined by Seligman (1975) as a psychological state that frequently results when events are uncontrollable. A large body of experimental work with both animals and man has demonstrated that when an organism is subjected to an uncontrollable aversive stimulus on a number of occasions he learns that the aversive stimulus occurs independently of his own responding and ceases to try to escape. A classical animal experiment (Seligman, 1975) consists of dogs being strapped into a hammock and given moderately painful inescapable electric shocks; no voluntary response by the animal alters or diminishes the shock. Subsequently these dogs are placed in a shuttle box in one chamber the animal receives a shock but can escape by leaping a barrier. Naive animals who have not been subjected to inescapable shock try to escape and quickly learn to avoid the shock by leaping the barrier. The animals who have received the inescapable shock at first run round like the naive dogs but soon appear to give up and lie down, passively accepting the shocks. They appear to have learned that their efforts produce few results.

Hiroto (1974) subjected psychology students to aversive noise under conditions of uncontrollability, these students responded differently in subsequent situations involving aversive noise, from those students who had not had previous experience of uncontrollability, the former reacted passively and seemed to have learned helplessness in a similar way to animals with experience of uncontrollability.

In order to establish that the helpless behaviour is a result of uncontrollability and not the result of receiving physical trauma, Seligman and Beagley (1975) and Maier (1970) introduced a triadic design. Using three groups of subjects, the first received pre-treatment where control of an aversive outcome was possible - the second were yoked to the first group and so received the same aversive outcomes but had no control, the third group received no pre-treatment. Twenty-four hours after the pre-treatment the three groups received escape avoidance training in a shuttlebox. The first and third group quickly learned to escape but the yoked group failed to learn to escape and remained passively accepting the shocks, indicating that previous uncontrollability was the key factor in producing passivity.

The conclusion from these studies is that experience of uncontrollability produces deterioration in the readiness of animals and man to respond adaptively to trauma (Seligman, 1975). Seligman found that uncontrollable reward as well as uncontrollable aversive stimuli can effect future responding. Rats who received food without responding, were later much slower to learn instrumental responses to obtain food, the more food they received in pre-training without responding the more later learning was disrupted.

Glass and Singer (1972) found that not only actual control but a belief in control reduced the deficit produced by uncontrollability. Belief in controllability but actual uncontrollability, and actual controllability can produce the same expectations, and it is the expectations that are important in determining the acquisition of learned helplessness. The links between learned helplessness, motivation, learning, locus of control and depression are discussed in more detail.

Emotion

Helplessness produces emotional disturbances in studies examining learned helplessness. Heightened emotional arousal occured when the traumatic aversive event first occured, this Seligman (1975) described as fear, but this decreases with time and if uncontrollable aversive events continue depression results.

Seligman (1975) suggests that depression is a widely used diagnostic label which covers a family of symptoms, no single factor identifying all types of depression. However, listing the six symptoms of learned helplessness he draws parallels to each in clinical models of depression. These common symptoms are, lowered initiation of voluntary responses, negative cognitive set, the time course where the effect of a single episode of uncontrollability dissipates with time, lowered aggression, and a loss of appetite for food, sex and social intercourse. Physiological correlates are also included, there is norepinephrine depletion in helpless rats, and helpless cats were found to be cholinergically over-active.

In line with a behaviourist approach to depression, Melges and Bowlby (1969) see helplessness as the core condition of depression with a loss of reinforcement causing extinction of responding.

Learning

Learning response outcome independence is the central issue in developing learned helplessness. When a response is explicitly rewarded or punished it is clear that the outcome is dependent on the response, when the outcome occurs regardless of the responses of the individual, and whether the outcome is reward or punishment the organism learns that outcomes are not dependent on his responding and will carry this learning into subsequent situations.

The cognitive disturbance brought about by the experience of uncontrollability is particularly disruptive in that having learnt response outcome independence, if a response does produce a favourable outcome perception of the response-reward link is lacking. Response outcome independence having been learnt actively interferes with learning that contradicts it.

In experimental situations learned helplessness interferes with problem solving and learning to escape physical trauma. Organisms without prior experience of uncontrollability soon learnt to escape from the aversive experience where escape was possible. Learning helplessness interfered with learning to escape.

Locus of Control

Cognitive uncontrollability distorts the perception of control. Hiroto (1974) suggests close links between locus of control and learned helplessness. Externality, that is believing that events are controlled by chance, fate or powerful others rather than being under personal control is similar to the state of learned helplessness, uncontrollability and a belief in a lack of personal control being similar. A negative cognitive set is produced by both externality and learned helplessness because of perceived independence between responding and outcome.

Miller and Seligman (1975) demonstrated the effect of negative cognitive set produced by uncontrollability. Students were divided into three pre-treatment groups, of escapable noise, inescapable noise and no noise. All groups were then given skill and chance tasks. Expectancy changes were reported following success or failure in the groups who had escapable noise or no noise pre-treatment, but the group who had experienced inescapable noise did not report any changes in expectancy.

Hiroto (1974) working with students who were divided on the basis of internality and externality of their scores on a locus of control scale, found that three independent factors produced helplessness in his students, the laboratory experience of uncontrollability, cognitive set induced by chance instructions and more external personality.

Though the bulk of experimental work on learned helplessness has been with animals other than man, the starting point for the research was work with patients with psychiatric problems who appeared to have lost all motivation to live their lives and had become passive and depressed.

Some patients following the onset of a condition involving physical impairment and disability strive constantly to attain mastery over their environment and to regain functions and skills lost or restricted through physical impairment, others appear to be passive and neither initiate responses themselves or respond to initiatives made by those trying to help them; these patients may have learned helplessness, many other patients are somewhere between these two extremes.

Patients suffering from a physical disability of recent onset will in most cases consider it to be an aversive event. In order to escape or minimise the effects of physical disability and restore lost abilities the individual must strive to regain lost movements and functions. If in the early stages his attempts to regain functions meet with no success he may learn that his own efforts have no part to play in his recovery, and that there is response independence between his own efforts and the regaining of control of his own movements and functions. Once helplessness is learned a negative cognitive set towards recovery is established. Any improvements which do occur will not be seen as connected in any way to the individual's efforts. Motivation to initiate responses towards self help will be sapped and this lack of motivation may spread to a number of tasks and situations.

It must be mentioned here that continual rewarding which is not in response to efforts on the part of the patient or to achievement of outcomes may also produce a similar effect of response independence. Heightened emotional arousal associated with learned helplessness, and depression which may ensue with time if response outcome independence is maintained, will further diminish efforts to achieve mastery. Even though physical impairment and the resulting disability are severe, some patients regain and maintain a high level of performance, these patients seem to perceive outcomes as dependent on their own responses.

The hypothesis proposed in this study is that patients who acquire learned helplessness will have poor motivation to initiate responses to restore lost movements and skills, will learn new tasks less quickly and will be more depressed, this will lead to less effective recovery for these patients. Since there are no generally accepted tests to measure learned helplessness, as a belief in external control implies a belief in response to independence. Tests of belief about locus of control will be used to assess uncontrollability.

The present study

The focal point for this study was the patient with physical disability and the aim was to identify factors closely related to the patient and his present situation which might explain observed differences in patterns of recovery.

In initial semi-structured interviews patients were invited to discuss their feelings about their condition and their present situation. Content analysis of this information revealed a number of aspects which were important to some of those interviewed. One of these was the question of control. A lack of control was spontaneously mentioned by over one-third of the patients as the most difficult aspect of the situation.

Rotter, Seeman and Liverant (1962) when defining the concept of locus of control, emphasise the element of personal control, and refer to 'the perception of positive and/or negative events as being the consequences of one's own action and thereby under personal control'(p. 499).

The hypothesis put forward in this study is that those patients who perceive that they have more control over their recovery will, other aspects being similar, make a quicker recovery and regain lost skills and functions more effectively than those patients who perceive that they lack personal control. If the patients holds the expectancy that the reinforcement, that is the regaining of lost skills, is contingent upon their own behaviour, this will affect their behaviour. To be suddenly deprived of the ability to perform a wide variety of daily activities, which had happened to both groups of patients in the study, can, in the majority of cases be considered to be an aversive or negative situation and the regaining of these lost activities a desired goal which would have a high value for most individuals.

The focus of the investigation is situation specific and therefore could not be generalised, however, as two groups of patients with different kinds of physical disability are being investigated, these situations could be said to represent a homogenous class of situations where patients have different kinds of physical disability.

Many research studies indicate the relationship between greater internal control and a number of different types of behaviour in different situations, persistence in instrumental activity Mischel et al. (1974), decreased anxiety about a painful shock Bowers (1968) reliance on one's own skills Julian and Katz (1968). In research on skill and chance situations when tasks are described as requiring skill, it implies that the outcomes are controllable and under these conditions subjects behave in a more adaptive and achieving way than when the task is described as being dependent on luck. Lefcourt (1972) also comments that more internal control is related to the incidence of effective goal striving behaviour, apathetic withdrawal behaviour when the subject perceives that other factors control the situation. It might be expected that goal striving and adaptive behaviour is more likely to result in quicker and more effective recovery of performance lost or limited through the onset of a physical condition.

This situation has not been examined before and the extent to which the patient believes he either has personal control over his recovery or lacks that personal control may have an important influence on that recovery. Reinforcement can be seen as regaining lost movements. If the patient's behaviour is goal-directed towards regaining lost skills and he is striving towards that goal, the achievement of any regaining of lost movement or skill will be perceived as reinforcement, the regaining of lost skills will be seen as contingent on his goal-directed behaviour.

Discussion of results

The highest possible score on the Locus of Control for Recovery (LOC) scale was 45. The overall range of scores obtained from the 40 patients was from 23-43 with a mean of 31.9. The scale was scored in the direction of internality, higher scores indicating a greater belief in personal control. Scores of patients in Group I were from a minimum of 23 to a maximum of 43 with a mean of 33.0 and a standard deviation of 6.1. Patients in Group II scored from 23-38 with a mean of 30.8 and a standard deviation of 5.6.

In Group I patients

A higher LOC score was correlated with higher personal care scores at the .05 level of significance and with the Attainment Gross Body Movement Disability score. The negative correlation between mood state and LOC score just failed to reach significance -.35. There was also a positive correlation .4 at the .05 level of significance between the total number of treatments and the LOC scores. Those who attributed the result achieved to their own efforts also had higher LOC scores .47 (.05). The factor Vigor in the POMS correlated positively with LOC scale .39 at .05 level of significance, see Table 12 Appendix A, p. 31.

Group II patients

For these patients a higher LOC score was negatively correlated -.4 at the .05 level of significance with total number of attendances and with number of weeks on treatment -.4 (.05). A higher score on the LOC scale was also correlated negatively -.39 (.05) with reported restriction of activities.

Attainment scores on two measurements of wrist movement, flexion/pronation and extension/supination positively correlated at the .05 level of significance with LOC scores. A strong belief in personal control, a high LOC score also correlated positively with the extent to which the individual attributed their recovery to their own efforts.

Conclusions and recommendations

The results of using the LOC scale showed a similarity between the two groups of patients with a slightly higher mean and standard deviation for Group I patients. There were significant correlations between the scores obtained on the LOC scale and a number of measures of recovery. In Group I, patients with higher LOC scores were more independent in personal care tasks regardless of their level of disability and they also attained a higher level of performance that might have been expected given their initial status on the Gross Body Movement Disability score. The relationship to mood was positive to the positive factor of Vigor and negative to that of Total Mood Disturbance. For patients in this group greater belief in personal control over recovery was related to aspects indicating a more effective recovery.

For Group II patients this was also the case. A higher LOC score was negatively related to restriction of activities and positively correlated to two Attainment scores of wrist measurements. Both the total number of attendances and the number of weeks on treatment were less for those with a belief in greater personal control. / Because these patients were only attending as out patients they may have felt that they could do more for their recovery at home and therefore discontinued treatment sooner - they may also have made more progress and been discharged sooner. The Group I patients on the other hand were in hospital and perhaps attempted to control their recovery by demanding - and getting - more treatment. Staying in the ward, the alternative to attending for treatment was viewed negatively by most patients. Because it was belief in situation specific control that was investigated rather than trait or dispositional beliefs it should be possible to influence these beliefs. Control is related to a number of other aspects that are important in recovery and has demonstrated to be so in the literature, the data from this study also suggests that it can be influential in the process of recovery, a higher belief in personal control facilitating the process of recovery, as measured by a number of different indices.

Therapists can themselves be a source of influence on the beliefs of the patient about personal control. Traditionally it has been seen as important for the patient to believe that the professional person treating them has the skill to influence their recovery, and the ability to inspire confidence is an important asset. However, it is also important that the patient sees their recovery as contingent upon their own efforts. If efforts are to be sustained, the achieving of both short term and long term goals will be facilitated if the patient can be encouraged to see the achieving of goals as contingent upon their own efforts. Feelings of helplessness and depression can arise from the situation where results are not seen as related to effort. Belief in control can also be seen as an important factor in motivation, there is little motivation to make an effort towards regaining lost movements and skills unless there is a belief that these efforts will in fact lead to a reduction of the limitations imposed by the condition. Some patients who have a strong belief in their own control following the onset of a condition involving physical disability should be encouraged in this belief,those who appear to perceive other factors as more important should be encouraged to see that they can control aspects of their recovery. This can be done most effectively by demonstration, where the patients' effortis required to achieve a certain goal the relationship between effort and result should be emphasised, where patients have severe restriction of movement and activities tasks may have to be fragmented so that small gains can be perceived. An important task of the therapist in rewarding and reinforcing progress is to emphasise the contribution of the efforts of the patient rather than his or her own skill. Patients clearly found it difficult to perceive recovery in many instances especially in the early stages. The demands of the present study meant that objective measurements and recording devices were used to monitor progress, these methods which provided a visual record were welcomed by patients as evidence of progress where this had occurred. Charts and records which the patient can see would help to re-inforce the perception of a relationship between effort and results.

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ATTRIBUTION

Attribution theory arose from the work of person perception theorists with attention being directed towards peoples' ascriptions of causes. The rationale was Heider's (1958) that the major task of the perceiver was to find the underlying causes of events. Attribution psychologists investigated how people search for causes of social behaviour, this emphasis somewhat similar to that of Kelly's (1955) view of man as a scientist seeking to understand his world. Heider differentiated explanations of causality of events into personal and environmental.

More recent attribution theory has a number of complementary but not formally linked principles Kelley's (1967) that 'an attribution is arrived at by a search, not necessarily conscious, for the cause most closely associated historically with the event'. Jones and Nisbett's (1972) proposes that people use information about choices and consequences to arrive at a decision about personal dispositions. The differences noted between actors and observers explanations being due to direction of attention and informational differences. They also propose that motivational reasons can account for actor observer differences. Bern (1967) maintained that if the actor cannot rely on private information in explaining what is happening, he uses what can be seen and heard as an observer would. Other attribution work has been concerned with how people reach a decision about what causes their own and other peoples behaviour , Ross (1977) and the accuracy of perception and reasons for inaccuracy Monson and Snyder (1977). Attribution theory is about cognitive processes, beliefs and motivation, attributional theory is concerned with the consequences of different attributions, and the behaviour that is associated with them.

Weiner's (1979) attributional theory proposed that a person's motivation to do something is a function of how well he has done the same thing in the past or to what he attributes his success or lack of it, three essential components here are stability, effort and luck. Abramson et al.'s (1978) attributional reformulations of learned helplessness is similar to that of Weiner in relation to clinical syndromesof depression. The record of success or failure on some particular task is such that no relationship is perceived between efforts and rewards, in this case there is a risk that feeling too helpless to do anything about it can result in clinical depression.

The internal external issue is a central theme in attribution theories, Kelley (1967) where dispositional entities could be either internal or external both being causal agents, Jones and Davis (1965) where the concept of internal cause specifically relates to intention and disposition and Jones and Nisbett (1972) where external causes were situational requirements and internal attributions stable personality dispositions. These internal and external concepts are challenged because methodologically it is difficult to find ways of measuring the two sorts of attribution unambiguously; the distinction can be misleading without enough consideration for the complexities of ordinary explanations.

At a personal level attributional processes are central to the individuals construction of personal reality - to a large extent the structure and meaning of the events experienced by an individual derive from attributional analyses that are often subtle and complex Harvey et al. (1978). Attribution theorists are concerned with phenomenological causality, the prediction of behaviour being based on subjective meaning of causes for the individual.

The aspects investigated most frequently in attribution research are ability, effort, and mood as internal properties relating to the individual, task difficulty and luck as external and environmental. A second dimension of causality is that of stability - instability, ability and task difficulty as stable, effort, luck and mood unstable Weiner et al. (1971).

Success and failure

That causal attribution influences the expectancy of success and failure is supported by many authors including Weiner (1976). Though ability may be seen as stable effort is not and the concept of effort has strong moral overtones, Lanzetta and Hannah (1969) found that an attribution of failure due to insufficient effort maximised the amount of punishment administered in a laboratory situation. Weiner and Kukla (1970) found that students demonstrating low ability but high effort received most reward from their teachers those with high ability but low effort being least rewarded. A number of other studies Kaplan and Swart (1973), Weiner and Heckhauser (1972), Weiner and Peter (1973) of pupils in school, demonstrated that effort was of greater importance than ability in determining rewards and punishments; high effort was more rewarded than high ability, low effort punished more than low ability. As far as the individual is concerned success attributed to lost ability or hard work produces more pride than success that is perceived as due to ease of task or good luck. Failure perceived as caused by low ability or lack of effort results in greater shame. Weiner (1976) and Feather (1967) found that self reports of the attractiveness of success and the repugnance of failure was greater in skill related (internal) tasks, than in chance (external) related tasks.

There may be a number of reasons for the discrepancy between attributions for ability and effort, not only the fact that effort elicits strong moral feelings as mentioned earlier but rewarding and punishing behaviour may be seen as instrumental to changing behaviour. Effort is believed to be subject to volitional control, ability as non-volitional, relatively stable and insensitive to external control attempts.

In the studies reported effort rather than ability seems to be the main determinant of evaluation. Incentive values of success, involving pride and failure involving shame, are inversely related to the perceived probability of success and failure at a task. Another variable influencing ability and effort is suggested by Nicholls (1976), if tasks are related to long-term goals ability is valued more than effort as a determinant of success conversely if performance at a task has no long term consequences effort is more esteemed than ability as a cause of success.

Expectations

Numerous investigations have demonstrated that both expectancy and affect influence a variety of behaviours. Weiner and Sierand (1975) found that attributions modify both expectancy and affect, and that expected results tended to be attributed to ability, unexpected results to luck. Freize and Weiner (1971) also report the same finding, the more different a performance was from previous performances the greater the tendency of the actor to use unstable factors to explain performance. Stability of attributions are also linked to expectations by Ajzen and Fishbein (1975). The stability of attributions are seen as a function of the absolute difference between the perceiver's expectations and actual performance and dependent on the degree to which initial expectations are confirmed. Initial expectations and actual performance of a task form the basis for predictions of future performance, Valle and Frieze (1976) propose that it is the value given to each of these factors that depend on attributions about the cause of the type of performance.

Emotion

Attribution and intensity of affect have been linked in a number of studies. Weiner, Russell and Lerman (1978) found that internal causal attributions, tended to magnify affective reactions, whereas emotional responses were minimised given external causal ascriptions. Weiner (1976) supported the point of view that locus of causality influenced the affective consequences of achievement outcomes while Storms and McCaul (1976) found that internal ascriptions for aberrant behaviours magnify anxiety.

Depression has been linked to internal ascriptions for failure, Seligman (1975) found helplessness and depression appeared when attributions for failure were attributed internally. Work by Tennen and Ellen (1977) supported this finding that subjects making internal ascriptions for failure exhibited learned helplessness. Weiner (1976) suggests that anger and frustration may be intensified by external attributions.

Discussion of results

It was apparent from interview material that patients searched for causes not only for progress or lack of progress during recovery but also for the onset of their condition. The majority in Group I could find no particular cause for their condition, a small number blamed themselves, thought they had been doing too much, another small group felt that it was a punishment visited on them because of something wicked (unidentified) that they had done. One woman said she had led a blameless life but her grandfather was a wicked man and her stroke was probably caused by his behaviour. Another patient had her stroke while under the anaesthetic for an operation which had been delayed through administrative mismanagement, she blamed the hospital for her stroke. Patients in Group II showed a different pattern mostly blaming their own carelessness either totally or partially for their fall and subsequent fracture, over half had fallen during icy weather and this was considered a contributory factor.

Effort was seen by both groups as value laden and all patients told of how hard they were trying. Therapists rewarded patients for trying hard though some patients were said to be making little progress because 'they tried too hard'.

It was clear from patients'reports and from observation that activity was only encouraged in the departments of physiotherapy and occupational therapy. All patients reported that they were asked to stay sitting on the ward, nurses were afraid they would injure themselves, most were not allowed to move about on their own at all particularly in the early stages and nursing staff were so busy they were not generally available to help with walking.

Reasons for lack of progress were said in Group I patients to be not enough treatment, this including lack of daily treatment, the short time spent in the department and the short time actually spent by the therapist with the patient while they were in the department. The long hours spent on the ward doing nothing were thought to be detrimental. For Group II patients, reasons given were a bad fracture, not properly set, and taken out of plaster too soon. It was interesting to note that for the six patients who felt their fracture had not been properly set checks with medical notes showed that for each of these patients there had been problems with reducing and fixing the fracture.

Reasons given for making good progress in Group I patients included, my own efforts often linked in some way to treatment, the treatment itself, coming down to the department, luck, being lucky because it wasn't so severe and therefore progress was easier. Group II patients also spoke frequently of their own efforts, coming to the class was also mentioned.

Scores on the LOC recovery scale for patients in both groups were significantly correlated with attribution of recovery mainly due to self, that is those who saw themselves as having more personal control over recovery, attributed progress in recovery to their own efforts, .47 (.05) Group I .50 (.05) Group II, see Table 13 Appendix A, p. 32 .

For patients in Group II patient satisfaction with the outcome of treatment was positively correlated with attribution of recovery to self .5 (.05), those patients who saw their own efforts as most influential being most satisfied with the outcome. There was a positive correlation between change in personal care scores and attribution of recovery as due to self (.05 level of significance) in Group II patients. Personal care was an aspect of importance to all the patients, being more successful achieving more change in this aspect would be readily recognised by the patient, perceived success here being attributed to self, this supporting the theoretical position of internal ascriptions for success external ones for failure. In Group I patients but not in Group II progress in personal care showed a negative correlation with attribution of recovery to treatment, an external attribution. In Group I patients a significant negative correlation was found between a number of mood factors and attribution of recovery to treatment, correlations at .05 level of significance for Tension, .43; Anger, .39; Depression, .05; and TMD, .45, these results appear to support to work of Weiner (1978) that emotional responses were minimised given external causal ascriptions.

Attributions about the causes for success and failure in recovery from conditions involving physical disability can have an important influence on future behaviour. Failure seen as due to lack of effort can be remedied by making more effort, failure seen as due to lack of ability may cause the patient to discontinue their efforts. Attributions are clearly linked to control, if an individual feels they have no control over their recovery, then they are unlikely to attribute any success to their own efforts, this being the case there is a danger of a state of learned helplessness and depression developing. Helping the patient to believe that they have some personal control over their own recovery will encourage success to be attributed to self, this stimulating further effort.

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PERSONAL CONSTRUCTS

George Kelly (1955) developed personal construct theory based on the philosophical position of constructive alternativism, man as a scientist, trying to make sense of the events in his life. Within the theory human behaviour is considered as basically anticipatory rather than reactive, new avenues opening up as man reconstrues the course of events surrounding him. The fundamental postulate is that a person's processes are psychologically channelised by the ways in which he anticipates events Kelly (1955).

Personal constructs are central to the theory Bannister and Fransella (1977) suggest they might in other psychological approaches be referred to as personality, attitudes, psychodynamics, concepts, philosophy. Kelly himself (1969) defined them as follows:

> 'A construct is like a reference axis, a basic dimension of appraisal often unverbalised frequently unsymbolised and occasionally unsignified in any manner except by the elemental processes it governs. Behaviourally it can be regarded as an open channel of movement and the system of constructs provides each man with his own personal network of action pathways, serving both to limit his movements and to open up to him passages of freedom which otherwise would be psychologically non-existent.'

The theory evolved through Kelly's work as a psychotherapist to examine another's system of personal constructs, repertory grids can be considered as a particular form of structured interview, a formalisation of the process of exploring another's construct system which assigns mathematical values to relationships Bannister and Fransella (1977). A number of different types of repertory grids have been developed but all contain both constructs and elements. The essential notion of constructs is that they are bipolar, Kelly maintained that we never affirm anything without simultaneously denying something else; we make sense of our world by noting likenesses and differences. Constructs which are used as a basis for a grid should usually be elicited from the individual to make sure that it is within his 'range of convenience' unless this is adhered to a distorted picture of an individuals construct system will be obtained. If constructs are provided rather than elicited it is essential to check that they are within the person's range of convenience i.e. that they make sense to him with reference to the particular area of the grid.

A grid is a method of obtaining information about an individual's personal construct system and was used as such in the present study, to try to understand each individual's important constructs about changes in his view of himself and his life since the onset of the condition involving physical disability. After trials experimenting with the use of different types of grid the rating grid was found to be most suitable for the present purpose.

In Study III both constructs and elements were elicited from the patients. Constructs were the limitations imposed by the patients condition, elements were the individual's emotional reaction to the restrictions. Patients rated each element on each construct (see sample grid in Appendix A p.   ). For example the construct being unable to get to the lavatory was rated according to the extent it made the patient feel frustrated. Each element being rated in relation to each construct.

This provided an excellent way of examining and monitoring the individuals personal constructs about his condition but because constructs and elements were elicited individually they did not provide any method for comparison between patients.

In order to study both changes within each individuals' constructs and a comparison between individual changes within the study population it was necessary to have similar provided constructs. To ensure that these provided constructs were within the range of convenience of the study population constructs were elicited from similar groups of patients (30 from Group I 25 from Group II) 10 were found to be common to both groups and these provided the bipolar constructs for the rating grid.

Dr. Don Bannister (personal communication) felt this would be an acceptable method of investigating both individual and group constructs about the onset of the condition. Constructs such as healthy-sick, active-inactive (see Appendix B IV for full list) were placed at either end of a six point rating scale. A six point scale was chosen to emphasise the bipolar nature of constructs proposed by Kelly and to force a choice towards one pole or the other. The rating grid with the items was completed by each patient four times.

Self was used as the element for the grids, on the first occasion the patient was asked to examine the constructs to see if they were within his range of convenience. If so, he was asked to retrospectively rate himself on the given constructs using a card sort method as he saw himself before the onset of his condition. Following that he was given another set of cards with the same constructs and asked to rate how he saw himself at present. The 'present' rating was carried out on a further two occasions.

The changes between the first and second grids was to be used to demonstrate the patients' construction of himself as changed through the onset of his condition and further grids at specified periods would denote any changes that occurred during the recovery period.

Though complex analyses can be performed on completed repertory grids it is important to keep in mind the overall purpose in constructing and examining the grids, therefore though many methods are available, see Slater (1977) on dimensions of interpersonal space, only those which were thought to contribute to the aims of the present study were undertaken.

Discussion of results

Using the PAI programme of the Statistical Package for the Social Sciences (SPSS) with the ratings obtained from the patients on the 10 contructs, high communality was demonstrated between the constructs. Analysis of the rating as 'I see myself' on referral indicated that the first variable, the rating of Active - Inactive accounted for 59.3 per cent of the variance and by using principal factor analysis with iterations, 90.7 per cent of the variance would be accounted for by Factor 1, 9.3 per cent by Factor 2. This indicates that the 10 constructs that together made up the rating grid were highly intercorrelated. Correlations between individual constructs and other variables such as POMS factor Depression with rating Worried, POMS factor Vigor with rating Active indicated that the constructs were consistent with other measures used to investigate ways in which the individuals viewed themselves. The correlations between the personal constructs and other factors are given in Table 14 Appendix A, p. 33 . For Group I patients, seeing oneself as more healthy and active following the onset of the condition involving physical disability was positively correlated with the

POMS factor Vigor (see section 11, p. 30 for details of Profile of Mood States) and patient satisfaction at the conclusion of treatment, at .05 level of significance, and negatively correlated with number of attendances (.05 significance level). Depression was negatively correlated with perceptions of activity, and being more healthy with recovery due to self. These constructs related to the patients perceptions of themselves as active or healthy and may have reflected an overall optimism about self.

For Group II patients, the correlations between the constructs Active and Healthy were positively correlated at the .01 level of significance to the POMS factor Vigor. Activity was negatively correlated to reports of constant pain and the construct Healthy showed negative correlations significant at .05 level with POMS factors Tension, Fatigue and Depression. The concepts of health and activity are closely linked in Herzlich's study (discussed in Section 2, p. 2) and this link was demonstrated in the present study, those who saw themselves as less active, also saw themselves as less healthy. For patients in both Group I and Group II, the construct Worried was correlated with Depression (.05 level) as well as for other POMS factors Tension, Anger and Fatigue for Group II patients. See Table 14Appendix A, p. 33. .

Reports of pain were positively correlated with the construct Frustration and negatively correlated with Control both at .05 level of significance. Those who reported more pain also reported more frustration. The negative correlation between pain reports and the construct Control may have reflected the fact that those who perceived more control, perceived less pain, or that because less pain was experienced, more control was perceived.

Control was positively correlated with factor Vigor in Group I patients .61 (.01 level of significance) and negatively correlated with Depression in Group II patients -.65 (.001 level of significance). The extent of Control for the two groups was to some extent essentially different as all Group I patients were resident in the hospital as in-patients, whereas all Group II attended as out-patients, some lack of control is an inherent part of admission to hospital, though perception of the extent of loss of control clearly differed.

Boredom appeared to be an important aspect for both groups of patients though more so for those in Group I, it was correlated with different POMS factors for Group I negatively correlated with Vigor for Group II, positively correlated with Depression. Seeing oneself as less strong was correlated with pain reports for Group II patients and with factor Anger for Group I patients, also positively correlated to factor Vigor.

Recommendations

It was evident from the investigations of the perceptions of patients and therapists about the patients problems that there were considerable differences, therapists often being unaware of the patients feelings about and perceptions of their condition and the main problems for them,a simple way for the therapist to investigate the patients' personal constructs about their problem which would help in understanding individual responses would be the use of rating grids. It is clear that factors other than objective severity can be influential in the process of recovery and it is important therefore to obtain an understanding of these factors, the use of the rating grids could be a particularly important tool to use when a patient appears to be making no progress, a knowledge of his personal constructs would help the therapist to structure a treatment programme taking into account the individual response of the patient to his condition. It would also be helpful in arriving at agreed goals of treatment unless the therapist can identify and agree short term goals with the patient treatment programmes are likely to be less effective.

Patients found the rating grids simple to complete and the rating scale had a meaning for them, most felt quite definite as to which end of each construct they wanted to place themselves, and saw movement in the grid as reflection of real change. Rating grids were developed for use by Kelly (1955) for use with patients attending for different forms of psychotherapy to investigate the ways in which the patient viewed his world, psychotherapy is usually concerned with behaviour which is in some way distressing or disturbing to the patient or others who live with him, physiotherapists are concerned with abnormal physical performance or behaviour which is the result of disease or trauma, there are marked similarities.

If the therapist is attempting to help the patient to deal with their symptoms, and the problems in their lives arising from these symptoms in a more effective way, any intervention should not only deal with the symptoms themselves, the muscle weakness, or the altered muscle tone but also aim to facilitate more effective functioning by helping the patient to accommodate to their symptoms, and this is particularly the case where impairment is irreversible. In order to do this therapists must be aware of the patients' perceptions of their condition and the problems it poses for them, rating grids provide a way of understanding an individuals personal constructs about different aspects of their lives.

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MOTIVATION

Motives are regarded as the basic causes and determinants of behaviour, as internal forces that arouse, regulate and sustain important actions (Vernon, 1972). Motivated behaviour ranges on a continuum from impulsive behaviour resulting from a sudden urge seeking satisfaction, through an intermediate range of behaviour to goal attainment where actions are consistently directed towards a specific goal sometimes over a prolonged period of time.

Motivation is an internal experience and cannot be studied directly, its existence and nature are inferred from observation, and experience; underlying motives for behaviour are often difficult to define and classify. Work on animal motivation has been considerably more extensive than that on human motivation, this possibly reflects the complexity of the concept in human beings and the difficulty of obtaining the controlled conditions necessary for investigation in human subjects.

In animal subjects motivation has been studied at the level of basic drives, motivated behaviour here is said to arise to satisfy basic biological needs such as hunger, thirst or sex. Tinbergen (1951) and other ethologists have provided detailed information about instinctive behaviour in animals, 'action specific' energy related to specific unsatisfied physiological needs. Human behaviour in circumstances of deprivation may be influenced by basic physiological needs but also by a large range of other needs. Murray (1938) introduced the concept of psychogenic needs and differentiated them from biological and homeostatic needs.

This comprehensive list of psychogenic needs given under six headings (for full list see Appendix A p. 36) was originally derived through observations both in daily life and in clinical settings and includes such things as ambition and achievement, defence of status and avoidance of humiliation, affiliation, and acquisition of knowledge. Maslow (1954) stressed that needs are not necessarily conscious and may give rise to behaviour that is not obviously linked to a particular need.

Any behaviour may be influenced by a number of different motives; the following appeared to be potentially relevant during the recovery period from a condition involving physical disability and are discussed in more detail.

Achievement motivation

This may be associated with a variety of goals and is defined by McClelland (1965) as activity directed towards attainment of some standard of excellence. Individuals are thought to differ in the extent to which they see achievement as important and by thematic apperception tests, individuals can be rated on the strength of their achievement motivation. Those designated as high achievers demonstrate certain characteristics, and have a stro and persistent desire for achievement, particularly of long term goals, in a wide variety of situations. Kagan and Moss (1962) found that those high in achievement motivation generally wished to achieve through their own independent actions and attached more importance to excellence than to prestige, they also preferred a challenge and being able to use personal initiative, being prepared to postpone immediate reward for an ultimately greater one. An unwillingness to respond to social pressures to excel was found by Shrable and Stewart (1967) with a highly individualist approach to difficult tasks. Vernon (1969) suggested that independence and achievement are closely related, achievement per se is not so important as achieving through one's own independent actions. Achievement motivation may not be aroused in every situation only those which the individual perceives as important or one where personal excellence is challenged. Greater persistence in test situations on achievement related tasks was found among a high achievement group by Atkinson and Litwin (1960).

In a laboratory situation fear of failure was less and hope of success higher in those with high achievement motivation, Heckhausen (1967) explained these findings by suggesting that motivation to achieve in these people was stronger than fear of failure. Approach and avoidance were conceived as motives by Atkinson and Litwin (1960) achievement motivation as a motive to approach success, test anxiety as a motive to avoid failure.

Affiliation

Atkinson and McClelland (1954) describe affiliation as concern with the establishment and maintainance of positive affectionate reactions with other persons and a desire to be liked and accepted. Affiliation includes a willingness to subordinate personal motivation to what is accepted by others. It is linked to social conformity, and people differ in the extent to which they are likely to subordinate their own wishes to those of others, the acquiescent individual is easily influenced and tends to give way to any form of social pressure and his behaviour will vary according to that of the people with whom he is in immediate contact. Some conformity is necessary for social order but excessive conformity may arise from a strong need for approval, the approval motive has been described by Crowne and Marlowe (1965) and investigated by the use of the 'social desirability questionnaire' (see Section 11 p. 36).

Level of aspiration

People frequently appear to set themselves some criterion of excellence a standard they hope to attain. The act of setting a level of aspiration can itself be motivating, encouraging the individual to try his best; knowledge of previous performance may be equally effective Helmstatter and Ellis (1952).

In a familiar situation levels of aspiration will be decided on the basis of past performance and the extent to which success or failure has been experienced in that particular situation. In a novel or unfamiliar situation, other aspects such as individual perceptions of the situation, new information and the expectations of others may be more influential.

Feedback of knowledge of results is generally accepted as having two functions; firstly, information about 'how I've done' and secondly motivational goal setting. Locke (1967) found that those with specified goals performed better at various experimental tasks in the laboratory than a 'do your best' group. With differing instructions and feedback of information there were continual fluctuations in performance. Feedback of information about performance must relate to the individual's goals or subgoals to provide effective motivation. French (1958) found that subjects identified as high on achievement or affiliation motivation only improved performance when feedback was appropriately achievement or affiliation oriented.

Control is also an important factor, and the extent to which an individual perceives the situation as one in which their own personal performance will be influential may change the level of aspiration, controllability is discussed fully in Section 7. It is clear that uncontrollability or a belief that the outcome of a situation is not contingent on personal behaviour or effort will have a profound effect on the level of aspiration, perceptions of controllability will tend to raise aspiration, perceptions of helplessness lower them. It is the expectation that responding will produce relief that provides the incentive to initiate voluntary responses and having learnt response outcome independence under conditions of uncontrollability the motivation to respond is debilitated.

This is well illustrated by the work of Hiroto (1974). Subjects were given solvable, and unsolvable sets of discrimination problems or no problems at all, all three groups were then tested with loud noise which could be controlled by means of a finger control. Those who had previously experienced solvable problems or no problems, had little trouble in learning to escape the noise, the group who had experienced the unsolvable problems reacted differently, they accepted the noise passively and appeared to lack the motivation to respond to avoid or terminate the aversive noise.

Using Witkins (1962) field dependent theory, Kronstadt and Forman (1965) found that those who were field dependent and had a global non-analytic approach to problems, unable to separate problem from context were overly attuned to approval or disapproval from authority figures, and approval or disapproval for them produced an increase or decrease in subjective probability of goal attainment.

Emotion and motivation

Arnold's (1960) theory of emotion is defined motivationally. A sequence of events is proposed firstly perception of the stimuli, this followed by appraisal, a judgement of the stimulus as harmful or beneficial, without this further reactions do not occur. Emotion or a felt tendency towards or away from the stimulus follows with expression of emotion and physiological changes, the final stage of the sequence being the action tendency of approach or withdrawal. In terms of this theory emotion is an externally aroused motive. The strength of the motive and task difficulty appears to interact, to a certain level of strength motives are facilitating but beyond that disruptive. The level at which it becomes disruptive is linked to task difficulty, more difficult tasks becoming disorganised at lower levels of motivation. Emotion may have both organising and disorganising effects on behaviour, it can both disrupt or produce new goal directed forms of behaviour Murray (1963). In animal experimentation fear has been shown as a motive, energising behaviour, Miller (1948) in animal studies demonstrated that fear could facilitate learning to escape also that fear responses learnt in one situation could generalise to another again, here moderate levels of fear were facilitative very high levels disruptive.

Murray (1963) suggests frustration as the emotionally arousing condition anger as the intervening emotional state and agression as only one of the many responses to anger. Aggression is not socially acceptable in many social groups and therefore individuals will inhibit their aggressive feelings, because of fear of social disapproval. This inhibited aggression can lead to displacement of aggression towards some other object.

Responses to frustration can include regression to childish behaviour, apathetic withdrawal and effective problem solving behaviour.

Discussion and recommendations

Motivation of patients recovering from conditions involving physical disability is frequently discussed by clinicians concerned with their treatment and is mentioned in the literature, O'Gorman (1975), Stewart (1975), Hawker (1975), Brewin (1982), Shepherd and Carr (1979). Success of treatment is frequently attributed to the patients' motivation, 'good motivation' producing success 'poor motivation' accounting for failure. The basis used by clinicians to make decisions about patients' motivation are unclear and appear to be intuitive.

Some of the characteristics stated by physiotherapists to be desirable in patients receiving physiotherapy (see Appendix A p.47) included 'realising he has a problem', 'works with me', 'does what he is told' these may be some of the elements that help the therapist to decide on the level of the patient's motivation, the patient seen as possessing desirable characteristics is more likely to be seen as well motivated, the opposite occurring for those patients not possessing the good characteristics or those possessing characteristics deemed to be undesirable, for example 'not recognising he has a problem', 'doesn't work with me', 'feels sorry for himself'.

During the period that the patient is receiving treatment perceptions of the patients'progress may influence decisions the clinician makes about the patients'motivation; since attributions of poor motivation are given to explain poor progress lack of progress itself may be used to designate the patient as poorly motivated. It is clear that motivation is a complex concept and a number of different aspects in any situation may effect the individuals motives for a wide range of behaviours and since there are no readily available methods for assessing an individual's motivation for recovery an understanding of some of the underlying motives which may be directing the patients behaviour during the recovery period will enable the clinician to be more sensitive to the patients' understanding of the situation and therefore to be in a better position to encourage behaviours that will facilitate the optimum recovery for each individual.

The therapists expectations of the patients' recovery may be influenced by the way in which their motivation is evaluated, those classified as poorly motivated are expected to do less well than those with good motivation and therefore the therapists expectations may well be lower for the patient classified as poorly motivated, these expectations may of themselves mean the patient achieves less during the period of recovery (see Section 6 Expectations.)

Individuals differ in achievement motivation, some will be stimulated by the challenge of overcoming their disability and will set themselves standards of excellence, these being more important to them than those set by the therapist, achieving by their independent efforts will be seen as all important. Hope for success or fear of failure may be uppermost in any one patient at any time. Patients who are high on achievement motivation will be more prepared to delay satisfaction for effort expended, while others may need to see a more immediate result of their actions. For any patient discussion about treatment programmes is essential explaining how intermediate treatment goals are related to more generalised longer term goals such as getting out of hospital or regaining lost independence.

Social pressure used by therapists to encourage patients to achieve more may be counterproductive Shrable and Stewart (1967) demonstrated unwillingness in high achievers to conform to social pressure and in the present study some patients commented that they found it unhelpful and distasteful to have their progress compared with others, either favourably or unfavourably.

Individuals need for approval varies and the extent of the therapists influence on the overly acquiescent individual with strong conformity must not be under rated. The therapists approval can be used to encourage desired behaviours but it could be dangerous for the patient to come to rely too heavily on therapist approval, some patients in the present study said they were disconsolate when therapists were changed. Too much approval can also be damaging, a number of patients reported finding fulsome praise by therapists, doctors and other staff at an early stage when little change was apparent as unhelpful, others commented that praise in the early stages supported an unrealistic view of the situation and led to later disappointment.

Knowledge of results is important for the patient in any therapeutic situation, and it is the therapists task to feedback information about results of their efforts to the patient. To be effective this information must relate to goals or subgoals. The setting of goals is an integral part of any treatment programme Carr and Shepherd (1982) and these goals must be mutally agreed. In the present study it was clear that the perceptions of the patients and therapists about the patients problems differed greatly and therefore their short term goals differed, the therapists in relation to the performance of movement, the patients in relation to performance of functions. Discussion and setting of agreed goals which include aspects of importance to both therapists and patients is an necessary prerequisite for feedback of information to be effective.

Levels of aspiration in novel situations cannot be based on past experience and the therapist has an important part in helping the individual patient to set appropriate levels of aspiration for themselves. The therapist will have background knowledge and experience, but the matter is not clear cut, the actual progress any patient will make is not easy to assess but it is important not to set goals so high that they are unachieveable or so low that little effort is required to achieve them.

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MOTIVATION

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MEASUREMENT

Before discussing the development of methods of measurement used in the studies it is essential to examine the terms used and their underlying concepts

Impairment and disability

There has been considerable confusion over the use of these terms for many years. Sainsbury (1973) discusses motor capacity, self and household care, physical dependence and the capacity for work all under the heading of disability (p. 35), while Jeffrys et al. (1969) describe motor capacity and physical dependence as impairment and use the terms impairment and limitation synonymously (p. 303). Stichbury (1975) investigates the assessment of locomotor ability under the heading of 'disability', following head injury and Katz et al. (1970) consider any restriction of function of any activity of daily living as being part of the dynamics of disability. Harris (1971) uses only the terms handicap and impairment to describe the same activities.

The WHO International Classification of Impairments, Disabilities and Handicaps (1980) has been developed to try to clarify the issue not only of terminology but also of the underlying concepts, different methods of assignment have been suggested which recognise conceptual differences. Impairment, defined as any loss or abnormality of anatomical or physiological structure or function which may be either permanent or temporary, is considered as a threshold phenomenon which is identified by its presence and coded in a 2-digit system as in the International Classification of Diseases (WHO, 1979). Disability, any restriction or lack of ability to perform an activity in the manner or within the range considered normal, is categorised in a complex manner, disabilities listed under nine 2-digit categories covering a wide spectrum from communication to personal care and situational disabilities. Handicaps are concerned with disadvantages experienced by the individual as a result of impairment and disability.

Though no measurement of impairment is provided in the WHO Classification, it is recognised that assessment of disability arising from impairment does to some extent reflect the type and extent of that impairment (Personal Communication, Dr. Philip Wood, 1981). Since the aim in this study was to examine the relationship between impairment and disability it was necessary to try to find scales which provided separate assessments. (See Table 15 Appendix A, p. 37)

Most measurements of limitation of activity or function whether described as impairment, disability, or handicap , have been developed for one of two purposes, either for population statistics (Jeffreys et al., 1969; Harris, 1972; Sainsbury, 1973) or to assess an individual's level of function at specified times, Katz (1970), Stichbury (1975) and Whiting (1979). Those that have been developed to obtain information from the total population about levels of physical ability were not suitable for monitoring progress in the recovery of physical skills in individual patients because they lacked the necessary sensitivity and also included many items inappropriate for patients in hospital, for example cooking, shopping, going on holiday Harris (1972) preparing and cooking a hot meal, running to catch a bus, handing out the washing Sainsbury (1973). Jeffreys et al. (1969) used activities which simulated daily living activities as test items, for example 'grasp a weighted tumbler using thumb and two fingers raise to mouth level', scores indicated whether or not the patient performed the activitiy in the stated manner but made no allowance for gradations in performance nor do such scales take into account the actual defects or dysfunction of body structure or systems.

The scales used by Stichbury (1975) came much nearer to the requirements of the study and involved a series of movements which followed a developmental sequence, starting with the patient being tested lying down and progressing through sitting and standing. These assessments were developed to record progress in patients following head injury. Evidence of the reliability and validity were not given and the test contained 36 items which was too long for the present purpose. Because suitable tools of measurement were not available, a number of tools of measurement of both physical and psychological variables were developed. These and other methods of measurement used in the study are discussed in the following section.

Development of methods of measurement

In order to monitor change and examine the relationships between a number of different variables in patients suffering from conditions involving physical disability, assessments and measurements were made when the patients were first seen and at intervals over a 3 month period.

Though the variables measured were considered under the two broad headings physical and psychological, this does not imply a conceptual dichotomy, any measurement of physical performance will be influenced not only by the individual's physical structures and systems but also by cognitive, emotional and other factors, measurements of emotional and other factors in turn being influenced by changes in the individual's physical state.

Physical variables

Measuring an individual's physical performance can be undertaken either by setting up a test situation and assessing and measuring performance in that situation or by obtaining information about the individual's performance of different physical activities in daily life. Both methods have been used either separately or in conjunction.

Impairment, the damage to systems or structures obviously varies in type with different conditions and in extent and severity in any one individual with that condition. The disability which results from the impairment will reflect both the impairment and the way the individuals copeswith the changes imposed by the impairment, since the way different individuals cope with impairment was of major interest, in this study separate measurements of impairment and disability were sought.

No way of obtaining direct measurements of all impairments of either Group I or Group II patients was found. The WHO Classification (1980) recognising the problem of obtaining measurements of impairment considered it a threshold phenomenon which was either present or absent.

As direct measurement of impairment was not possible, a measure was sought which reflected the extent or type of impairment, for Group I patients the measure selected was the performance of movements, this separate from the performance of functions, more extraneous variables were likely to influence the performance of functions and therefore reflect impairment less directly. The performance of activities which are of themselves more complex of necessity involve more situational variability, and the extent to which activities are restricted reflects disability.

The extent to which an individual complies with instructions to perform movements may vary and performance in a test situation may overestimate both impairment and disability, though the neuromuscular structures and systems involved in a particular movement may be intact, the individual may not perform the movement, and there is therefore the possibility of obtaining false negative results, but the likelihood of obtaining false positive results is not high; unless there is a degree of intactness of the appropriate neuromuscular system the performance of the movement would not be possible. While accepting the limitations of this method, as there was a low probability of obtaining false positive results this measure was used to obtain some assessment of impairment of the neuromuscular mechanisms involved in performing specified movements.

Measures selected to reflect impairment in Group II patients were performance of movements involving the affected joints, localised oedema in the region surrounding the fracture, grip strength and patient reports of pain.

The impairment for both Group I and Group II patients involved only one side of the body and therefore in the performance of complex activities such as dressing, the type of use made of the unaffected side varied, the opportunity for compensating for the affected side by use of the unaffected side was much greater when performing activities than when performing movements.

The extent of disability was assessed by obtaining information about the performance of activities in daily life. The patients reports of their level of independent performance of named activities formed the basis of these assessments, the reliability of their statements were checked by direct observation by the research worker and by asking the nursing staff for Group I patients and by detailed questions of what had happened the previous day for Group II patients. Since the impairments of patients in Group I and Group II were different the methods of measurement are considered separately.

Group I patients physical variables

Performance of movements

Method (Study III)

Each patient to be assessed within the first five days of starting physiotherapy treatment, then at intervals of 2, 6, 8 and

12 weeks. Assessments were undertaken with the therapist asking the patient to perform the movements while the research worker recorded the patient's performance with the video recorder.

Subjects

12 patients, 7 male 5 female with an age range from 29-89 years - a mean age of 67 years.

Materials

Originally a 12-item scale was used but inter-rater reliability only achieved an acceptable level

(98% agreement) with the following 7 items:

A form containing 7 items of movement as follows:

A Turn over in supine lying position to lie on right side
B Turn over in supine lying position to lie on left side
C Sit upright from lying supine
D Maintain sitting balance for 10 seconds sitting on edge of the plinth.
E Get off the plinth onto a chair on affected side
F Stand up from sitting position and maintain standing position for 10 seconds
G Walk 6 steps

A Sony Rover videorecorder AVC 3450CE

Procedure

The purpose of the study and the assessment was explained to the physiotherapist and to the patient. The items were attempted in order from A to G.

Instructions

A Turn onto your side so that you are lying on your right side
B Turn onto your side so that you are lying on your left side
C Sit up so that your head and shoulders are off the bed and you are sitting upright

D Maintain this sitting position without falling over while I count 10

E Get off the plinth and sit in the chair on that side (towards affected side)

F Stand up from where you are sitting on the plinth and maintain your standing balance while I count 10. You may use a stick but not hold onto the furniture

G Walk 6 steps - using a stick or frame if necessary.

For each item:

The simple instruction given as above. If the movement was not achieved at the first attempt, one further attempt was allowed. On the third attempt help was given as necessary.

If the patient was unable to perform an activity the next 2 items were attempted but after that no further items were attempted.

The video recordings were viewed by two independent assessors who graded the performance from 0-4 as follows:

0 = performs activity unaided without difficulty
1 = performs activity unaided but with difficulty
2 = needs some assistance physical or verbal
3 = needs considerable physical assistance
4 = did not perform movement

The items were assessed in order from A-G.

Results

The initial recordings were all taken within the first week of physiotherapy treatment however further assessments were not possible for some patients, information was therefore obtained from 9 patients. Though the aim was to record progress at two weekly intervals this was not always possible, there were some problems with equipment, and patients were not always able to come down to the department, because of intercurrent illnesses, staff shortages or other diagnostic or treatment procedures. However three assessments were obtained for each of the nine patients and two for the remaining three on referral between two and 4 weeks and between 8 and 10 weeks.

Agreement was reached between the two raters as follows: assessments on 230 items were made and there was agreement between the raters on 200 items (86% agreement). The areas of disagreement came with the amount of help required for Categories C, D and E and between gradings 2 and 3. A third rater viewed assessments on 36 items the first measurements of 6 patients, 31 of the 36 items were rated 86% agreement. If the assessments were considered to find whether a patient either passed or failed, that is they either achieved the required movement unaided, or did not achieve it without help there was 100% agreement between the two raters. No patient received a 0 grading on any item from one rater and a 1 grading from another, this result was achieved whether the cut off point was between performance and did not perform activity or between performed activity independently, did not perform activity independently. On subjecting the gradings of the patients to scalogram analysis using the Guttman scale computer programme of the statistical package for the social sciences (SPSS) an overall co-efficient of reproduceability of 0.96 and of scaleability of 0.86 was obtained, conventionally acceptable levels. The form was valid in that it contained items similar to those in other forms discussed see review Table 15Appendix A, p. 37 , its face validity was high and was accepted by both therapists and patients as a reasonable test of movements relevant to the patients' condition.

Discussion and conclusion

The inter-rater reliability when using a two category pass-fail grading was very high, 100% but less high, 86% when using the more sensitive 0-4 grading system. More work needs to be done before acceptable levels of reliability can be achieved in monitoring small changes in independent performance of movements which occur during the process of recovery. Test-retest of reliability was not used as the group of patients studied were in the recovery phase and changes noted on re-testing might reflect actual changes in the patient's performance rather than variability in the testing instrument.

Conventionally acceptable levels of scaleability and reproduceability were found in examining the gradings obtained on the different items which provided evidence of the cumulative and unidimensional nature of the items in the scale, and the assessment form provides a useful tool for the measurement of change in the patients performance of movements and was used in Study IV. Two cut off points were used in scoring the 7-item scale. Did/did not perform the activity and performed the activity independently/did not perform the activity independently. Consideration will be given to the lack of reliability in the more sensitive 0-4 gradings.

Performance of activities

Method

Since assessment of the actual level at which the individual was functioning in their daily lives was required information was collected from the patients themselves. In order to check the accuracy of this information observation of their performance on the specified activities was undertaken by the research worker and the nursing staff were asked in the patients absence about the amount of help that was given for the patient to perform the specified activities.

Subjects

12 patients initially 7 male, 5 female subsequently 9 patients 5 male, 4 female from 29-89 years.

Materials

A form on which 6 self-care items were listed:

feed, wash, undress, dress, toilet, bath

Performance of items was scaled from 0-5.

The patient was asked about their performance of self-care activities on referral and at intervals of two weeks.

Procedure

The patient was asked how they managed with the six self-care items. They were asked to rate themselves on a scale from 0-5.

0 = no problem as I did before this happened

1 = can manage well but takes longer
2 = without help, but with difficulty
3 = need some help- verbal or physical or someone standing by

4 = need a lot of help from 1 or 2 people

5 = can't do it. Have others do it for me.

The patient was asked to consider the component parts of each activity and the whole activity was graded according to the lowest grading of any component in the activity, ie. if help was needed with some items of dressing though others were independent the activity was graded as 3 or 4.

When the form had been completed, the research worker during the following week went up to the ward and observed from an inconspicuous position outside the ward and checked the rating of patient's performance. The nursing staff were asked how much help they had to give the patient to perform the listed activities. If these were not the same, further discussion took place with the patient who was then asked to re-rate the activity.

Results

The items listed had criterion related validity as they were the necessary daily activities. They had high face validity for patients and nursing staff as independent performance of these tasks were noted as milestones in the patient's progress. Reliability was high between the three sources of information on the needs help/does not need any help grading. The amount of help needed was more problematic as it often depended who was giving the help, as to the amount of help needed. Only one experienced nurse in whom the patient expressed confidence was needed to help perform an activity but two or on occasion three inexperienced nurses were needed to help the same patient perform the same activity; the variation here being in the quality of the helper not in the patient themselves. It was not possible to control this situation in any way as there were very frequent changes of staff throughout the study period.

Scaleogram analysis of the gradings obtained on the six items provided co-efficients of reproduceability of .93 and of scaleability of .63 these are within the conventional limits for accepting the presence of a Guttman scale. For this scale as for the gross body movement scale, the two cut off points of needs help/doesn't need help and no problem but takes longer/only manage with difficulty both produced conventionally acceptable levels of reproduceability and scaleability.

Discussion and conclusion

Since the situation was a naturally occurring one, rather than a controlled test situation there was more variation in the day-to-day performance, and grading was arrived at by consensus of opinion. If a patient had newly regained the skill of performing an activity independently, they might not always be allowed to perform it independently because the nursing staff were afraid they might fall and therefore there was a time gap between actually being able to perform independently and being allowed to do so. The situation as it occurred was described and rated.

The problem as to how representative any sample of behaviour is of usual behaviour is pertinent here, however there did not in most cases appear to be any difficulty either for patients or nurses in deciding how much help was usually necessary. Before observing the patient's performance on the ward any unusual circumstances were noted. If for example a patient complained of feeling unwell or ward routine was disrupted observation would be deferred to another day as the aim was to monitor typical behaviour.

Some patients complained that they were not allowed to do things unaided and the competence of the nurses and the extent of the patients confidence in them certainly affected the amount of help given or needed to accomplish the activity.

Conclusion

Despite the limitations discussed above this method provides an appropriate measure of the patient's performance of self care activities and was used in Study IV.

Measurement of changes in muscle tone

Introduction

One of the major changes found in patients who have upper motor neurone lesions is a change in the normal smooth functioning of muscles resulting in paralysis or paresis. There is either a decrease in muscle activity, in which case muscles are said to be flaccid or an increase in which they are termed spastic; these are clinical terms used to describe the opposite characteristics in the changes in muscle tone. The neurophysiology underlying these phenomena is complex and any simple measure can only provide a crude indication of the direction of change and its effect on the performance of movement.

Method Study III

Using the method described by Stichbury (1975) patients were asked to perform limb movements starting proximally and progressing to the distal joints, movement and control of movement at the different joints was monitored by videorecording.

Subjects

12 patients with residual hemiplegia or hemiparesis, 7 male 5 female, age range 29-89 years.

Materials

Sony Rover video recorder

Form for grading categories

0 = no movement or total flexion or extension pattern
1 = some control of proximal joint shoulder or hip
2 = 1+ independent elbow/knee movement
3 = 2+ independent wrist/ankle movement
4 = 3+ independent finger/toe movement
5 = all normal movements controlled

Procedure

The patient was seated on a chair of appropriate height with hip and knee at a right angle, supported if necessary.

Patient is asked to move the arm upwards. Performance is video-recorded. Patient is then requested to move elbow, wrist and fingers each time controlling proximal joints while moving more distal joints. The patient is then asked to flex the hip joint of the affected side, this is followed by attempted movement of the knee, ankle and toes in the same manner as movements of the upper limb were undertaken, controlling the proximal joints while moving the more distal joints.

Direction of changes in muscle tone were noted whether increased or decreased. Video-recordings were taken of performance.

Results

The ratings of the two assessors did not show satisfactory agreement. Agreement was only reached on 18 out of 27 occasions (66%).

Discussion

Inter-rater reliability was not good and sometimes it was difficult to determine the plane of movement as video-recordings were taken from an anterior position. As the grading was based on the assumption that recovery was from proximal to distal specific movements were not requested i.e. flexion and extension of shoulder or elbow and therefore interpretation of control of movement was not always easy.

Conclusions

Another more precise measure will be sought and tested to give some assessment of abnormal changes in muscle tone and their effect on movement.

Measurement of changes in muscle tone Study IV

The approach to the treatment of neurological conditions in both children and adults developed by Bobath is probably the most widely practised in England. A method of assessment of quality of limb movement proposed by Bobath (1976) takes account of patterns of normal purposeful movement and of abnormal patterns of movement found in upper motor neurone lesions. Changes in normal muscle tone inhibits the performance of smooth patterns of movement, therefore 'quality of movement', suggested by Bobath for assessment prior to treatment also provides an indication of the extent of the influence of altered muscle tone on the performance of smooth movement. The six item leg, and eight item arm scales are scored on a yes/no basis. The patient either performs the movement or does not. Details of items and scale in Appendix B schedule III .

Six therapists and the research worker observed 10 patients attempting to perform the 14 test items. Agreement was 97% as to whether the patient had or had not performed the test item. The Bobath form was used to assess the performance of movements of the affected limbs, the direction of change of muscle tone was noted.

Group II Physical variables

Introduction

As for patients in Group I measurements which reflected both impairment and disability were sought. Unlike the patients in

Group I some direct information about impairment was available in the form of X-ray reports, on the extent of bony injury, type of fracture, whether simple compound or comminuted, and whether displacement had occurred. The X-ray however did not provide any information about the extent of soft tissue injury. Further measures which reflected impairment for these patients were range of movements of the wrist joint, grip strength and the amount of oedema in the region of the fracture.

Methods Study III

Range of movement

Videorecordings were made of patients attempting active movements of the wrist, on referral and at two weekly intervals. The movements of the affected and the unaffected side were monitored together to assess initial differences and then changes in the range of movement of the affected joint as compared to the unaffected side.

Subjects

13 patients with fractures of the lower end of the radius, one male, twelve female with an age range from 41-85.

Materials

Sony Rover video-recorder with zoom lens. Chair, and table for patient to sit and rest both arms on while performing movements.

Procedure

Patients were seated with the forearm resting on a table, the patient was asked first to perform the movement with the unaffected hand then to perform the movement with the affected hand moving as far as possible in the required direction within the limit of pain. The movements requested were:

1) Flexion and extension of the wrist in mid pronation/supination position

2) ulnar and radial deviation

3) pronation and supination of the forearm.

Two assessors viewed the video-tapes to assess the differences in range of movement between the affected and unaffected side. Range of movement was graded in relation to limitation of 0, ½, ¾ range in relation to the range of movement on the unaffected side.

Results

Though a zoom lens was used and close pictures obtained of the patient's wrists the pictures obtained were not clear and there was poor agreement between the 3 assessors on the limitation of range of movement of the affected wrist of 60%. Not only was there disagreement between the different raters, but each rater found it difficult to assess the range of movement of the affected hand particularly the movement of pronation and supination. Therefore as both inter- and intra-rater reliability were poor the videorecording of these movements was not continued after the first five patients.

Discussion

Videorecording wrist movements and assessment of range of movement from these recordings did not provide a reliable method of measurement and was discontinued. The unreliability was related to the difficulty of obtaining clear overall pictures with one camera of a full range of movement, and of accurately measuring the range of movement.

Conclusion

This method will not be used. Other methods of measurement of range of movement will be sought and tested.

Measurement of localised oedema

Method

To examine the amount of localised oedema in the region of the wrist circumferential measurements were taken of the affected wrist and compared to those of the unaffected wrist.

Subjects

13 patients who had suffered a wrist fracture.

Materials

A flexible tape marked in millimetres.

Procedure

Patients were seated in a comfortable position with the forearms resting on a table for 10 minutes before measurements were taken, to eliminate dependent oedema. Measurements of the circumference of both wrists were undertaken with a flexible tape at the level of the styloid process of the ulna.

Results

Measurements of the circumference of both wrists was undertaken at the level of the styloid process of the ulna but varied greatly some patients who appeared to have considerable swelling did not appear to have a difference in circumference because the site of the swelling varied.

Observations of the swelling of the patients wrists made it clear that the overall exudation did not follow the same pattern and swelling might occur at different levels. Measurements at a fixed point did not provide an accurate measurement of overall swelling, yet a fixed point was needed for repeatability of measurement.

Discussion

The aim was to obtain some measure of the overall exudation of tissue fluid and products of inflammation in the area of the trauma. Reduction in the amount of oedema should provide an indication of recovery, however measures of circumference at the fixed point of the lateral condyle of the ulnar did not provide information about the overall oedema and did not correspond to clinically observed oedema, the areas of swelling extended both above the lateral condyle and onto the dorsum of the hand and fingers. This did not provide a valid or reliable measure of exudation into the tissues following a fracture.

Conclusion

Other more suitable ways of measuring soft tissue oedema must be found. Measuring the volume of water displaced by the affected hand would give an indication of swelling.

Water displacement

Equipment was a cylinder (see Appendix A, p.38 Figure 4) which was filled with water to the level of an outflow pipe. The patient was asked to immerse the unaffected hand in the cylinder until the web between the first and second finger touched the bar fixed across the cylinder. The displaced water flowed into a calibrated jar and the total volume of water displaced was measured. The cylinder was refilled and the measurements repeated for the affected hand. Subtracting the total amount of water displaced by the unaffected hand from that of the affected hand obtained an estimate of the amount of localised swelling. However, in 3 patients with clinically observable swelling, measurements obtained from the affected hand were less than those of the unaffected hand. After further examination of the patients' hands the reason appeared to be that because of 4-5 weeks immobilisation in plaster of paris there was considerable muscle wasting in the region of the thenar and hypothenar eminence and this wasting accounted for more than that of the localised oedema. This method did not provide a reliable assessment of localised oedema and was not used for the remainder of the patients ..

Measurement of wrist movements

A hand held plastic goniometer was used to measure the range of movement of both the affected and the unaffected wrist. The patients hand and forearm were placed on the table with the patients sitting close to the table. The forearm was held in position by the research worker and each movement measured.

1) Flexion and extension - with the unaffected hand resting on ulnar surface of the wrist with the thumb facing upwards the fingers loosely held the patient was asked to move the hand as far forward and as far back as possible. When the movement was correctly performed one arm of the goniometer was placed along the forearm, the other along the second metacarpel, the joint of the goniometer over the wrist joint, the patient was asked to perform the movement again, the range of movement through which the hand passed from the centre in each direction was noted. The affected hand was then measured in the same way.

2) Radial and ulnar deviation - with the unaffected hand placed palm down on the table and the forearm fixed by the research worker the patient was asked to move the hand from side to side as far as possible keeping the palm flat on the surface, one arm of the goniometer was placed along the forearm the other along the middle finger, the range of movement was measured to radial and ulnar side from the centre and a range of movement calculated. The affected hand was measured in the same way.

3) Pronation and supination. The unaffected hand placed in mid position resting on the ulnar border with the thumb outstretched and the fingers lightly flexed into the palm of the hand. A board with a protractor attached to it measuring through 180° was placed beyond the patients hand, the patient was asked to turn the hand forward to place the palmar surface down

and backwards to place the dorsum of the hand down. The arc of movement described by the thumb on the protractor from the centre in each direction was noted. For each of the six movements the score was calculated by expressing the movement of the affected hand in terms of the movement of the unaffected hand, this because with the age, sex and occupational differences of the group there were no appropriate norms against which they could be measured. Measurements of the affected hand might be expected to change but test re-test of the unaffected hand should provide information about the extent of the reliability of the measurement. There was a difference of up to 10^{o} in repeated measurements of flexion and extension and radial and ulnar deviation of the unaffected hands and a more reliable method will be sought. Not placing the joint of the goniometer in exactly the same central position may account for some of the variation.

The wrists of a sub group of 10 subjects were measured by placing the hand over a piece of paper marked with a horizontal baseline and a central vertical line. The wrist joint was placed over the horizontal baseline for flexion and extension the fingers were extended and the fifth metacarpal and little finger placed on the vertical line the hand was moved forward and back as far as possible, the most extreme position reached in both flexion and extension by the head of the fifth metacarpal was marked on the paper. For radial and ulnar deviation the wrist joint was placed over the horizontal line the middle finger down the vertical line. The fingers and thumb were adducted and the head of the fifth metacarpal was marked to indicate ulnar deviation. The head of the first metacarpal indicated radial deviation. Using this method differences of movement tested were reduced to 6^{o} and this was considered to be acceptable. Pronation and supination differences were stable at differencesof 8^{o}. The marks on the paper were joined to the central point and the degrees of movement through which the hand moved were calculated.

Measurement of grip strength

Measurement of grip strength was undertaken initially using the metal Clinifeed dynamometer (Duffield Medical). This measures pressure exerted by a spring mechanism from 0-90 kilos; Of the first 8 patients who tried to use this dynamometer two were unable to record any measurement, a more sensitive tool was sought.

The Boots grip strength meter which comprises a sphygmomanometer bag with bulb and tube for inflation attached by a tube to a gauge measuring from 0-300 mm Hg. With careful instructions as to the type of grip reliable measurements were obtained with only 5% error. The grip was opposition of the thumb with an extended interphalangeal joint pressure being exerted on the ball of the terminal phalanx not the tip. Fingers gripped with a lumbrical movement with flexion at the metacarpophalangeal joint and extended interphalangeal joints, again pressure exerted on the bag by the balls of the terminal phalanges. Patients were asked to grip firmly and release and were allowed several practice grips. Three grips were taken from each hand the best of three recorded as the measurement. The bag was inflated to a minimum pressure of 20 mm Hg according to manufacturers instructions to increase reliability of recording. The bag was marked for the position of the thumb and the tips of the fingers. Strength was calculated as for the movements by expressing the measurement of the affected hand in terms of the unaffected hand.

Dominance

It might be expected that movement and grip strength would differ between the dominant and non dominant hand. As the literature did not provide guidance as to the extent of the difference that might be expected between dominant and non-dominant hands. 20 individuals used the grip meter. Having 3 grips with each hand the mean of the 3 was used as the grip measure. Seven had the same score with both hands (within 10 mm Hg) in four the non dominant hand scored higher, and in 9 the dominant hand scored higher. Because of this dominance was not taken into account at this stage, though it was recorded and would be used as a separate factor in analysis.

Performance of activities

Method

Unlike the patients in Group I who were patients on hospital wards these patients were living at home so that their individual situations varied considerably as did the tasks they were required to perform both in self-care and in their daily lives.

Self-report measures were used on very broad categories of activity. Patients were asked to indicate the way in which they performed the listed activities. These reports were checked where possible with relatives but also by asking exactly what happened on the previous day, this providing a check to the information provided.

Subjects

Thirteen patients, who had sustained a wrist fracture.

Materials

A form with 6 self-care items listed and a grading system from 0-5 thus:

Feeding
Washing
Undress
Dress
Toilet
Bath

Grading 0 = back to pre-injury level
1 = manage unaided no problem takes longer
2 = manage unaided but with difficulty
3 = need some help
4 = need a lot of help
5 = don't/can't do

Procedure

On referral the purposes of this form were explained to the patient. Levels of grading were discussed in detail and gradings were agreed and noted for each of the six items. When a grading had been decided on the activities of the previous day were recalled. This reminded patients of actual level of performance rather than their impression of how they performed or whether they wished to appear either independent or dependent.

Results

Patients did not seem to have difficulty in grading their activities and many emphasised the great differences for them between the grading of unaided back to normal, unaided but takes longer, unaided but with difficulty.

The sequence of activities in self-care items was the same as for patients in Group I and though the circumstances might differ more widely for patients at home this form provided a measure of their independent/dependent performance of these activities. The measurement had face validity as the items were those required as part of normal routine.

Scaleogram analysis of the gradings obtained from the 13 patients showed that they conformed to the conventional levels of scaleability 0.63 reproduceability 0.86 and therefore the scale is unidimensional and forms a Guttman scale.

Discussion

Though it only provides a crude overall measure of performance, it does provide a valid measure of the individual's independent performance of self-care. Use with a larger number of patients is needed for further validation.

Conclusion

This measure of self-care activities will be used to monitor the way in which the patients are performing self-care activities at home.

Measurement of pain

In Study III a simple 4-point verbal rating scale was used. Patients were asked whether they had pain in their wrist or not, if they said they did have pain they were asked to rate it as very severe, severe, not very severe, not severe at all. It became clear that this was not sufficiently detailed to reflect the patients' pain and more information was requested in Study IV. Patients were asked whether their pain was constant i.e. present nearly all the time, or episodic occuring from time to time and exacerbated by certain activities. Patients were asked to describe the pain in their own words. They were then asked to rate the severity of both types of pain on the same 4-point scale as in Study III. They were also asked about the extent to which the pain disturbed their sleep from a lot, quite a lot, only a little, or not at all . whether they took sleeping pills or analgesics because of the pain and were then asked to list activities that the pain interfered with or stopped them doing.

Measurement of psychological factors

Psychological factors that have been most commonly investigated in patients with physical illness have been emotional changes (Visotsky, 1966; McDaniel, 1976; Langer, 1975; Johnson, 1971; Pilowsky, 1979 and Johnston, 1980). Others have looked at psychiatric state (Fogel and Rosillo, 1969) intellectual abilities (Dubowitz, 1965) self concept (Litman, 1962) and cognitive functioning (Jambor, 1969). Methods of investigation have included psychometric tests such as Taylors Manifest Anxiety (1953), Eysenck Personality Inventory (Eysenck, 1960), illness behaviour questionnaire (Pilowski, 1979) and social desirability response set (Marlowe Crowne, 1964), Wilson Barnett (1979) and Langer (1975) have used both patient reports and the reports of nurses attending the patients to monitor changes in the patients' mood and behaviour.

Both the psychological tests and patient reports were used in the present study. Psychometric tests provide more readily analyseable data but the richness of indepth information provided by open ended interviews is also important in an exploratory project of this nature.

Psychological variables

Measurement of perceived locus of control

The focus of the interest in locus of control was on situation-specific control, the investigation of the beliefs of each individual about the extent of their personal control in their own recovery. In Study III the Rotter (1966) scale was used but inconclusive results were obtained, all patients obtaining scores in the middle range, the scale lacked face validity for this group of patients and it aroused resentment in some. Because of this another method of assessing beliefs about control for recovery was sought which was situation specific.

The health locus of control scale (Wallston, 1976) was considered for use in the study but was rejected on the grounds that the items related to the broad concepts of health and illness and not to specific behaviours of people who were already sick. Many items lacked face validity for some of the patients in the study who had recently suffered a cerebrovascular accident for example, 1. If I take care of myself I can avoid illness. The reported use of this test as discussed earlier has been in the field of health prevention and therefore its usefulness in this type of study has not yet been demonstrated.

Bearing in mind Phares (1976) statement that it would be advantageous to develop a scale of items essentially directed to a particular situation if prediction within that situation was required and Rotter's (1975) that his 1966 scale related 'more accurately to populations than to individuals' a 9-item scale of locus of control for recovery was produced. Items were selected from analysis of patients' statements made during informal interviews undertaken in Studies I and II.

Fourteen statements were given to 10 judges see Appendix A, p. 40 with the following instructions:

There seems to be a difference in the beliefs that people hold about the control that they themselves have over the outcome of a particular situation.

Patients who had conditions involving different kinds of physical disability used the following sentences when describing how they perceived control over their own recovery.

Some indicate the belief that they have control, others that there is a lack of personal control - that event will be controlled by chance, luck or powerful others.

Could you please indicate with an I sentences which imply a belief in personal control over recovery, and E to sentences which imply a belief that luck, chance or powerful others will be more influential. Leave blank any statements which do not seem to indicate either E = external control or I = internal control.

The judges included clinical and other psychologists, other graduates and physiotherapists. There was complete agreement on the assignment of 11 items as either internal or external control statement. A further 2 items were omitted from the final scale, because after pilot work with 11 patients it appeared that statements such as 'I'm relying on the staff here to get me better' and 'the treatment you receive is the most important thing in your recovery' were tapping a different dimension of externality from the other items, belief in powerful others. Though this may be important since the present study was investigating the beliefs about personal control for recovery these items were omitted. The final 9 items scored by the patients was as follows:

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. How I manage in the future depends on me not on what other people can do for me.					
2. It's often best to just wait and see what happens.					
3. It's what I do to help myself that's really going to make all the difference.					
4. My own efforts are not very important, my recovery really depends on others.					
5. It's up to me to make sure I make the best recovery possible under the circumstances.					
6. My own contribution to my recovery doesn't amount to much.					
7. Getting better now is a matter of my own determination rather than anything else.					
8. I have little or no control over my progress from now on.					
9. It doesn't matter how much help you get, in the end it's your own efforts that count.					

Patients were presented with 9 cards with the statements printed on them and asked to assign them to one of five categories. Patients were asked to agree or disagree with the items on a five-point Likert-type scale from strongly agree, agree, uncertain, to disagree and strongly disagree. Agreement with internal items and disagreement with external items indicating internality, agreement with external items and disagreement with internal items indicating externality. The scale was scored in the direction of internality.

Analysis of results of recovery locus of control scale

Total possible score was 45, the actual minimum score obtained was 19, maximum 27. The mean was 24.9 and the standard deviation 2.1.

The internal consistency of the test was high, with all 5 internal items being highly significantly (.001) correlated with the internal mean and all 4 external items being highly significantly (.001) correlated with the external mean. The negative correlation between the internal and external mean was highly significant (.001). Internal items were only weakly correlated with the external mean and external items negatively correlated with the internal mean.

Test-re-test for 6 patients provided scores that were not significantly different.

These results suggest that the test is reliable;it had face validity for the patients and the items are similar to those used in other tests devised to measure perceived locus of control. It was situation specific for patients during the recovery phase of an illness involving physical disability.

Measurement of feeling and emotions

Subjective data about the patients feelingsand mood states was collected. In Study III a list of words derived from patients descriptions of their feelings about their condition was used, the words on this list were rated on a 5-point scale from not at all to a great deal.

Words described present and recently felt mood states and the temporal frequency with which they had been experienced on a 4-point scale from never to all the time. In Study IV the profile of mood states (POMS) developed by McNair, Lorr and Droppleman (1981) was used as it had been used more widely with different groups and provided evidence of its validity and reliability. The POMS contained adjectives similar to those used in informal interviews with patients which could be easily understood, and it could be completed in a relatively short time. Normative data was available of the use of POMS with both psychiatric and non-psychiatric groups.

The 41 item scale measures 6 identifiable mood or affective states 5 of these were used tension/anxiety, depression/dejection, anger/hostility, vigor/activity, fatigue/inertia. The present (1981) form used represents the refinement of a total of 100 different adjective scales by repeated factor analysis. The five mood states are described as follows by the authors:

1. Tension/anxiety

Factor I is defined by adjective scales descriptive of heightened musculoskeletal tension, correlations of the scales with the factors were reported in 6 studies.

2. Depression/dejection

Factor D appears to represent a mood of depression accompanied by a sense of personal inadequacy - again reported replication in 6 studies.

3. Anger/hostility

Factor A represents a mood of anger and antipathy towards others and describes feelings of intense overt anger. The factor correlations of angry, furious, ready to fight are consistent over 6 studies.

4. Vigor/activity

Factor V defined by adjectives suggesting a mood of vigorous ebullience and high energy this factor was replicated in all 6 studies.

5. Fatigue/inertia

Factor F represents a mood of weariness inertia and low level energy. It has been confirmed in 6 studies. Factor F appears to be negatively related to Factor V but independent, the two are not opposite poles of a single bipolar factor.

Highly satisfactory reliabilities are reported by the authors with the indices of the extent to which individual items within the mood scales measure the same factor near .90 or above. Test-re-test reliability estimates ranged from .65 for vigor to .74 for depression.

Examination of individual items defining each mood scale supports face or content validity of factor scores. Three areas of research have provided evidence for predictive and constructive validity of POMS brief psychotherapy studies Lorr et al. (1964), Haskell et al. (1969); controlled out patient trials McNair et al. (1965). Studies of emotion inducing conditions, Pillard and Fisher (1975) means for college students were markedly different from those of psychiatric patients, vigor, depression and tension discriminated most clearly. Normative data is not available for a directly comparable group to that of the present study a group of patients presenting with overt physical symptomology. Subjects were given the following instructions.

These are words that describe feelings people have. Please read each one carefully and then place the card under the answer which best describes how you have been feeling during the past week including today

Four categories were given

not at all = 0

a little = 1

quite a lot = 2

extremely = 3

between emotional adjustment and degree of recovery, Dovenmuehle and Verwoerth (1962, 1963) reported that the intensity of unpleasant affect determines the extent of disability for lifes activities. The same authors Verwoerth and Dovenmuehle (1964) reported that the severity of the condition - in this case cardiac, - influenced the level of depression. Tizzard (1962) and Moos (1964) both comment on the difficulty of interpreting the results of these studies because of 'different methodology' and the 'quality of the research'. McDaniel (1976) felt that research in this area 'tends to repeat the same errors'.

Work with surgical patients by Janis (op. cit.), Johnson et al. (1971) and Pilowski et al. (1979) has indicated that there is a significant relationship between stress and emotional reactions to it and the individual's recovery post-surgery. Ley and Spelman (1965) and Langer et al. (1975) have demonstrated that stress and the patient's emotional response can be altered by cognitive re-appraisal of the situation (Langer) and the giving of appropriate information (Ley).

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STUDY II

Summary

Ten patients attending two physiotherapy outpatient departments were interviewed prior to their first treatment, and the first session was videorecorded. Information was obtained by structured questionnaires and informal interviews from both the patients and the ten therapists treating them. Factors found in the first stage of the study and those identified from the literature as influential were investigated and methods of measurement sought; the large number of factors and their variability emphasised the need to restrict the number of aspects studied and the decision was made to make the patient the main focus of subsequent studies.

Introduction

On the basis of information collected in Study I, the purpose of Study II was to obtain more specific information by monitoring patients receiving physiotherapy treatment. Interview schedules and unstructured questionnaires that had been revised were used and methods and tools of measurement to be used in subsequent stages were developed.

Aims

Based on information obtained in Study I.

1. Observe and record the therapeutic situation - to identify factors related to important and influential aspects.

2. Investigate the use of appropriate methods of measurement related to these factors.

Methods

A two-day feasibility study was carried out in a busy physiotherapy department in a London hospital. It was found that with a full explanation, video-recording was acceptable to both patients and therapists and did not cause undue disruption in the department. Both sound and vision of the recordings were of an acceptable level, even in some areas of the departments where lighting appeared inadequate.

Therapists in the two hospital departments were approached and asked if they were willing to take part in the study - all but two agreed. Informed consent was obtained from patients when they presented to make their first appointment. Information was obtained by access to the patients' notes, with their permission, semi-structured questionnaires and informal interviews were used with both patients and therapists, and treatment sessions were video-recorded in their entirety.

Subjects

Ten patients attending two outpatient physiotherapy departments for treatment for the first time. The ten therapists who treated them.

Materials

Semi-structured questionnaires. Informal interview schedules with probe questions.

Sony videorecorder AV 3420 CE.

J.V.C. cassette-corder.

Procedure

I The patients were interviewed prior to receiving their first treatment. A structured form was used initially and an informal interview was undertaken with probe questions on:

1. The history of their present condition and its onset.
2. Their perceptions about their condition and the extent to which it interfered in their lives.
3. Specific problems associated with their conditions and their feelings about them.
4. Their expectations of the outcome of treatment.
5. Previous experience of physiotherapy (self or family or friends).

The first treatment session and some subsequent sessions were monitored by videorecording. Patients were asked to complete a number of short forms:

1. Three scales of the Minnesota Multiphasic Personality Inventory (M.M.P.I.) - Hysteria, Depression and Hypochondriasis.
2. A shortened version of the Treatment Expectancies Questionnaire (T.E.Q.) - this questionnaire consists of 28 statements claiming to be about the way people feel about treatment, and was originally designed for use with patients attending for group psychotherapy or behaviour therapy (Caine, 1979).

II The therapists were interviewed and asked to give information about:

1. The patient they were treating:
    a. Assessment of patient's condition.
    b. Their expectations for the patient's recovery.
    c. Their expectations of extent of benefit this patient would obtain from treatment.
2. About themselves:
    a. Their professional experience.
    b. Preferences in areas of work with patients.
    c. Their confidence in their ability to help patients.

d. Indication of patient characteristics, considered influential, and whether desirable or undesirable.

3. Completed scale of Conservatism (Wilson & Patterson, 1968).

III The situation. Interaction between patient and therapist in terms of:

a. Time spent with patient.
b. Extent of privacy of treatment session.
c. Type of social situation.
d. Content of the therapeutic situation.

Results

Three people took part in analysis of the videorecorded sessions. Each session was examined on a minute by minute basis. Of the 10 sessions observed, only patient/therapist contact time was videorecorded, though patients may have been in the department carrying out activities for a longer period of time.

Total patient/therapist contact time Range from 4-28 minutes with a mean of 14.7 - further information in Appendix A p. 27 Table 10.

Communication

Verbal communication

Therapist talking was calculated on a minute by minute basis. In all but one session the therapist talked for 100% of the treatment time, that is, she was talking at some point during each minute of patient contact time.

Patient talking Patient talking was less - ranging from 8% to 100% of the total time but with only 3 patients reaching 100%. The mean was 65%.

Analysis of content of therapist/patient interaction By viewing tapes independent observers (3) were able to identify seven aspects of therapist behaviour:

1. Assessing and re-assessing which was both verbal and physical.
2. Treatment - use of specific techniques or methods.
3. Teaching by the use of touch and demonstration.
4. Re-inforcement of patient behaviour, both positive and negative by gesture and verbally.
5. Feedback of information - giving knowledge of results.
6. Re-assurance.
7. Social interchanges.

The ranges and averages of each type of behaviour are given in Table 10 in the Appendix A.p27. There was wide variation in the occurrence of different types of behaviour - this may have reflected a number of different factors. There was some evidence from earlier observations that the first treatment session differed significantly from subsequent ones in the amount of time occupied by different activities and amount and type of communication.

Non-verbal communication

Attempts to monitor aspects such as eye contact or body orientation between patient and therapist were not successful with one research worker and the Sony Rover camera.

Touch

The occurrence of touching the patient was monitored. The three observers found it possible to differentiate between touching that was specific to the treatment method and non-specific touching. This non-specific touching varied greatly and appeared to be a characteristic of therapist style, each therapist's amount of non-specific touching remaining fairly constant over a number of patients. Though designated as non-specific, this type of touching was thought to be an integral part of patient/therapist interaction.

Body orientation

Though it was possible to monitor body orientation of the therapist towards the patient, it was not possible to separate the times when the treatment method demanded a certain type of orientation, more than one camera would be needed to monitor adequately.

The therapists

Attempts were made to classify the therapists on a cold-warm (ASCH, 1946) dimension in their attitude towards the patient, by different observers viewing the videorecordings. Though observers had no difficulty in placing the therapists on the given dimension, there was not general agreement, interpretation of the characteristics chosen as indicating warmth or coldness differed.

Informal interviews

Patients were able to express their perceptions of and emotional reactions to their condition. These varied widely and again showed no obvious correlation between objective severity and extremity of expressed feelings. Responses were explained by the patients in terms of its particular meaning for them. 'This (back problem) is dreadful, really dreadful for me. I'm a farmer's wife and I have to do heavy work'. 'The main problem is this (knee problem) means I can't do my job'.

Factors that appeared to be potentially influential on the basis of the interviews with both patients and therapists and from observations of recorded material were as follows:

1. The therapist
    a. Experience.
    b. Age.
    c. Style of interaction.
    d. Treatments used.

    - e. Personality factors.
    - f. Expectations for the patients recovery.
    - g. Amount and type of verbal communication.
    - h. Amount and type of non-specific touching of patients during treatment sessions.
2. The pàtient
    - a. Perceptions of and emotional responses to onset of their condition.
    - b. Expectations about recovery.
    - c. Perceived seriousness of the condition and feelings about this.
    - d. Type and amount of information requested by patient.
    - e. Amount and type of verbal communication.
    - f. Perceptions about extent to which they themselves could contribute to their own recovery.
3. The situation
    - a. The procedures and routines within the department.
    - b. Patient or hospital oriented approach see Appendix A p. 58.

<u>Treatment expectancies questionnaire</u>

This 28 item scale is scored from 1-4, the items are statements about how many people feel about treatment and are derived from work with psychiatric patients subjects are asked whether they consider the statements true, partly true, partly false or false. When used with this group of patients with conditions involving physical disability it was considered that 14 of the items were inappropriate for example item 9 'only a specialist in mental treatments will be able to help me get better' and item 18 'learning to relax in difficult situations is an important part of treatment'. Because after use with 7 patients only half the items were found to be appropriate the use of the test was discontinued.

Minnesota Multiphasic Personality Inventory

Aspects of the patient's personality which might pre-dispose him to view health and illness in different ways were explored using the MMPI. As time was to be of the essence in this study - only about half an hour in which to interview the patient - a shortened form was used. The scales considered most appropriate for the purpose was hypochrondriasis (Hs), the Hs scale is said to measure the amount of abnormal concern about bodily functions, people with high scores often have a long history of exaggeration of physical complaints and seeking sympathy, hysteria (Hy) and depression (D) scales.

The inventory was devised for use with psychiatric patients and some items were inappropriate, A42 - 'I have no difficulty keeping my balance in walking'- and A44 - 'I have little or no trouble with my muscles twitching or jumping' - might for a patient with stroke or a spinal injury be the very physical problems for which they were coming for physiotherapy. The thirty one items of the Hs scale were given to patients in the first part of the pilot study. The cards containing the statements were given to the patients and they were asked to sort them into three piles, of True (like me), False (not like me) and Cannot say. The method seemed acceptable and only a few cards were placed in the 'cannot say' category.

Because the purpose of the inventory was to provide an estimate of syndromes commonly recognised in patient with psychiatric morbidity, only a small proportion of the total scale was being used and because some items referred to actual physical symptoms of the condition from which the patient was suffering, it was decided not to continue using it with this study population.

A new measure of conservatism

If the physiotherapists were more rigid in their attitudes it was hypothesised that their approach to the patient would be more set, and they would be less likely to adjust flexibly to the individual needs of each patient. Rigidity has unpleasant implications but it was hoped that conservatism might be a more acceptable concept that would still tap the same type of characteristic. A 50-item scale is presented to the subject who is asked, which of the following do you favour or believe in. Items are words such as 'death penalty', 'patriotism', 'socialism', and the subject is asked to 'circle yes or no or if absolutely uncertain ?'.

This type of test did not prove acceptable to the therapists, some were reluctant to complete them most were keen that returned forms should not be named or numbered two refused to complete a form.

For the six therapists who returned completed forms the mean was 50 which was high, but the range was from 42 to 66 with three therapists being in the low 40s. Two older mean over 50 years of age took part, but at the therapist's wish the forms were not identifiable to individuals.

As this test aroused the suspicion of the therapists and antagonism of two, this method of assessing the ridigity of the therapists will not be used in the main study.

The therapists (28)

8 therapists treating the patients, a further 20 who were working in the physiotherapy departments at that time.

Age range 23-39.

Experience From 2-12 years in clinical practice.

Approach - generalist versus specialist

Two thirds of the therapists thought a specialist approach was preferable.

Generalist approach - therapists supporting this felt they should be able to move around and liked variety in their work. Newly qualified therapists and those working part-time supported this viewpoint.

Specialist approach - the majority of therapists supported this approach. Gathering specialised knowledge and gaining expertise in a particular area was seen as desirable the specialist areas mentioned were respiratory care, manipulation, children, neurological and orthopaedic conditions.

Importance of techniques

The therapists opinions were divided, approximately half stating that techniques were all important and the best way of improving the treatment of patients was by improving techniques. The other half stressed the importance of the relationship with the patient, techniques were not seen as unimportant, but could often be rendered ineffective if a good relationship with the patient was not established.

Perceived autonomy

Autonomy was seen as extremely important. Being able to make decisions about whether to treat patients or not in the first place, then helping to decide or deciding on appropriate treatment, its progression and termination were all seen as desirable even newly qualified therapists mentioned aspects of autonomy as reasons for being satisfied with their present post though they liked to feel advice was available if needed.

Patients

Reasons for enjoying and not enjoying treating different kinds of patients came into three main categories, firstly the patients condition, many expressed a preference for treating backs, neurological conditions, chests, 'I really enjoy sports injuries'. Reasons for disliking were similar 'I don't like working with obstetric patients', 'I can't stand chests', 'I find recent injuries in outpatients very boring'. The age of the patient was also frequently mentioned. 'I don't like working with old people', 'I'm uneasy working with children', 'I enjoy working with geriatric patients most'. The third reason given was characteristics of the patients themselves, those who were cheerful, presented a challenge, were interesting people, patients who feel sorry for themselves were seen as less attractive to work with.

Contribution of patient and therapists to outcome

Most thought the relative contribution varied, however without some input by the patient treatment was unlikely to achieve much. Some therapists seemed to achieve more than others with their patients. The potential for the patient to contribute towards their recovery differed, very little perhaps when receiving for example ultrasound for a soft tissue injury, but much more with hemiplegia resulting from a cerebrovascular accident.

Extent of compliance

Following advice and instructions given by therapists was seen as important by all. The extent to which patients complied was thought to vary but in general most patients were seen as trying to follow the instructions given; therapists thought they could identify those patients who were following instructions and those who were not.

How much does physiotherapy help patients

Percentages quoted referred to overall practice, and between 40% and 60% of patients were thought to get little benefit from treatment. This was thought to be because of inappropriate referral in the first place, and because of the practice in many departments of referring patients for 4 or 6 weeks treatments - to continue until the next clinic appointment.

Discussion and conclusion

Because of the large number of factors identified which could be influential to the process of recovery it was clear that it would not be possible to investigate all of them in detail, in one study. The three component parts, the patient, the therapist, and the therapeutic situation could each individually form the focus of further study their interaction being an integral part of the investigation of any one aspect.

Tape-recording informal interviews enabled all information to be accurately recorded for later analysis and avoided bias in the note-taking of the research worker; it was also possible for the subject to have the full undivided attention of the person asking the questions.

Video-recording the treatment sessions was acceptable to the therapists and the patients - though the therapists found it more threatening initially. The main value of this method was that an accurate record of the treatment session was obtained which allowed independent analysis by different observers.

The next stage of the study will focus on the patient and follow their progress over time so that detailed in-depth information can be collected.

Observation of work in physiotherapy departments during Study I demonstrated the wide variety of conditions of patients referred for treatment. The literature did not provide methods for categorising these patients other than by diagnosis, and this was not satisfactory firstly because of the frequent lack of a clearly stated diagnosis for many patients, and secondly since it is the symptoms and problems rather than the disease process itself that form the basis for referral for physiotherapy. Therefore, a classification for evaluation was produced which grouped together patients with conditions where the aetiology is known and the outcome of treatment can be considered in a similar way. The grouping takes into account the natural history of the condition and its associated prognosis; shared characteristics in relation to aims of treatment and the extent of the contribution of physiotherapy to the patients' total treatment (Appendix A p. 1). This was to form a basis from which to decide on the categories of patients to be selected for further stages of the study.

References

STUDY II

Asch, S.E. (1946), 'Forming impressions of personality', Journal of Abnormal Psychology, vol. 41, pp. 258-90.

Caine, T.M. (1979), 'Treatment expectancies questionnaire' in Personal Styles in Neurosis: Implications for Small Group Psychotherapy and Behaviour Therapy, Routledge Kegan and Paul, London.

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STUDY III

Summary

Twenty two patients were monitored during the period when they were receiving treatment. The initial interview explored the patient's cognitive appraisal of their situation, their emotional responses to it, personal constructs, expectations and perceived

personal control over recovery were investigated; information about compliance with treatment regimens was also collected. Monitoring at specified intervals was undertaken and measurement of physical variables related to the patient's symptoms and psychological variables related to cognition and mood were developed, the extent of their reliability and validity was investigated.

Introduction

The first two stages provided a data base for this study of a defined population, with monitoring of important aspects undertaken for a specified time. A search for appropriate tools of measurement of physical disability revealed that few were available that gave any indication of their reliability (see Table 15 Appendix A, p. 37). Therefore this third study would concentrate on testing the reliability of available tools of measurement and where these were not suitable developing and testing new tools for assessing the dependent variables of performance of movements and performance of functions and the psychological variables associated with cognitions, feelings, locus of control and personal constructs.

Patients for this stage of the study were selected by using the Classification for Evaluation (see Appendix A p. 1) developed during Study II. Patients selected were from Group 2 and Group 3 suffering from conditions frequently found in physiotherapy departments, that result in physical disability.

Aims

To monitor the recovery of patients following the onset of a condition involving physical disability by investigating their physical performance and level of independent function over a three-month period starting on their referral for physiotherapy. To examine:

1) The patients' cognitive appraisal of the situation.

2) The type and extent of emotional arousal.

3) Personal constructs following the onset of the condition.

4) The expectations of the patient and the therapist about the outcome of treatment.

5) The patients' beliefs about the locus of control for their recovery.

To relate these independent variables to dependent variables of performance and function.

6) To develop and test tools of measurement to assess and monitor the above aspects.

Methods

Patients were selected who were suffering from physical disability following a cerebrovascular accident (Group I) and a fracture of the wrist (Group II) who had been referred for physiotherapy treatment in two London hospitals in the 10 month period December 1979 to September 1980.

Informed consent was obtained from patients fulfilling the criteria for entry to the study. Each patient was interviewed within 7 days of referral to physiotherapy - physical performance and function were assessed. The therapists were interviewed at the beginning of the treatment at a specified interval and at discharge or exit from the study. The development of tools of measurement is discussed separately in the section 11 on Measurement,

Subjects

Group I Patients with hemiplegia or hemiparesis following a cerebrovascular accident

Group II Patients who had sustained a wrist fracture and who were referred for treatment following the removal of plaster of paris bandage.

Patients of both sexes and any age were included able to

a) comprehend written and spoken English

b) speak and communicate clearly in English.

Materials

Semi-structured interview schedules with probe questions.

JVC MIC 100 cassette recorder.

Tape recorder - Sony Cassette corder TCM, 797

Sony Video recorder AV 3420 CE

A number of tools of measurement were being developed during this stage. These and others were tested for their appropriateness with this group of patients. They included the following:

Gross physical movement scale

Personal care scale

Rating grids of constructs relating to onset of condition

Checklist of affective state

Scale for influence of changes in muscle tone on movement.

Procedure

Therapists, medical staff and nurses involved in the care of patients selected were consulted, permission was sought from ethical committees and hospital administrators were informed about the proposed study. From the commencement date each patient who fulfilled the study criteria was asked to take part, and informed consent obtained; there were no refusals.

Procedure

In Group I

1. Patient information sheet 1 (see Appendix B Schedule III) was completed.

2. The first interview pp. 2-6 were completed and tape recorded.

3. The patient was videotaped performing 6 items of Gross body movement.

4. Patient reports of ward activities were recorded.

5. A self care score was completed on admission at 2, 4, 6, 8, 10, and 12 weeks.

6. Influence of changes in muscle tone on movement (4 times)

7. Affective state checklist was completed on admission and at 2 weeks.

8. Rotter (1966) locus of control scale was completed by the patient.

9. Progress reports collected on the same day from patient and therapist on 3 separate occasions.

10. Rating scales of personal contructs

On discharge or exit from the study at 12 weeks

11. Information about advice and instructions given and extent of compliance with these.

12. Information about people or things that had been particularly helpful or unhelpful during hospital stay and in what way.

13. Therapist discharge form completed.

14. Patient discharge form completed.

In Group II

1. Patient information sheet 1 (see Appendix B .III).
2. The first interview pp. 2-6 completed and tape recorded.
3. Measurement of movements of both wrists:
    a) Flexion and extension
    b) Radial and ulnar deviation
    c) Pronation and supination
    d) Grip strength
4. Measurement of localised oedema by water displacement.
5. Measurement of circumference of wrist joint.
6. Patient reports of pain on admission and at 2, 4, 6, 8, 10 and 12 weeks.
7. Self care score on admission and at 2, 4, 6, 8, 10 and 12 weeks.
8. Affective state checklist.
9. Rotter (1966) locus of control scale completed.
10. Rating scales of personal constructs.

Items 11-14 as for patients in Group I.

Methods of measurement for items 3, 4, 5 and 6 for Group I patients and items 3, 4, 5, 6 and 7 for Group II are discussed in the section on Measurement, p. .

Results

Though 41 patients were accepted into the study complete information is only available for 22 patients. The reason for this was 4 died, 6 were transferred to other hospitals and 9 did not continue to attend for treatment.

Age and Sex Range 41-89 years; 6 men, 16 women.

Patients with hemiplegia 5 men, 4 women; age range 29-89 years, mean of 66.

Patients with wrist fracture 1 man, 12 women; age range 41-83 years, mean of 66.

Treatments

The total number of treatments received by patients varied from 14-44, with an overall mean of 27. Stroke patients received between 16 and 44 treatments with a mean of 31.8. Patients with fractured wrist between 14 and 30 treatments with a mean of 25.5.

Patients and therapists expectations

Patients and therapists had some difficulty in discussing their expectations. Despite this difficulty at the beginning in expressing their expectations, at later stages patients often remarked that earlier expectations had not been fulfilled. Asking patients in a general way about expectations did not provide useful information. Therapists reported that all patients would either do very well, or well, this may have been because 'doing well' has implications for the therapist as well as the patient, a therapist should be able to help any patient to 'do well'.

Progress reports

Because of changes of therapists it was not always possible to obtain opinions about progress. Initially patients saw less progress than therapists, this may have reflected their differing perceptions of the patients main problems, therapists relating to movements, patients to functions; movements might be expected to return before functional activity was regained.

When asked to talk in overall percentage terms about progress some patients were able to state confidently 'I'm 75%' or 'only 50%' recovered this the present state in terms of their pre-morbid state of 100%. However it soon became clear that for many patients progress or recovery was multi faceted, pain might be better but little more movement, the leg might be improving but not the arm. This made an overall percentage difficult to calculate and its use was discontinued.

Reports of pain

All patients with a wrist fracture reported that they had pain in the affected wrist. Most commented that sudden movements or using the hand without undue care caused pain. Only 3 reports were obtained for all 13 patients. At the first report 2 patients reported very severe pain, 5 severe, 4 not very severe and 2 not severe at all (details in Appendix A, p. 55 Table 18).

During the study it became clear that more detailed descriptions of pain were necessary and constant pain which was present all the time should be separated from episodic pain which was exacerbated by movement, this will be done in Study IV.

Independence scores in the department and on the ward

There were differences in the independence scores from the videotaped sessions as scored by the observers and that reported by the patient on the ward. First scores were lower for the videotape with a mean of 15.9 as against a patient report of 16.6, however subsequent reports were lower than the videorecorded ones. (See Appendix A, Table 20 p. 56). Subsequent lower ward scores may have reflected the fact also reported by patients that though they were able to perform activities they were not allowed to do so on the ward.

Personal care scores

The means of all patients (22) personal care scores ranged from 11.7 on referral to 19.0 at 8 weeks. Group I patients were lower 9.4 on referral and 18.5 at week 8 than Group II patients 13.3 on referral and 20.8 at 8 weeks (full details in Appendix A, pTable 21, p. 57.)

Personal constructs

A grid was constructed, the elements were the restrictions imposed by the patients condition, the constructs the individuals affective responses to these restrictions both constructs and elements were elicited from the patients, an example of a completed grid is in the Appendix A, p. 58 . The grids explored the individuals response to the onset of the condition, and attempted to monitor changes that occurred in these responses during the recovery period; group similarities and differences were explored. Though the restrictions imposed by the patients condition were similar, because of individual starting points constructs at the start of treatment were not always within the patients' range of convenience, some patients were initially more mobile than others. Because of this group similarities and differences could not be explored using this method, it was decided to use rating grids in Study IV. Constructs would be provided from a larger pool of elicited constructs, the elements on each occasion the patient concerned, who would be asked to rate themselves on provided constructs within their range of convenience. The grids used in this study would provide a very helpful method of helping the therapist to understand the individual patients' problems, though would not be useful in monitoring a group of patients as in the present study.

Gross body movement and personal care

Methods of measurement of these aspects were being developed during this stage of the study and are discussed in the section 11 on Measurement.

Changes in muscle tone

The method used of monitoring the effect of changed muscle tone on movements by use of videotape did not prove to be reliable with agreement of only 66% between independent assessors using a modified Stichbury (1975) scale. Other methods are discussed in section 11 on Measurement.

Measurement of range of movement

The method used of videorecording wrist movements is described in the section 11 on Measurement. It did not prove reliable and other methods will be developed for Study IV.

Locus of control

The Rotter (1966) scale was completed by the first 12 patients, the scores obtained were all in the middle range, between 11-13. The scale did not have face validity for the patients and two further patients refused to complete it as they said it was meaningless for them. The scale was not given to the remaining 8 patients. A more suitable situation specific scale will be developed for the next study.

Perceptions of patients main problems

For 20 patients therapists thought the main problem related to physical symptoms, for only two patients were problems related to function mentioned. All patients saw their problems in terms of limitation of function.

Expressed emotion (see Appendix B III for rating scale.

Information was collected about amount of emotion experienced and frequency of occurence - the increases showed a direct correlation i.e. a small amount and sometimes, or quite a lot and quite often, the only difference occured with depression where 3 patients reported feeling extremely depressed but only occasionally. There was, as might be expected, more extreme expressions of emotion at the first interviews soon after onset. Though there were differences between the ratings of different emotional feelings, there tended to be reports of an overall raised level of emotional arousal, where one was raised others were also raised see Table 22 in Appendix A p. 60.

Satisfaction

Patients and therapists were both asked how satisfied they were with the patients' progress, 9 therapists were not very satisfied, 11 were satisfied, two were very satisfied. One patient was not satisfied, 8 were not very satisfied, 8 were satisfied and 5 were very satisfied. For only 8 patients (36%) did patient and therapist satisfaction show concordance.

Compliance

All the patients said they had been given advice but only 5 said they followed it frequently, 8 had sometimes followed it and 7 reported only occasionally following advice.

People who were helpful and unhelpful and in what way

Full details in Appendix A p. 61 .

Nurses

Were seen as helpful, kind, encouraging and morale boosting, sympathetic but above all doing things for the patient. They were also seen as unapproachable, making patients feel a nuisance, not understanding and making patients feel small and always so busy 'so very busy you don't like to ask'.

Busyness of nurses was mentioned by all patients but stressed as being unhelpful by two thirds of the patients.

Consultants and ward doctors

The helpful/not helpful concept was not seen as appropriate here. Doctors were seen as not knowing the patient, don't talk to them, are not interested and really don't know one patient from the other but 'wants me out, I'm just taking up a bed' (Group I patients).

Physiotherapists

Were seen as trying hard. Giving confidence making patients think they could achieve things and bothered about them as people. They were also rude and brusque, clamped down on patients and took the ground from under them. Students were said to be frightening as they didn't know what they were doing, this in turn making patients anxious.

Other patients

Could be nice and encouraging - and sometimes the patient enjoyed helping the other patients. Could also be very depressing, some were very confused which was distressing. Could be good to see others doing well but frightening to see some getting worse.

Discussion and conclusions

The major task of this study was the development and testing of tools of measurement used to monitor physical and psychological aspects associated with recovery in two groups of patients with physical disability. Because many of the tools were being developed during the study and the total number of patients was small, conclusions about the association between psychological factors and recovery from physical disability could not be made; their relationship will be examined more fully with two similar groups of patients using the methods developed during this study in Study IV.

Where the methods used were demonstrated to be inaccurate or inappropriate they were discarded and where necessary further methods sought. No further reliable method of measuring localised oedema of the hand and forearm was found because patterns of swelling varied widely and measuring circumference at any given point did not provide an accurate indication of overall swelling. Because all patients had been immobilised and there was therefore considerable muscle wasting, this wasting was equal to or sometimes greater than the localised swelling, and the overall water displacement of the clinically swollen hand was less than the unaffected hand. New measures will be developed for examining changes in muscle tone, and a situation based locus of control scale will be devised. The variability of response of those with objectively similar conditions and in some cases the similarity of response of those with different conditions demonstrated that individual responses to the onset of these conditions was not linked to objective severity. That patients and therapists viewed the patients' problems in a different way; physical signs and symptoms being predominant in therapists reports, patients saw problems in terms of restriction in the performance of functions. This may have accounted for the low correlation of reported satisfaction with recovery between therapists and patients perceptions of recovery being based on changes in different aspects. More information is needed about the extent to which patients understand and remember instructions given to them during physiotherapy sessions, a check must be made on recall of instructions before attempting to assess the extent of compliance. Expressed emotion could be monitored more reliably by using an established mood adjective check list or profile of mood states that included similar words to those used by these patients.

This study provided useful information about the two selected groups of patients and the opportunity to develop and test methods of measurement suitable for monitoring aspects of recovery specific to the two diagnostic groups. The next study, IV, will concentrate on testing the hypotheses proposed that psychological factors can account for some of the observed variability in the recovery of patients with conditions of similar severity.

References

Study III

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STUDY IV

SUMMARY

Forty patients with conditions involving physical disability were assessed on referral for physiotherapy, 20 patients had suffered a cerebrovascular accident Group I, 20 had sustained a wrist fracture Group II. Each group was monitored for a specified period, Group I 6-12 weeks, Group II 4 weeks. Information was collected about both physical and psychological variables, therapists and patients perceptions about the patients problems were explored. There was little correlation between objective measures of severity and patients perceptions of severity. There were significant differences between patients and therapists on a number of aspects including perceptions of the patients problems, of progress during the recovery period, satisfaction with recovery, or condition at discharge. A full discussion of the relationships between physical and psychological variables is given in the appropriate sections.

Introduction

Having developed and tested methods of measurement for monitoring change in symptoms of patients with two specific conditions this study examined the relationship between different variables during a specified period to find if predictions about recovery could be made from examination of psychological variables.

The dependent variables were the measurements of physical performance and differed in the two groups; for Group I patients measurement of gross body movement and quality of arm and leg movement and for Group II measurements of wrist movements, grip strength and patient reports of pain. The independent variables examined were psychological and included mood states, perceptions of patients and therapists about the patients condition and their recovery, patients and therapists expectations about recovery, and the patients personal constructs about their condition.

Aim

To investigate two groups of patients with conditions involving physical disability to find the extent to which patients cognitions and emotions were related to the type and extent of recovery achieved.

Methods

Patients who fulfilled the criteria for selection entered the study until a total of 40 patients were included, 20 in each diagnostic group. Informed consent was obtained from all therapists who might be treating these patients and from each patient before they were included in the study. Information was collected from the patients and measurements were taken at the beginning of treatment at specified intervals, and on discharge or exit from the study. Information was obtained from the therapists after they had seen the patient on two occasions and at similar specified intervals. Also at the time of the patients discharge or exit from the study. Tools of measurement used are described fully in the section 11 on Measurement.

Subjects

Patients who had been referred for physiotherapy of both sexes and any age who were able to:

a) comprehend written and spoken English

b) speak and communicate clearly in English.

Group I Patients with residual hemiplegia or hemiparesis following the onset of a cerebrovascular accident

Group II Patients who had sustained a fracture of the wrist, either a Colles or Smiths fracture.

Materials

Semi-structured interview schedules see Appendix B p.

Tape recorder Sony cassette corder TCM 797

Gross body movement scale

Quality of arm and leg movement form

Personal care scale

Rating grids

Profile of Mood States (POMS) McNair, Lorr and Droppleman (1981)

A New Scale of Social Desirability Crowne and Marlowe (1960)

Recovery locus of control scale.

Grip strength meter supplied by Boots Research Division

Apparatus for measuring water displacement

Protractor

Plastic goniometer

Procedure

Therapists, medical staff and nurses involved in the care of patients in the selected groups were consulted, permission was sought and obtained from the ethical committee, and the hospital administrators of the hospitals included in this study were informed.

Patients schedules completed as follows (schedule in Appendix B IV)

For all patients

First patient interview completed.

Personal care. First patient report.

Patients and therapists expectations.

Card sort of P.O.M.S. into 4 categories -

not at all, a little, quite a lot, extremely

Rating grids completed - 11 items

rated separately for i) as I see myself before this happened and

ii) as I am now. This on 3 separate occasions.

Locus of control scale card sort of 9 items into 5 categories.

strongly agree, agree, uncertain, disagree and strongly disagree.

Life events checklist of items after Paykel (1974).

Progress reports at 2 weeks, and 4/6 weeks.

Social desirability scale completed at 6 weeks.

Rating grids repeated at 4/6 weeks all patients and 12 weeks Group I patients.

P.O.M.S. at 4/6 weeks.

Details of P.O.M.S. and rating grids and life events checklist in section 11 on Measurement.

Group I patients

Gross body movement assessment at first interview and 6 and 12 weeks.

Quality of arm and leg movement assessment at first interview and 6 and 12 weeks.

Sensory assessment at first interview and 6 weeks.

Group II patients

Type of fracture

Measurement of wrist movements }
Measurement of grip strength } at first interview and 4 weeks
Patient reports of pain }

For both Group I and Group II patients on discharge or exit from the study

Information obtained about advice and instructions given and extent of compliance with them.

Information about people or things that have been particularly helpful or unhelpful during recovery.

Patient discharge form completed.

Therapist discharge form completed.

Details of methods of measurement and administration given in section 11 on Measurement.

Results

The patients 57 patients entered the study and complete information is available on 40 patients, 3 died, 10 were transferred or did not continue with treatment, 4 had further serious illnesses.

Diagnosis

Group I 20 patients with hemiplegia following a cerebrovascular accident.

Patients in this group had all been admitted to hospital following the onset of a cerebrovascular accident and had been referred for physiotherapy with residual hemiplegia or hemiparesis. For each patient it was the first time they had suffered a cerebrovascular accident. It was policy in the hospitals included in this stage of the study for all patients with stroke to be referred for physiotherapy as soon as they were considered to be in a stable condition, this was sometimes within 24 hours in others up to 2 weeks. In the first few days some patients were seen on the wards and received physiotherapy but though permission was sometimes sought from patients before they attended the physiotherapy department, monitoring did not start until their first treatment in the department.

Group II 20 patients having sustained a wrist fracture. Patients in this group had suffered a fracture of the lower end of the radius (19 Colles fracture, 1 Smiths fracture). All had fallen, 18 in the street, often in icy conditions, 2 had fallen in their own homes. The fractures had all been immobilised in plaster of paris cylinders for a period of from 4-6 weeks and patients were referred for physiotherapy on the removal of the plaster. The main symptoms were decreased range of all wrist movements, decrease in strength in fingers and thumb, swelling which was sometimes localised to the fracture site and sometimes extended up the forearm, but more often on the dorsum of the hand and down to the fingers and thumb. Localised discolouration was sometimes still present when the plaster was removed and pain was present in some form in most cases exacerbated by movement.

Of the 40 patients, 10 had other existing pathology (15 of these were stroke patients).

Age	Range 50-85 years, Mean 69 years.
Sex	Of those patients with hemiplegia 14 were female 6 male. Those with a wrist fracture 18 female and 2 male.
Marital status and home circumstances	Eighteen patients were married, 10 single and 12 widowed, 17 were living with their spouse 4 with other friends or relations and 19 lived alone.
Employment	Ten patients were working before the onset of their condition, 12 were housewives and 18 retired.

Social class	Social class using OPCS criteria were one patient from Class I, 21 from Class II, 13 from Class III and 5 from Class IV.
Stay in hospital (20)	Three stroke patients were in hospital for less than 6 weeks, 6 between 6 and 9 weeks, 10 between 10 and 20 weeks and one patient was still in hospital when the study finished.
Weeks receiving treatment	Overall patients received between one and 20 weeks treatment, stroke patients between 3 and 20 weeks, with a mean of 10, wrist patients between 1 and 12 weeks with a mean of 6, but over half the patients in this group had 4 weeks or less treatment.
Side affected	Eleven patients' right side was affected, (9 stroke patients) in 29 the left side was affected.
Dominance	For 13 patients the affected hand was the dominant hand (10 stroke patients) for 27 their non-dominant hand was affected.

Physical state

Group I

On referral 4 patients had no active movement in either arm or leg and a further 10 had no active arm movements, on discharge 8 patients still had no useful active movement in the affected arm, and two patients no active leg movements. Twelve of the patients had increased tone, 8 diminished tone 9 had some degree of hemianopia. Ten patients had some sensory deficits 7 had deficits of both touch and joint position sense and a further 3 had only deficits of touch. Seven of the patients with sensory deficits had a left sided hemiplegia 3 had right sided paralysis. In all 9 patients had suffered damage to the right hemisphere 11 to the left.

Physical state

Group II

Ten patients had simple fractures, 10 were either comminuted fractures or were displaced. 18 fractures were fixed in a below elbow plaster - one had a reinforced slab and the other an above elbow plaster, (the patient with a Smiths fracture). The plasters were all applied between 3 and 10 hours after the fall with a mean of 6 hours. One patient's shoulder was affected in the accident.

Prior independence

Thirty eight patients lived independent lives prior to the onset of their condition, one was independent only with difficulty and one needed some help with some activities.

Total attendances

Ranged from one wrist patient who only attended once to a stroke patient who received 90 treatments.

Group I

The least number of attendances by a patient with stroke was 13 with an average of 39 and a range of 13-90 attendances, 12 patients were still attending as out patients at the time the study terminated, 3 patients were still in hospital.

Group II

Eight patients attended between 1 and 10 times, 11 between 11 and 19 and only one patient 50 attendances. Classes were held 3 times a week but only 5 patients attended for an overall average of 3 treatments a week, 10 attended twice a week and five one.

Perceived seriousness

Group I patients

Initial perceptions Three saw their condition as very serious, 4 as serious, 5 as not very serious, 1 as not serious at all. Seven patients were unconscious at onset.

Perceptions at 2 weeks after onset Eight saw their condition as very serious, 12 as serious (see Appendix A p. 55 Table 19).

Group II patients

Initial perceptions One patient saw her condition as very serious, 12 as serious, 5 not very serious and 2 not at all serious.

Perceptions at 1 week after removal of plaster One patient perceived her condition as very serious, 13 as serious, 5 not very serious and one not serious at all.

Perceptions of patients problems

More than one main problem was mentioned by some therapists 22 saw the patients main problem as physical, relating to symptoms, 10 mentioned psychological problems, this included pain, 7 emotional problems 2 only mentioned problems related to function. The therapists did not give information for 12 patients. Of the 40 patients only 11 patients mentioned physical aspects among their problems, 25 gave limitation of function as their problem and 4 were not able to identify a main problem. Fourteen percent of therapists saw limitation of function as a problem but 62% of patients saw it as their main problem.

Perceptions of progress

At the first report therapists thought there had been more progress than patients, no therapist saw the patient as either the same or worse (see Figure 1 Appendix A p. 18) Ten patients reported seeing no progress at all at the first report, the difference between the two reports was found to be highly statistically significant at .001 level using a T-test for related means.

At the second report the therapists were still seeing more progress than patients though the difference was not statistically significant.

Congruence between patients and therapists reports was low, overall 50% at first report 37% at second report. Congruence differed between the groups being lower for Group I patients 40% at first report 35% for second report as against 60% and 40% for Group II.

Satisfaction

Again more therapists (18) did not reply to this question because they had recently changed and had not been treating the patient over a sufficient period of time. Twenty six patients were satisfied (6 very satisfied) 13 not satisfied (3 not at all satisfied), 18 therapists were satisfied (2 very satisfied) with 4 not very satisfied.

Overall congruence of satisfaction was 28%, see Appendix A p. 20 Table 5.

Expectations

Expectations were linked to the performance of specific activities and going home at 6 and 12 weeks for patients in Group I. Patients on the whole had higher expectations than therapists though 9 patients felt unable to state their expectations (see Table 23 in Appendix A p. 64). For Group II patients the time intervals for expectations were 2 and 4 weeks, the patients here had higher expectations than therapists though 7 therapists and 3 patients were unable to give information about their expectations, the therapists because they changed frequently and had not fully assessed the patient in question.

Locus of control

The recovery locus of control scale was scored in the direction of internality, the scores obtained ranged from 23-43 with a mean of 31.9. Total possible score was 45. Three patients scored above 40 and four had a score of 23.

Life events

Fourteen patients had experienced stressful life events in the 6 months preceeding the onset of their condition; 7 in Group I and 7 in Group II.

Profile of Mood States P.O.M.S.

Completed profiles were available for all patients at first interview and scores on the five mood states were as follows:

Tension from	-2 - 17	Mean 5.1
Anger	0 - 11	Mean 3.45
Fatigue	0 - 16	Mean 5.2
Vigor	0 - 17	Mean 4.65
Depression	0 - 22	Mean 5.57

Second assessment was available for only 19 patients results here were as follows:

Tension	-2 - 13	Mean 4.4
Anger	0 - 6	Mean 2.2
Fatigue	1 - 12	Mean 4.6
Vigor	2 - 12	Mean 6.0
Depression	0 - 15	Mean 5.0

Marlowe-Crowne Personal Inventory Reaction

Because this was introduced during the study only 21 patients completed the inventory. The scores obtained ranged from 10-27; the mean was 20 standard deviation 4.8

Rating Grids

Completed at first interview 'As I see myself now.' Many patients thought able to see friends was not within their range of convenience and results are given for 10 ratings omitting the construct of "seeing friends".

Ratings were from 1 Active --- to 6 Inactive

	Group I		Group II	
	Range	Mean	Range	Mean
Active/Inactive	1 - 6	5.0	1 - 6	3.7
Healthy/Sick	1 - 6	3.3	1 - 6	1.9
Enjoy life/Not enjoy life	1 - 6	4.4	1 - 6	3.1
Not worried/Worried	1 - 6	4.4	1 - 6	4.1
Not frustrated/Frustrated	1 - 6	4.7	1 - 6	3.6
Not bored/Bored	1 - 6	4.4	1 - 6	2.3
In control/Not in control	1 - 6	4.9	1 - 6	2.1
Independent/Dependent	1 - 6	4.5	1 - 6	2.0
Strong/Weak	1 - 6	4.4	1 - 6	1.6
Not depressed/Depressed	1 - 6	3.8	1 - 6	2.4

Completed at second interview

	Group I		Group II	
	Range	Mean	Range	Mean
Active/Inactive	1 - 6	3.3	1 - 5	2.6
Healthy/Sick	1 - 6	2.7	1 - 4	1.6
Enjoy life/Not enjoy life	1 - 6	3.0	1 - 6	2.8
Not worried/Worried	1 - 6	3.1	1 - 6	3.5
Not frustrated/Frustrated	1 - 6	3.2	1 - 6	2.7
Not bored/Bored	1 - 6	4.1	1 - 6	2.2
In control/Not in control	1 - 6	2.9	1 - 6	2.0
Independent/Dependent	1 - 6	3.1	1 - 5	2.1
Strong/Weak	1 - 6	3.3	1 - 5	2.5
Not depressed/Depressed	1 - 6	3.1	1 - 6	2.2

Therapist contact time

Group I

Patients were all initially admitted to hospital and were brought to the physiotherapy department for treatment, though they might be seen before this in bed on the ward and given advice - monitoring started when they came to the department for treatment. Sessions were usually scheduled to be half an hour or an hour long. It was not possible to monitor all treatment sessions but a number (44) were monitored. A further 38 treatments involving stroke patients and the therapists in the study were monitored in all 82 sessions. Range was from 10 - 72 minutes in the department.

A smaller number (33) of sessions were monitored to find out about patient/therapist contact time during the session. A minute by minute check was undertaken noting whether contact occured or not during each minute of the treatment session. This may have produced an overestimate of time spent with the patient as any contact during each 60 seconds counted as one minute of contact time. The overall mean percentage of therapist/patient contact time was 62%. But a further breakdown revealed that for 17 sessions 11% - 50% of the session was spent with therapist and patient together, for the remaining 16 sessions contact time was from 71% - 98%.

Group II

Patients were all attending an exercise class designated for patients who had sustained a wrist fracture. The official time was one hour but patients spent on average 1½ hours in the department. Wax treatments preceded the exercises and new patients were usually individually assessed for about 5 minutes prior to joining the class. Individual attention was not given during the class, though some patients attended for further individual treatment sessions of 5 to 10 minutes. Where information was required from therapists it was not always available because of frequent changes of therapists and a new therapist felt unable to comment without having known the patient.

On discharge

Thirty nine of the forty patients thought they were better, 9 a great deal better, 23 quite a lot better and 7 only a little better. Six therapists thought the patient was a great deal better, 16 quite a lot better and 2 only a little better, 16 therapists felt unable to comment.

Progress

Due to self

Seven patients (5 Group I 2 Group II) thought they themselves were the most important factor in their progress, 25 thought their own part quite important and 8 thought their own efforts unimportant.

Due to treatment

Six patients thought their treatment the most important factor in their progress, 18 that it was quite important, 16 either did not know or thought it not important in their recovery.

Satisfaction with condition at discharge or exit from the study at 12 weeks

Six patients were very satisfied with the result 20 were satisfied 14 were not very satisfied. Five thought their therapist was very satisfied 25 that she was satisfied, five did not know and 5 thought she was not satisfied (see Table 25Appendix A p 66).

Two therapists said they were very satisfied, 16 were satisfied, 4 were not very satisfied and there were 18 patients on whom therapists felt unable to comment. Overall congruence of satisfaction 28%.

Attributions about control of recovery

Recovery controlled by self

Six patients saw their recovery as entirely controlled by self, 15 a great deal, 12 quite a lot 2 not much and 5 did not know.

Recovery controlled by treatment

One patient thought recovery would be entirely controlled by treatment, three a great deal, 7 quite a lot, 8 not much; the remainder did think their recovery would be controlled by the treatment they received.

Perceptions of condition on discharge

Patients and therapists perceived results differently, unfortunately 22 therapists felt unable to comment because they had not been treating the patient for long enough. Only 8 patients thought the result was as expected, 14 saw it as better than they had expected and 13 as worse (see Table 25 in Appendix A p. 66 .

Attributions about recovery on discharge

Asked about the contribution they had made themselves and the contribution of treatment towards their recovery, 7 patients thought their own contribution was all important, 8 that it was unimportant (see Table 26 Appendix A p. 66).

Treatment was thought to be all important by 6 patients and unimportant by 16.

Patients perceptions of what was helpful and unhelpful in their recovery

Though patients in general commented favourably about the help they had been given in hospital when asked to comment in detail they cited considerably more aspects that they considered unhelpful.

Results will be given separately for Groups I and II as the former were in-patients and had substantially more contact with the hospital.

Group I

What was considered to be helpful

Staff characteristics and their behaviour figured largely in all reports. Those characteristics considered helpful included being interested in the patient and their problems - this was mentioned most frequently - feeling that the staff believe in you, giving you confidence, not minding what they do to help, keeping the same staff so you get to know each other and being given help in an unobtrusive and pleasant way. Being given time to work things out in your own way, with staff adjusting to patients' problems and adopting a slower pace, staff who were thoughtful and considerate were seen as helping recovery. Other patients could be helpful, seeing the progress that they made, recognising the problems that they had and also as someone to talk to. The individuals own efforts and determination were mentioned as important in recovery as well as family members who could be supportive and could also provide an incentive for wanting to recovery and get back to caring for them.

A number of patients (12) commented on how helpful it had been talking about themselves to the R.W. having someone with the time to sit down and listen.

What patients considered unhelpful

It is possible to group the aspects considered unhelpful as follows:

General behaviour of staff that was unhelpful

Talking down to you; 'being treated like a child'; making you feel 'so high'; talking across you as if you're not there; making disparaging remarks about you or other patients out loud; not understanding you; not believing you if you say something, saying you're lazy when you really can't do it; doing too much for you and not allowing you the time to do it yourself; not accepting what's happened to you (the stroke) and trying to pretend everything is alright; being used as an example good or bad for other patients; 'one person tells you to do something so you do it the next one on duty tells you not to, its wrong, so what do you do?'.

Progress

A major point raised by 17 of the 20 patients concerned progress. Staff saying you're making progress and doing well when you're not - 'this delayed my coming to grips with reality, supported my unrealistic view', 'when they say you're getting better and you can see no change at all you wonder why they say it'. 'Very annoying saying you're so much better when you're not, why not save it till something is really happening'.

Having to ask for help

This was particularly in relation to going to the lavatory. 'Waiting is very upsetting'. 'You wait as long as you can because you know they're busy then you ask, when you can't wait any longer, and they say "presently" its awful'. 'Staff being bad tempered and snapping at you when you ask for something - if they don't want to do it why can't they say so nicely'. 'You hate having to ask and they make you feel a nuisance'. Four patients said they were very afraid of some staff members and tried not to drink so that they would not have to ask to go to the lavatory.

Boredom

Having nothing to do and no one to talk to was mentioned frequently, by sixteen patients in particular having no other patients near who could carry on a conversation and nurses being too busy to talk (18).

Not understanding

'You have good days and bad days but they say "you did it yesterday", they think you're not trying they don't understand'. 'They don't understand my problem (hemiplegia) and don't hold me so I can help myself'. 'They say you must be silly can't you see the plate in front of you! but I can't'(she has hemianopia with disturbance of vision).

General ward problems

The beds are so high you're afraid you may fall off (10); no privacy, nowhere to talk privately to visitors (3); it's all so open, not being allowed to do anything or move about in the ward (18); or get onto the bed to do exercises. Ward staff fearful you're going to fall so they like to see you sitting quietly.

Very warm feelings were expressed about many nursing and therapy staff, but the particularly helpful and unhelpful aspects are given below. (See Appendix A, p. 67,68)

Therapists

Favourable aspects

Were seen as helpful, giving confidence, telling you what to do, showing you how to do things, keeping their temper even when you can't do things.

Unfavourable aspects

Constantly changing therapists - being passed from one to the other.

Giving too much praise when it wasn't warranted (16); gave inappropriate treatment (6) 'making a cup of tea as preparation for going home! too busy to spend time with you, telling you you're doing things wrong but not really showing how to do them right. Using you as an example for other patients.

Nurses

All patients (20) commented on the fact that the nurses were always so busy.

Favourable

Understanding the patient and their problems, being cheerful and smiling, helping without embarrassing the patient.

Unfavourable aspects

Being too busy; being impatient; not giving patients sufficient time to try and do things for themselves (10); treating the patient like a child; being cross with patient for asking for help (nearly always with going to the lavatory (12)); not believing what the patient says.

Doctors

None of the patients felt they could comment on the helpfulness or otherwise of doctors in their recovery. 'He doesn't know who I am'; 'he always talks about me not to me'; he told me I'm not ill just disabled so they're not interested in me they need the bed (4); 'he just looks at the notes at the bottom of the bed and passes on'.

Group II patients Study IV

What is helpful

Helpful to know what to expect i.e. its going to be painful (6)

Doing the exercises in the class (7)

Giving me confidence (12) by attending the class

Being shown what to do in the class

Reassurance that I'm going the right thing

Being able to talk with others who have the same problems

Seing other people who are worse than you are

What is unhelpful

Not having anything to measure progress by. I can't see I'm getting better.

Not having anything written down about what to do at home

The therapists keep changing

Too much talking during the class

Analysis of data

To obtain a single score that would reflect what each individual had achieved during the process of recovery monitored in this study, preliminary transformation of the raw data of the physical variables was undertaken, the two diagnostic subgroups were considered separately because different physical characteristics were assessed and measured.

Group I (20)

Raw data was available on 3 variables. On 2 occasions for all patients and on 3 for 14 patients. The variables were:

1. Gross body movement (GBM)
2. Quality of arm movement (QA)
3. Quality of leg movement (QL)

The development and reliability of these scales is discussed in the section 11 on Measurement.

GBM scores were obtained from 2 ordinal scales of 7 items each. The two scales represented performance in two ways that of disability, whether the movement was performed or not and independence - was the movement performed independently or not and was scored as follows:

Disability	did perform movement = 1
	did not perform movement = 0
Independence	performed movement independently = 1
	did not perform independently = 0

The scores on these two scales demonstrated different correlations at each time period

at onset 0.62

at 6 weeks 0 .23

and at 12 weeks 0.74

So that the scores from both groups of patients could be considered in the same way, the GBM scores were expressed as percentage of the total possible score in each case. Scores were then transformed into arc sin scores by finding first the square root and then the inverse sin, the final score being expressed in degrees. (Appendix A Table 31, 32 pp. 75, 76.)

Group II subjects (20)

Physical variables

Raw data was available on 7 variables. 6 wrist movements and one of hand grip as follows:

1) flexion
2) extension
3) pronation
4) supination
5) radial deviation
6) ulnar deviation
7) grip

Two scores were available on each variable.

By principal component analysis of the 7 variables identification of 3 factors was possible. The totalled factor loadings are given below

	Factor 1	Factor 2	Factor 3
1	0.81	-0.06	0.08
2	-0.24	-0.166	0.88
3	-0.18	0.818	0.17
4	0.22	0.873	0.08
5	0.82	-0.11	0.16
6	0.18	0.35	0.80

Three movement variables were now available linking flexion and pronation, extension and supination and radial and ulnar deviation. These movements might anatomically be expected to be correlated. As the normal range of movement of the wrist joint and strength of grip varied between subjects the movement and grip scores were expressed as the proportion of movement of the affected wrist in terms of the movement of the unaffected hand. To normalise the data and take into account the different starting positions, with potentially more movement change possible for those with a lower initial score, the raw scores were transformed into arc sin scores, these used in all further analysis.

Transformation of raw scores into arc sin scores was undertaken by calculating the square root of the raw scores and the inverse sin of the square root the final score expressed in degrees.

In order to examine the extent of recovery of movement in the affected hand, a predicted score was obtained for each subject, so that an actual end score obtained could be compared to the score that might have been expected given the original starting point.

To obtain a predicted score the following equation was calculated for each of the 4 variables

$$y = x_1b_1 + x_2b_2 + x_3b_3 + x_4b_4 + c$$

where y = end score of each variable

x = the beginning score

b = the weights

c = constant term

The weights were the regression co-efficients obtained from the following regression equations for each of the 4 measurements.

Dependent variable = end measurement of variable

Independent variable = beginning measurement of all 4 variables

To examinethe differences between the predicted score and the actual score obtained an attainment score was calculated, the ratio of the predicted to the actual score. The ranges were as follows:

Movement	1	1.16 - 0.89
	2	1.28 - 0.02
	3	1.28 - 0.85
Grip		1.18 - 0.75

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STUDY IV

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The items of the POMS scale were presented to the subjects on cards and they were asked to sort them into the 4 categories, which were indicated by clearly labelled 4" x 3" cards. A score for each mood factor was obtained by summing the responses obtained for the items for each factor. A total mood score was obtained by summing the scores and subtracting the vigor score.

Items were as follows:

Gloomy
Relaxed
Restless
Guilty
Furious
Panicky
Nervous
Lively
Hopeless
Sluggish
Helpless
Angry
Anxious

Discouraged
Carefree
Tired
On edge
Desperate
Lonely
Worthless
Terrified
Vigorous
Uneasy
Ready to fight
Deceived
Miserable

Spiteful
Sleepy
Active
Afraid
Worn out
Full of pep
Annoyed
Weary
Alert
Resentful
Fatigued
Shaky
Grumpy
Unhappy
Tense

Measurement of anxiety

The most widely used approaches to the measurement of anxiety have been physiological and psychological measures. The physiological measures most commonly used have been blood pressure, heart rate, respiratory rate, and electrical skin resistance, but the results of these tests has on the whole been disappointing Levitt (1971). This because they are seldom related to each other, to psychological indices, or to intensity of stress. Most studies linking physiological and behavioural measures have been undertaken in animal laboratories and at the present state of knowledge physiological indices did not provide a reliable method of investigating the construct of anxiety for the purposes of the present study.

Psychological measures used to measure anxiety have been of three main types, projective tests, inventories and adjective check lists. Projective tests are unstructured or only partly structured perhaps the best known is the Rorschach ink blot test. The advantage of this type of technique is that the subject rarely has an idea of the interpretation of his responses and therefore cannot 'fake good'. Despite its wide clinical use where the meaning of the test can be revealed in the context of detailed study of the respondent, the lack of quantification of results and the different interpretations make it unsuitable for this experimental purpose.

Inventories and questionnaires have the advantage of ease of administration and quick and easy scoring. Their reliability is said to be greater than either physiological measures or projective techniques. This in terms of being less affected by extraneous variables in the experimental situation. Among the problems of using inventories or questionnaires is the common use of denial as a defense against awareness of anxiety response or acquiescence set and the effect of social desirability. Taylor's Manifest Anxiety T.M.A. (1953) was constructed from items of the Minnesota Multiphasic Personality Inventory (M.M.P.I.) and consists of forced choice items to some extent eliminating the social desirability effect, the test produced by the Institute for Personality and Ability Testing, I.P.A.P. Cattell and Schier (1961) is widely used but these and many others were mainly developed for evaluation of anxiety in psychiatric patients and concentrates more on the dispositional aspect of anxiety (A trait). The State-Trait Adjective Inventory S.T.A.I. Spielberger et a (1970) claims to measure both trait and state anxiety, is critisised because its main development work was carried out with college student populations.

Affective check lists such as those of Zuckerman (1960) are easy to administer providing the subjects have an adequate vocabulary level and verbal fluency, but an individual who defends himself against anxiety by denial or repression may score low on a check list even though very anxious. Affective adjective check lists were used in this study.

Social desirability

It has been recognised for many years that scores on psychometric tests are influenced by non test relevant determinants. Three main approaches to the problem were outlined by Wiggins and Rumrill (1959) attempts at statistical correction for 'faking' good or bad Meehl and Hathaway (1946) analysis of response sets Cronbach (1950) and ratings of social desirability of test items Edwardes (1957). These approaches reflect both the social desirability of the test items, and the behaviour of the subject in responding to these test items.

The need of subjects to present themselves in a favourable light varies and the extent of this influence on self-report tests was of particular interest in the present study. In informal interviews and when discussing their mood states and emotions patients frequently said 'no I must not let myself feel ...' 'it doesn't do to let oneself feel like that'. In particular in a situation where a negative emotional response might have been expected some patients reported nothing but positive feelings.

Crowne and Marlowe (1960) have developed a new scale of social desirability which was developed to avoid the ambiguities of the statistical deviance approach. The authors state that the items consist of those which are culturally sanctioned and approved, the rationale underlying the scale is that of the lie scale of the M.M.P.I. but less extreme. The scale is intended for and was tested with a population without significant psychiatric pathology and using the Kuder Richardson formula the internal consistency co-efficient was .88, a test-re-test of .89 was obtained.

The Marlowe-Crowne Personal Inventory Reaction

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you personally.

		True	False
1.	Before voting I thoroughly investigated the qualifications of all candiates		
2.	I never hesitate to go out of my way to help someone in trouble		
3.	It is sometimes hard for me to go on with my work if I am not encouraged		
4.	I have never intensely dislikedanyone		
5.	On occasion I have had doubts about my ability to succeed in life		
6.	I sometimes feel resentful when I don't get my way		
7.	I am always careful about my manner of dress		
8.	My table manners at home are as good as when I eat out in a restaurant		
9.	If I could get into a movie without paying and be sure I was not seen I would probably do it		
10.	On a few occasions, I have given up doing something because I thoughttoo little of my ability		
11.	I like to gossip at times		
12.	There have been times when I felt like rebelling against people in authority even though I knew they were right		

		True	False
13.	No matter who I'm talking to, I'm always a good listener		
14.	I can remember 'playing sick' to get out of something		
15.	There have been occasions when I took advantage of someone		
16.	I am always willing to admit it when I make a mistake		
17.	I always try to practice what I preach		
18.	I don't find it particularly difficult to get along with loud mouthed, obnoxious people		
19.	I sometimes try to get even, rather than forgive and forget		
20.	When I don't know something I don't at all mind admitting it		
21.	I am always courteous, even to people who are disagreeable		
22.	At times I have really insisted on having my own way		
23.	There have been occasions when I felt like smashing things		
24.	I would never think of letting someone else be punished for my wrongdoings		
25.	I never resent being asked to return a favour		
26.	I have never been irked when people expressed ideas very different from my own		
27.	I never make a long trip without checking the safety of my car		

	True	False
28. There have been times when I was quite jealous of the good fortune of others		
29. I have almost never felt the urge to tell someone off		
30. I am sometimes irritated by people who ask favours of me		
31. I have never felt that I was punished without cause		
32. I sometimes think when people have a misfortune they only got what they deserved		
33. I have never deliberately said something that hurt someone's feelings		

The inventory consists of 33 items which subjects are asked to mark as either true or false as it pertains to them personally. The total score reflects the extent to which the individual seeks to present themselves in a favourable light. A high score indicating a strong need for social desireability.

Rating grids of personal constructs

The use of a number of different grids were explored in Study III. A repertory grid where constructs were the restrictions imposed by the individuals condition and elements were the feelings aroused by these restrictions was constructed for each patient. Both constructs and elements were elicited from each patient. This provided a good way of examining each individuals personal constructs about their condition, however it did not provide group data that could form the basis for comparisions between individuals and in Study IV rating grids were used. Patients were asked about ways in which they saw themselves altered by the onset of their condition. These formed a pool of constructs which were relevant for people with conditions involving physical disability. Eleven of these constructs were provided for each individual, self was the element in each case. The individual was asked to rate themselves on the 11 constructs 'as I was before this happened', and 'as I am now' on 3 subsequent occasions.

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GENERAL DISCUSSION AND CONCLUSION

The clinical impression that initial severity was not of itself a reliable predictor of eventual recovery for these patients with physical disability was supported by the data. There was also considerable evidence of the disparity between individual perceptions and objectively measured severity within both groups of patients, also between the groups with some patients in Group I who had suffered a cerebrovascular accident, seeing their condition as less serious than some patients in Group II who had sustained a wrist fracture.

Changes in some physical symptoms, such as the performance of movement may be a necessary pre-requisite for the performance of different activities but clearly performance of movements of themselves did not mean that activities would be performed, this is evidenced by the lack of correlation between objective measurements of movements and reported restriction of activity.

It is clearly necessary to undertake objective assessments of physical symptoms towards which treatment is directed and restriction of movement for patients with physical disability is a prime symptom; however it is important that a direct relationship between these measurements and the performance of functions and activities in the individuals daily life are not assumed. The classification for evaluation, see Appendix A, p. 1 considers the performance of movements and the performance functions at different levels, the relationship between the two levels is an important topic for investigation, so that assessments of symptoms undertaken in hospital can be more reliably related to performance in daily life outside the hospital.

Significant positive and negative relationships found between the psychological and physical factors in the study are discussed in the appropriate sections, but as the aim of the study was to investigate aspects where change was possible, the findings that were of major concern where it appeared that change would be of benefit to the patient are discussed below.

The differing individual perceptions of the patient and therapist of both of the patients' condition and of their subsequent progress are a matter for concern. Under these conditions, the opportunity of establishing a warm therapeutic relationship and the possibility of agreeing and setting appropriate goals is significantly reduced. It is the responsibility of the therapist to investigate the patients' perceptions and to make hers/his known to the patient.

Closely linked to perceptions of the patients' problems is that of communication between patient and therapist. It was clear in this study that patients were not remembering information therapists thought they were giving them, either because they had not understood them in the first place or had forgotten them, patient recall of instructions and compliance with them being extremely low. If compliance with instructions for behaviour between treatment sessions is an important part of physiotherapy management, it is essential that more consideration is given to this aspect both in clinical practice and in the training of student therapists.

Two other aspects give cause for concern, the amount of time actually spent by the therapist with the patient during their treatment session, and for patients in hospital, the extent of activity possible during a twenty-four hour period.

For patients attending a hand class, very little time was allocated for individual assessment or treatment, the whole concept was of a group of patients with similar conditions joining together to undertake exercises. However it is open to question whether patients made any more rapid progress through attending the exercise sessions. Patients themselves spoke of their benefits in terms of re-assurance and encouragement, there was little evidence of greater physical changes associated with more frequent attendance. Exercises were given generally to the group, few patients followed them, though they followed their own ideas with considerable enthusiasm. There may be a place for individual assessment, reassurance and instructions which could for most patients replace repeated attendance at a hand class, this is becoming common practice in relation to back schools with the emphasis on giving information and instruction rather than repetitive exercises.

Patients in Group I with hemiplegia were brought down to the Department for treatment, though treatment was usually planned on a daily basis, individuals rarely came more than four days out of seven, and quite often less because of staff shortages, holidays or the patient having to remain for doctors visits or other investigations. Because treatment of neurological patients usually takes place in an open area or gymnasium there are considerable distractions for both the therapist and patient. Actual patient/therapist time was monitored and within a 40-60 minute period in the Department actual patient/therapist contact time could be as low as 10%. Sometimes patients were left to perform tasks under supervision, at others they waited in their chairs for attention. Some of the patients in the study were attending for occupational therapy and may have also spent an hour or so in that Department. However over nearly every week-end and for the remaining part of the day they stayed for most of their time out of bed - sitting in a chair often with feet on a raised footstool and with a front locking table fixed to the chair Patients were positively discouraged from moving around on their own, and because of staff shortages there was rarely time for nursing staff to help patients to walk. Patients reported that they were unable to perform any movements or activities in the ward, because the ward restrictions did not allow them to do so. Though these patients were in hospital specifically for 'rehabilitation', the greater part of each week-day and the whole of most week-ends were spent in enforced inactivity. It is essential to consider ways in which a more active programme can be planned for these patients, not only will movement not be regained as quickly as might be possible, but the inactivity of itself appears to be detrimental both physically and psychologically.

The recovery of patients with conditions involving physical disability was for many years seen mainly in physical terms, treatment being in the form of physical exercises and programmes of movement facilitation, more recently there has been an emphasis on the psychological aspects of physical disability with a realisation of their importance in the process of recovery; it would seem now that there is a danger of swinging from the totally physical approach to the totally psychological, this would be detrimental for these patients. Some aspects of the complex inter-relationships between physical and psychological factors have been demonstrated in this study and it is essential if these patients are to regain a level of functioning that is acceptable to them, that their treatment and management is planned taking into account both physical and psychological factors and their interaction.

STUDY I

Summary

Eighty-five patients and 58 physiotherapists were observed during treatment sessions and interviewed separately, department procedures were noted. Information was collected about the patients and their conditions, the treatment they were receiving, their opinions about and attitudes towards their condition and their treatment. Therapists' attitudes towards the patients and their conditions were also explored.

A literature search was carried out to find work already undertaken in this area, also to examine theoretical perspectives and research work undertaken in other areas which might have relevance for this study.

Introduction

In order to study the effect of non-specific factors on the process of recovery in patients receiving physiotherapy it was necessary to obtain information about the situation in which patients were receiving treatment, about the patients themselves and the therapists treating them. Data was collected which was to form a base-line from which later stages of the study would be developed.

Aims

The study was exploratory and had two main aims:

1. By observing the process of physiotherapy, to obtain basic data about

   a. The structure and organisation of treatment sessions.

   b. The patients and the therapists treating them.

2. To consider what methods would be suitable for obtaining information in this setting that would be acceptable to

both patients and therapists.

Methods

Non-participant observation was undertaken in five hospitals. Informal interviews with probe questions were undertaken with patients and therapists.

Subjects were selected on the basis of availability.

85 patients receiving physiotherapy treatment in 5 hospitals.
58 therapists who were treating these patients.

Procedure

Having obtained permission from the superintendent of the department, medical personnel and administrative authorities, staff were asked if they were prepared to be observed and interviewed. Informed consent was then obtained from the patients of those therapists who were willing to participate (6 therapists refused; no patients refused).

Patients were asked about their:

- Attitudes towards
    1) their condition
    2) the physiotherapy treatment they were receiving
    3) the physiotherapist(s) treating them
- Feelings about
    1) their condition
    2) the treatment they were receiving
- Perceptions of
    1) their own problems
    2) the benefits of treatment

The patients' expectations about their recovery and their opinions about desirable and undesirable characteristics of physiotherapists in general were explored.

Therapists were asked about their:

1. a) training
   b) experience
   c) areas of specialisation
2. opinions and preferences about treating patients with different types of conditions
3. characteristics in patients they considered desirable and undesirable, (see Appendix A, p)

Patients' notes were examined, with their permission, to extract a diagnosis where possible. However, for a third of the patients, symptoms were listed but no diagnosis was given.

Results

The patients

Patients with a wide variety of diagnoses and conditions were (see Table 17 Appendix A, p. 41) interviewed. There were great individual differences in the perceptions of patients about their condition with little or no correlation between objective severity and patients' perceptions of severity or expressions of extreme emotional reactions. Patients' perceptions about their treatment and the therapists treating them are listed in Appendix A p. 42, 44.

Expectations

Asked about their expectations of future recovery at the start of treatment most patients were reluctant or unable to give predictions. It was clear however that they did form expectations at any early stage, as towards the end of a programme of treatment many remarked that they were either 'better than expected' or 'were disappointed, because more progress had been expected'.

The therapists

Those interviewed covered a wide age range 21-60 years and experience of from 6 months - 38 years. No definite information was available on specialisation as at present there are no agreed criteria by which to define specialisation within physiotherapy - the only guideline here was length of time in a senior post. Listed in the Appendix A p. 48 are the characteristics generally agreed by the therapists to be important and influential in patients receiving treatment, though there was not general agreement as to whether these effects were beneficial or otherwise. 'Recognises he has a problem' and 'works with me' were the two most often mentioned as beneficial, being 'bloody minded' could be either detrimental or advantageous.

Discussion and conclusion

Patients were prepared to talk about themselves, their condition and the treatment they were receiving, however to obtain full information on any topic it will be necessary to use a tape recorder, as information was lost and there may have been a distortion through note taking. It will be necessary to approach the questions of perceived benefit from treatment and patients' perceptions of therapists in an indirect way; it was clear that most patients felt socially constrained to comment in favourable terms on both these aspects. Useful information was obtained from therapists but again different methods will have to be used to monitor the therapeutic situation in detail, there is considerable noise and movement and often therapists are treating more than one patient at any one time.

A useful baseline of data was obtained from which to develop further investigation and select the methods which would be appropriate. More specificity will be required in selecting patients for further study from the very wide range (see Appendix A p. 41 Table 17.) of those found in physiotherapy departments. To reduce some of the great variety found in all aspects of the situation some selection and narrowing of focus will be necessary in the next study.

Observation and further monitoring will be possible but considerable preparatory work will need to be done and the routines of each department studied in detail, all those who might in any way be involved must be kept fully informed.

LITERATURE REVIEW (1979)

There has been very little research in physiotherapy to date. Of the studies reported, most have been clinical trials such as those of Seymour (1969) and Graham and Bradley (1978) looking at the efficacy of physiotherapy for specific conditions or those which compare the effectiveness of two different types of treatment for a given condition, Hamer and Kirk (1976), Basmajian (1975). Little if any account has been taken in these studies of factors other than the patients' medical diagnosis, their medical history and the physiotherapy given; and even here there is often a lack of specific information about what was actually done in the way of treatment, Brocklehurst et al. (1978), Doran and Newell (1975), Newton and Stephenson (1978).

Though even less investigation has been undertaken into non-specific factors effecting physiotherapy, articles in the professional journals have started to draw attention to the importance of these factors. From America, Goldin (1975) discusses the effect of the physical therapist as therapist, O'Gorman (1975) the importance of the patient's motivation in treatment and Pratt (1978) the psychological view of the physiotherapist's role.

A few research projects have also been reported. Perry (1975) investigated non-verbal communication during physical therapy and Rosillo and Fogel (1970) examined affect levels and improvement in physical rehabilitation. Both studies found that these psychological factors, i.e. non-verbal communication and affect levels were influential in the process and outcome of physiotherapy.

Though there has been a considerable volume of published research into rehabilitation (Nichols, 1975, Goodwill, 1976) which often included physiotherapy as part of the patient's programme, in most of these studies it was impossible either to identify the specific contribution made by physiotherapy or to isolate its contribution to the outcome achieved.

Interest in psychological aspects of patients with physical illness has increased over the past 20 years. Many investigators including McDaniel (1976), Shontz (1971), Wright (1960) have studied patients with chronic disabilities and have been able to provide information about three important aspects. Firstly that specific disabilities are not associated with identifiable personality types, secondly that there is no simple relationship between severity of disability and degree of psychological impairment and thirdly that there is a very wide range of individual reaction to disability.

Janis (1958) and Lazarus (1966) have investigated the relationship between perceived threat, stress and adaptation to physical illness and in later studies Langer and Janis (1975) and Lazarus (1974) found a relationship between different levels of stress and adaptive behaviour, high levels of stress being disruptive.

A number of studies have investigated the relationships between progress in rehabilitation and a number of psychological variables. Moos and Solomon (1965) found greater degrees of functional incapacity related to more physical symptoms and greater depression and apathy. Weiss et al. (1971) also reported a relationship between severity of disability and physical and psychological adjustment. Though de Wolff et al. (1966) using physicians ratings, did not find a significant relationship