

Recovery and Rehabilitation after Minor Injuries

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R.H. Lee.

SUMMARY AND CONCLUSIONS

1. INTRODUCTION

This study had the aim of exploring patients' needs for rehabilitation and aftercare after 'minor' fractures.

The study population consisted of 171 patients, aged 18 to 59 inclusive, with a diagnosis of fracture, who were seen at a trauma clinic in one general hospital in Dover, and who had not been admitted to hospital as inpatients because of their injury. Each respondent was interviewed up to six times in the year after the injury. The diagnoses that were most common in the series were fractures of the lower end of radius, metacarpals, phalanges of the hand, metatarsals and toes.

There has been no recent British research that has examined needs for rehabilitation among patients with minor fractures. A review of the literature about recovery after these fractures suggested three things.

(i) The majority of patients make a satisfactory recovery in the long term.

(ii) Most patients make a good functional recovery, although some retain anatomical abnormalities. There has been little study of the personal and social consequences of these fractures.

(iii) It is impossible to establish from the literature a clear picture of the relationship between the clinical aspects of recovery and the timing of return to work.

2. FINDINGS

(a) Timing of Return to Work

There was a large amount of variation between individuals in the time at which they returned to work.

Four main factors were associated with variations in the timing of return to work:

- (i) the nature and site of the injury;
- (ii) the duration of treatment;
- (iii) the nature of patients' work; and
- (iv) the presence or absence of a spouse at home.

These factors do not suggest any obvious and effective ways of intervening to alter the time at which people return to work.

There are no explicit criteria available for assessing the appropriateness of timing of return to work after fractures. Most patients in the present study felt that they had returned at about the right time, but one-quarter felt they had returned too early.

(b) The Pattern of Recovery

The respondents' recovery was examined in terms of their clinical condition, the effects of the injury on the work and home-life, and the effects of the injury on a range of items included in the Grogono and Woodgate Index of Health . The large majority of people made a good recovery within two to three months of their injury.

A small number of people continued to feel the effects of their injury, in terms of physical discomfort or interference with their work or recreation, for six months or more.

(c) Health and Rehabilitation Services

The main services used by patients consisted of medical care provided by the outpatient trauma clinic and, to a lesser extent, by general practitioners. There was very little use of the rehabilitation or resettlement services.

Thirty-five per cent of the respondents expressed a desire for more information about their injury or its effects. Ten per cent said that they needed physiotherapy to help their recovery. Otherwise hardly any respondents expressed any needs for any rehabilitation or resettlement services.

3. CONCLUSIONS

The patients included in this study appeared to make a satisfactory recovery and receive an acceptable service. They expressed very few unmet needs for rehabilitation services. If this is representative of the situation elsewhere, then there is reason to believe that the nature and level of provision of rehabilitation and aftercare services in Britain for patients with minor fractures is satisfactory.

There are, however, three areas in which improvements might be desirable.

(a) Timing of Return to Work

The literature suggests that under certain circumstances fracture patients can return to work much earlier than they usually do. If hospital staff and general practitioners were to focus their attention more specifically on decisions about timing of return to work, and if they were to use explicit criteria about patients' fitness to do their jobs, then there might be considerable changes in the amount of sickness absence taken.

(b) Personal Effects of the Injury

A number of patients experienced physical discomfort, emotional distress, or interference with their recreational activity, sleep or sexual activity, because of their injury. Some of these things are not often discussed in the medical literature in relation to fractures. By paying more attention to them, doctors might be able to contribute more to the welfare of their patients during recovery.

(c) Information and Advice

One third of the patients expressed a desire for more information about their injury and treatment. This could probably best be provided by clinicians during consultations on an individual one-to-one basis.

CHAPTER 1 INTRODUCTION

1. AIMS OF THE STUDY

Recovery after illness or injury is of concern to all clinicians. Most medical treatment aims at curing patients of their ailments or at helping their recovery. But there are many different aspects of recovery that are important to doctors and their patients. Besides the obvious life and death results, there are many finer distinctions to be drawn. Doctors may concentrate on the anatomical or physiological consequences of an illness or injury. They may pay attention to functional or psychological factors; they may be concerned with the social or economic consequences of the medical event. Just as an illness or injury has many different effects on the sufferer, so there are many different aspects of recovery. In this report, we are concerned with some of the personal and social aspects of recovery after 'minor' fractures. The study has the overall aim of exploring patients' needs for rehabilitation and aftercare.

There are three main reasons for studying whether patients with minor fractures have significant unmet needs for rehabilitation.

First, a variety of research studies have shown that a minority of these patients experience residual symptoms or functional limitations. For example, Wright (1968) in Edinburgh found that 13 per cent of patients with fractured metacarpals and 35 per cent with fractured fingers had not regained full function, when assessed at an outpatient clinic. Nade and Monahan (1973) in Oxford found that 47 per cent of patients with fractures of the calcaneum reported pain and 35 per cent stiffness when followed up at least two years after their injury. Borgeskov (1967) in Copenhagen found that 32 per cent of patients with fractured metacarpals or fingers had poor functional results when followed up five years after their fractures. This literature is reviewed in more detail later in this chapter. One orthopaedic surgeon (Swanson, 1970) has commented:

"Fractures involving the digits of the hand are the most frequent of all fractures. If severe or improperly treated, they may result in instability, stiffness, pain, and loss of normal function. Disability may be prolonged or permanent and has profound economic as well as personal effects."

Minor fractures may result in an appreciable amount of disability.

Second, some medical authors emphasize the importance of rehabilitation after fractures. Adams (1978) says in his orthopaedics textbook:

"Improved results in the treatment of fractures owe much to rehabilitation, perhaps the most important of the three great principles of fracture treatment. Reduction is often unnecessary; immobilisation is often unnecessary; rehabilitation is always essential." (p.45).

Much of the emphasis has been on early mobilisation and active exercises to maintain and restore function. There have been few attempts to evaluate different methods of restoring function and reducing disability. Pasila et al (1974) found that physiotherapy was no more effective than close supervision by the surgeon in restoring function. Johnson (1976) found that functional treatment and close liaison between medical staff and employers almost eliminated sickness absence from work, among patients with fractures of the forefoot, when compared with conventionally treated patients. There is scope for more research into the appropriateness and effectiveness of different methods of rehabilitation for fracture patients.

Third, there appears to have been no recent British research that has examined needs for rehabilitation among patients with minor fractures. Despite the enthusiasm of some orthopaedic surgeons for active treatment and rehabilitation, it is not known whether patients still experience residual symptoms and disability. There are no explicit standards for identifying satisfactory outcomes, and no explicit criteria for identifying needs for rehabilitation. It is not known whether British hospital patients with minor fractures experience problems that constitute unmet needs for rehabilitation.

The study is one of a series, within the Health Services Research Unit, that are examining needs for rehabilitation among hospital patients. The focus here is on a series of patients, with relatively minor injuries, among whom the main problems were expected to be concerned with the timing of recovery and return to work. This contrasts with the study of recovery and rehabilitation after myocardial infarction, which focused on the survivors' longer-lasting emotional and social problems (Lee, 1978). In the present study we are concerned more with needs for those rehabilitation services that will promote the optimal timing of recovery during the weeks after the initial fracture.

2. METHODS AND MATERIAL

The patients included in the study were a consecutive series of persons, aged 18 to 59 inclusive, with a diagnosis of fracture, who were seen at a trauma clinic at Buckland Hospital, Dover, and who had not been admitted to hospital as an inpatient because of their injury. The series of patients was collected for the study between April 1975 and December 1976. The series consisted of 171 persons, for whom interview data were available. Fifteen persons are known not to have been included in the series, mainly because the interviewers were unable to contact them at the second interview. An unknown, but probably small, number of people were not included in the series because of non-contact at the first interview in the hospital clinic.

Table 1 shows the site of the fractures of the patients in the series. The classification follows the International Classification of Diseases. It subdivides diagnostic categories only in the cases of fractures of those bones or sites in relation to which orthopaedic surgery textbooks (Adams, 1972; Apley, 1977) indicate substantial variations in the timing or process of recovery. The fractures from which the patients were suffering were mainly those of relatively minor bones in the hand or foot. It is for this reason that we have used the word 'minor' throughout this report, although it must be remembered that the patients were admitted to the series on the criterion that they had not received inpatient treatment, rather than on the severity of the injury.

Data about the patients and their injuries were collected in three main ways.

A series of interviews was held with each patient at fixed points in time after the initial injury. The interviews covered the broad personal and social aspects of recovery and the respondents' use of health and other services. The interviews were scheduled for the first attendance at the fracture clinic, and then for two weeks, six weeks, three months, six months and one year after the injury. All respondents received a first and second interview. Subsequently each respondent, whose replies at any one interview indicated that he had made a complete recovery and had no residual problems, was not interviewed further. This, and a certain number of refusals and non-contacts in each set of follow-up interviews, means that there is a decreasing number of respondents for each interview.

In each interview the respondents were asked whether their injury, or anything to do with it, had any effect on various aspects of their daily lives. This set of questions was based closely on an index for measuring health devised by Grogono and Woodgate (1971). Grogono and Woodgate identified ten aspects of daily life which they thought were comprehensive but without obvious redundancy. These were work, recreation, physical suffering, mental suffering, dependency on others, sleep, communication, feeding, excretion and sexual activity. Each respondent was asked in the present study about each item. This allows us to identify the range of different aspects of daily life affected by the injury. It also allows us to assess the overall severity of the impact of the injury; the respondents were allocated two points for each item completely affected and one point for each item partially affected; these points have been added to give a total score for each patient (out of a maximum of 20) that is an easy-to-use indicator of the severity of the impact of the injury.

Brief postal questionnaires were sent six months and one year after the injury to those respondents who had been assessed at an earlier interview as having made a full recovery. The questionnaires asked in general terms about the respondents' medical condition and about the existence of any problems arising from the injury.

Clinical data about each patient were recorded on a specially designed form by a consultant orthopaedic surgeon. These data were recorded after hospital treatment was complete, on the basis of the patient's case notes. They covered the nature of the injury, the treatment and advice provided, and clinical aspects of recovery.

Table 2 shows the number of patients in each diagnostic category, for whom each set of research data is available.

Table 3 shows the average time after the initial injury that the interviews were held. All but four of the first interviews were held at the time of the patients' first attendance at the trauma clinic. Although it was planned that the interviews should be held at fixed times after the injury, there were inevitably some delays in contacting respondents and arranging the interviews that caused variation in the timing.

Table 4 shows the respondents' sex and age. The majority of respondents were men, usually in their 20s or 30s. The majority of women were in their 50s.

Buckland Hospital is a small general hospital in Dover, containing about 240 acute and geriatric beds, and having an accident and emergency department. Nearly all the patients included in this study were under the care of the one orthopaedic surgeon working in the hospital. After the initial treatment of the injury, hospital care for the patients was provided primarily through fracture clinics. The orthopaedic surgeon had a strong interest in the social and employment aspects of patients' recovery (Thomas, 1970; Thomas and Stevens, 1974). This interest had not resulted in the introduction of specific rehabilitation services for patients with minor fractures at the time of the study. The whole time equivalent of four qualified physiotherapists were employed at the hospital, but little physiotherapy was prescribed for the patients included in this study.

There was a considerable variety of diagnoses among the patients included in this study. The time and pattern of recovery may vary substantially between patients with fractures of different sites. Therefore, in examining issues and data about recovery and rehabilitation, we will proceed in two ways. First, we will examine the series as a whole and make general comments on that basis. Second, when we are examining specific issues in detail, we will focus upon the fractures of each of those sites, for which we have enough respondents to examine differences between people with that fracture, viz. lower end of radius, metacarpals, phalanges of the hand, metatarsals and phalanges of the foot.

3. LITERATURE REVIEW

In comparison to some other conditions, there has been relatively little research into the recovery and rehabilitation of patients with the fractures with which we are concerned in this report. In this section, we will summarise material about the recovery of patients with the fractures specified above, viz. lower end of radius, metacarpals, phalanges of the hand, metatarsals and phalanges of the foot. We will examine:

- (i) the standard treatment provided for different fractures, and, in particular, the duration of treatment;
- (ii) clinical aspects of recovery;
- (iii) the timing of return to work.

The literature reviewed consists of two current British orthopaedics textbooks (Adams, Outline of Fractures, Sixth Edition, 1972; Apley, System of Orthopaedics and Fractures, Fifth Edition, 1977) and of research papers published between about 1968 and 1977.

(a) Lower End of Radius (Colles' Fractures)

Treatment. The usual treatment for displaced Colles' fractures is reduction, followed by immobilisation in plaster for about six weeks.

Clinical aspects of recovery. A number of authors have identified and discussed different aspects of recovery in different ways, making the comparison of their findings difficult.

(i) Anatomical. The fractured bone unites in about six weeks, but takes longer to consolidate. Malunion and deformity may occur. Pool (1973) found that 67 per cent of patients with Colles' fracture had no or slight deformity at discharge, 26 per cent had moderate deformity and seven per cent severe deformity.

(ii) Symptoms. Symptoms such as pain and weakness are sometimes mentioned in the literature, but the frequency with which they occur is inadequately reported. Pool (1973) said that most patients continued to attend hospital until symptomless; the average time of discharge was five months. Bygren (1969) reported from Sweden that 44 per cent of patients with Colles' fractures reported some remaining "troubles" three years after the fracture, and 30 per cent six years after the fracture.

(iii) Function. The textbooks say that most patients progress rapidly towards full recovery of function, but that stiffness of the shoulder, wrist or hand may occur. Improvement in function may continue to occur for six months after the fracture. Pasila et al. (1974) found a substantial amount of incapacity in patients' range of movement and strength of grip 12 weeks after the injury. Pool (1973) found a certain amount of residual limitation in movement and grasp when patients were discharged from hospital care at an average of five months after the fracture.

(iv) Activities. Bygren (1969) reported that 21 per cent of patients with Colles' fracture still experienced the effects of their fracture on their work three years after their injury, and that 12 per cent did so six years after their injury. Similarly, 10 per cent and 7 per cent experienced effects on their leisure.

Timing of return to work. Gardner et al. (1968), in an English study that included 50 working men with fractures of the distal one-sixth of the radius, found that these patients had an average of 5½ weeks

off work. They also found that 12 of the patients had no time off work, and that the average length of sickness absence of the rest was seven weeks. Pasila et al. (1974) found that the average time of return to work for their Finnish series of Colles' fracture patients was approximately seven weeks.

(b) Metacarpals

Treatment. Fractures of the metacarpal bones are typically described as small but common. Undisplaced or slightly displaced fractures may be bandaged; the textbooks say that the patients should make active use of the injured hand. More severely displaced fractures are reduced and immobilised. Borgeskov (1967) in a study of a consecutive series of patients seen in a Danish outpatient department, found that 27 per cent of fractures of the metacarpals were not displaced, 43 per cent were displaced but not reduced and 30 per cent were reduced.

Clinical aspects of recovery. There are few detailed data available on this subject. Wright (1968) studied a series of patients in Scotland; he assessed the results at the final clinic attendance in terms of the range of motion in all joints, the strength of grip compared to the uninjured hand, and subjective complaints; he found that 88 per cent of the patients had made a full recovery and that 12 per cent had not. Borgeskov (1967) examined his Danish series of patients about five years after their fracture; he found that 96 per cent had good subjective results, 79 per cent had regained normal function, and 54 per cent had normal anatomical appearance.

Timing of return to work. Gardner et al. (1968) included 76 working men with fractures of the metacarpal in their study. They found that these patients had on average three weeks off work. They also found that 28 of the patients had no time off work, and that the average length of sickness absence of the rest was five weeks. Hunter and Cowen (1970) studied a series of firemen and policemen, with fractures of the fifth metacarpal, who were treated in one American city clinic that aimed at early return to function and duty. They found that the average time of return to work for fractures of different sites of the bone varied between about three and four weeks.

(c) Phalanges of the Hand

Treatment. Treatment of fractures of the fingers or thumb varies considerably, according to the site of the fracture, the presence of displacement and the presence of soft tissue injury. The finger may be strapped or splinted for up to about three weeks. In fractures of the terminal phalanx, attention should be focused on any soft tissue injuries.

Clinical aspects of recovery. There appear to be no recent research data on the short-term process of recovery among general series of patients with fractures of the fingers. The implication of the textbooks is that recovery should have progressed sufficiently far in about two or three weeks for the treatment to be discontinued. Borgeskov (1967) found five years after the fracture that 96 per cent had good subjective results, 63 per cent had regained normal function, and 50 per cent had a normal anatomical appearance.

Timing of return to work. There appear to be no data available on this subject, apart from a statement by Green and Anderson (1973) that most of their American series of 21 patients with percutaneously pinned unstable fractures returned to work in a few days.

(d) Metatarsals

Treatment. In rotational injuries, with an avulsion fracture of the fifth metatarsal, a walking plaster is worn for about three weeks. Fractures of the metatarsal shafts, caused by a falling object or forced inversion of the foot, may be immobilised in a walking plaster for about four weeks. Functional treatment in cases with minor displacement is to encourage the patient to undertake early activity and to walk as normally as possible; in these circumstances full painless function is rapidly regained.

Clinical aspects of recovery. There appear to be no recent research data on the processes of recovery after fracture of the metatarsals. The implication of the textbooks is that recovery should have progressed sufficiently far in about three or four weeks at most for treatment to be discontinued.

Timing of return to work. The only study containing data about sickness absence appears to be that by Johnson (1976), in which he studied two series of patients mainly with industrial, crushing injuries. Johnson's industrial group were treated at the medical centre in the factory with dressings and the provision of overshoes, and encouragement to immediate ambulation, weight bearing and return to work. These patients had on average two weeks off work. But 23 of the 43 lost no time at all, and the average length of sickness absence of the rest was five weeks. In a group of 15 patients, with comparable fractures, drawn from insurance records, Johnson found that they all had some time off work, with the average time being $7\frac{1}{2}$ weeks.

(e) Toes

Treatment. These fractures are usually caused by falling objects. Little or no treatment is required for the fracture. The toe should be dressed and protected. If necessary, the foot should be elevated for a few days, after which the patient is encouraged to walk.

Clinical aspects of recovery. There appears to be little discussion of this subject and no data about it.

Timing of return to work. Johnson (1976) (see above) found that his industrial group had on average one day off work. But 223 of the 243 lost no time at all, and the average length of sickness absence of those having some time off was $2\frac{1}{2}$ weeks. In his insurance group the average time off work was $4\frac{1}{2}$ weeks. Nine of the 85 people in the insurance group lost no time at all, and the average length of sickness absence of those having some time off was five weeks.

(f) Themes in the Literature

Timing of recovery. When sufficient union of the fractured bone has been achieved for immobilisation to be discontinued, the patient is likely to experience stiffness and lack of mobility in the joints near the fracture and weakness in nearby muscles. The full restoration of function (in fractures of the distal end of the radius at least) takes several months (Pasila et al., 1974; Pool, 1973) and may take a year or more (Woodyard, 1969).

Long-term results. In the longer-term, it seems likely that the large majority of patients with the fractures considered here make a

completely satisfactory recovery. Wright (1968) found that 88 per cent of his series of patients with metacarpal fractures made a full recovery.

Different aspects of recovery. It is well known to orthopaedic surgeons that patients may achieve complete functional recovery while retaining anatomical abnormalities. In the months after Colles' fracture there is an appreciable amount of anatomical deformity (Pool, 1973) and functional disability (Pasila et al., 1974; Pool, 1973), but it has not been established whether it is the same or different patients who suffer from each. In any case, it seems likely that the deformity continues while the disability tends to improve with time. In his study of fractures of the metacarpals and fingers, Borgeskov (1967) found that 51 per cent of his series achieved anatomical normality, 68 per cent functional normality and 72 per cent experienced no discomfort whatever.

Timing of return to work. Because of the inadequacy of the data, it is impossible to make empirical comparisons between the timing of the clinical aspects of recovery and the timing of return to work after different kinds of fractures. It is possible only to make a number of partial approaches from different starting points.

(i) Many patients have no time off from work at all after a fracture. Gardner et al. (1968) found that 28 per cent of their men with Colles' fractures and 37 per cent with fractures of the metacarpals lost no time. Johnson (1976) found that 9 per cent of his insurance group of patients with fractures of the forefoot and 36 per cent of his industrial group lost no time. It appears that in many instances the important influence on the occurrence of sickness absence is not some abstract or purely clinical assessment of incapacity- instead it is a judgement about the patient's fitness to perform a certain kind of work or a particular job.

(ii) Table 5 shows an attempt to present schematically the relationship between the standard times of duration of treatment of different fractures, as presented in the textbooks, and the average periods of sickness absence, as reported in empirical studies. The data are very inadequate. Among patients with different injuries, who do actually take some time off from work, return to work tends to occur, on average, some time after the achievement of union and the termination of immobilisation. Patients with Colles' fractures appear to return to work fairly soon after the end of immobilisation; those with fractures of the metacarpals, metatarsals or toes appear to return two or three weeks afterwards.

(iii) It is likely that many, if not most, patients with Colles' fractures return to work before complete clinical and functional recovery is

achieved. Although there are no data relating to other kinds of fractures, the fact that some patients may have no sickness absence at all makes it probable that others return before a complete recovery is achieved.

(iv) There are indications that the nature of the medical care and the delivery of the health services may influence the timing of return to work. The research of Hunter and Cowen (1970) and especially Johnson (1976) suggests that medical care that is actively orientated towards functional activity and early return to work, and health services that are closely integrated with the employing organisation, may have two effects. They may reduce the number of people who have any sickness absence from work, and they may reduce the length of absence of those who do take some time off.

In summary, therefore, we might expect to find that a minority of patients with minor fractures experience residual symptoms or functional incapacity several months after their injury. We might also expect to find variations in the timing of return to work that are not related in a straightforward way to the clinical aspects of recovery or to the duration of the medical treatment. It is part of the purpose of this research to assess whether any functional incapacity warrants further attention from the rehabilitation services, and to judge whether there are improvements that might be made in the management of sickness absence from work.

CHAPTER 2 TIMING OF RETURN TO WORK

1. INTRODUCTION

This chapter examines a number of related themes in relation to the timing of return to work.

(i) What is the length of sickness absence after the fractures selected for study? Previous studies of patients with these injuries have usually presented data only about the average time of return to work. Although it is obvious that there is considerable variation between individuals in the time at which they return, the full data have not been presented in the literature.

(ii) What are the causes of variations in the length of sickness absence? Gardner et al. (1968) found that the nature of the injury (which bone was fractured, the occurrence of complications) and the nature of the work (whether it was heavy manual, light manual or sedentary work) were related to the timing of return to work. Johnson (1976) found that the objectives, nature and organisation of the initial medical treatment was related to the timing. In contrast to some other conditions, there appears to have been very little study of the causes of variations in the length of sickness absence after minor fractures.

(iii) What are appropriate lengths of sickness absence? Much of the thinking in medical rehabilitation tends to assume that early return to work is a desirable goal for which to aim. There are frequent comments about the need to avoid unnecessary delays: "... the temporarily ill patient or disabled person may take longer than necessary to return to work ..." (D.H.S.S., 1972, para. 84). But it is important to examine both sides of the question. Should some people return to work earlier than they do? Should some people return later? On what criteria should decisions about the length of sickness absence be based?

Not all the respondents are appropriately studied in relation to return to work. Those not in paid employment at the time of their injury (viz. students, housewives and the unemployed) and those, for whom the date of return to work was not available, have been excluded from the analyses. As a result we have data about the timing of return to work of 123 patients. Within this group, we will examine in more detail the data about the 86 respondents with fractures of the lower end of radius, meta-carpals, fingers, metatarsals or toes.

In this chapter we will present data first about the time after the injury at which the respondents returned to work. And then we will examine data about a variety of possible causes of variations in the timing of return to work.

(i) Clinical data: the site of the fracture and the nature of the injury; aspects of the clinical condition thought likely to affect the recovery; the nature and duration of treatment; the date of the final attendance at outpatients and the extent of recovery achieved at that time.

(ii) Data about people's personal circumstances: their sex and age; the composition of their household.

(iii) Data about people's work: the nature of their job; whether they like their job and the reasons; whether they felt ready to go back to work and whether they wanted to go back; what their employer thought about when they should go back to work.

(iv) Data about people's income: personal income and income of other members of the household; the importance of their income in influencing their return to work; claims for compensation.

2. RESULTS

(a) Timing of Return to Work

Table 6 shows the respondents' time of return to work after their injury. Three points may be emphasized.

(i) There are very small numbers of persons with fractures of each site, so interpretation must be cautious.

(ii) There are some differences in the amount of time spent off sick, between people with fractures of different sites. People with fractures of the metacarpals, fingers or toes had on average three weeks off. The small number of people with fractures of the tibia, ankle or tarsals each had about two months or more off work.

(iii) There are substantial variations between individuals with fractures of the same site in the timing of return to work. Even if there are standard times for the union of fractured bones, as the text-books tend to suggest, these are not straightforwardly reflected in comparable standard times of sickness absence from work.

Table 7 shows, for the selected five diagnoses with most respondents, the average time of return to work for all persons, and for those persons who had some time off work. Comparison of Table 7 and Table 5 shows that

the findings of the present study are the same as, or very close to, those of other studies. This is important in increasing the confidence with which the findings of the present study may be interpreted.

Data were collected about a variety of factors that might be related to variations in the timing of return to work. These factors have been examined in detail only in relation to variations in the time of return to work between patients within each diagnostic group - fractures of the lower end of radius, metacarpals, phalanges of the hand, metatarsals and toes.

(b) Site of Fracture

As we have noted, people with fractures of the leg bones tended to have more time off work than those with fractures of the long bones of the hands or feet.

(c) Aspects of Clinical Condition

Data about aspects of the patients' clinical condition were recorded on the clinical data form, either as part of the diagnosis (e.g. compound fracture, comminuted fracture, lacerations) or as an aspect of the patient's condition likely to affect subsequent recovery. These two sets of information have been consolidated to produce a single list of aspects of the clinical condition that includes the nature of the injury, the existence of a previous injury on the same site, the presence of associated injuries, or the presence of concurrent illness. The presence of one or more of these factors has been examined in relation to the timing of return to work among respondents with one of the five most common fractures. Table 8 shows that, among patients with fractures of the metacarpals or fingers, the occurrence of one or more of these clinical aspects was clearly related to the timing of return to work. Among people with fractures of one of these two sites, differences in patients' clinical condition may explain an appreciable amount of the variation in the timing of return to work. People with compound fractures, associated lacerations or other associated injuries returned to work later than those without these conditions.

(d) Duration of Treatment

It might be expected that patients would return to work soon after the removal of their plaster, or soon after the completion of other forms

of treatment. But Table 5 suggested that the relationship between the length of treatment and the timing of return to work might not be a very close one. Data about the duration of treatment are available for the majority, but not all, of the patients in the present study. There are gaps relating particularly to patients with fractures of the metacarpals and those with fractures of the fingers treated by strapping or dressings.

(i) Table 9 shows the duration of treatment of patients with fractures of different sites. Comparison with Table 6 suggests that patients with Colles' fractures are both immobilised in plaster longer and return to work later than the others. Apart from this, there is no obvious relationship between the length of treatment and the timing of return to work among the different groups of patients as a whole.

(ii) Within each diagnosis, or taking people with fractures of the hands or feet as a single group, there was no correlation between the duration of treatment and the timing of return to work (correlation coefficient $r = 0.1$).

(iii) Although there was no correlation between the length of treatment and the length of sickness absence, there is some kind of relationship between them. Table 10 shows that the respondents fell into two main groups: those who returned to work immediately after their injury, while they were still being treated; and those who had some time off work and then returned within two weeks of the completion of their treatment. Smaller numbers had some time off work and returned before their treatment was complete, or returned three or more weeks after the completion of their treatment. The majority of patients either had no time off work or returned to work within two weeks of the end of their treatment.

(e) Timing of, and Recovery at, Final Outpatient Attendance

It is reasonable to look for a relationship between the timing of return to work and the timing of the final outpatient attendance. If decisions about the timing of both events are based on examination of the same aspects of patients' recovery, then one would expect there to be a close relationship between them. However, if decisions about returning to work and about outpatient attendances are based on different aspects of recovery, or if they are influenced by external factors (e.g. the nature of the patients' job; routinised expectations about recovery; the availability of consultation time in outpatient clinics) then one might not find much relationship between them at all.

(i) Table 11 shows the time of the final outpatient attendance of patients with fractures of different sites. Comparison with Table 6

suggests that patients with Colles' fractures are discharged later and return later than those with fractures of the hand or foot.

(ii) Patients with fractured toes appear to be discharged slightly earlier than others, and also return to work quite early.

(iii) Taking people with fractures of the hands and feet as a single group, there was a small positive correlation ($r = 0.3$) between the date of the final attendance and the time of return to work. There appears to be some kind of relationship between these two sets of events, but not a very close one.

(iv) Table 12 shows something more of the relationship between the timing of final attendance and the time of return to work. The patients fell into two main groups: those who returned to work immediately; and those who returned at about the time of their final outpatient attendance or in the two weeks following it. Several people had some time off work but returned appreciably before their final attendance. These tended to be people who had clinical problems in addition to their fracture and whose final attendance at outpatients was fairly late. Several people returned to work substantially later than their final attendance. Some of these were discharged quite early or did not attend for later appointments; others expressed some dislike of their work or said that they did not particularly want to return to it.

(v) Among patients whose final attendance at outpatients was at any given point in time, there was no difference in the timing of return to work between those who were said to have recovered completely, almost to have recovered, or to have recovered partly. In this rather limited sense, the details of clinical recovery were not related to the timing of return to work.

(f) Personal Characteristics

There was no evidence to show that patients' sex or age was associated with variations in the timing of return to work.

(g) Household Composition and Responsibilities

It has been suggested in the literature, but not substantiated by research findings, that patients' household responsibilities may affect the time at which they return to work. The expectation is that wage earners, who have other members of their family dependent upon them, and who experience a reduction in their income during sickness absence, will be likely to return to work earlier than other people. The evidence in the present

study did not support this hypothesis. Table 13 shows the household composition of 75 of the 76 respondents with fractures of the metacarpals, fingers, metatarsals or toes. Married people, whose spouses were not working, tended to return to work rather later than the others, on average. People with a spouse at home stayed off work longer than people without a spouse at home. This was not affected by the presence of dependent children. Nor was the length of sickness-absence among persons in different kinds of households related to whether or not there were changes in the level of their personal income between being at work and being off sick.

(h) Employer

There were seven self-employed people with fractures of the lower end of radius, metacarpals, fingers, metatarsals or toes. They tended to return to work earlier than employees. The self-employed returned on average one week after their injury; employees returned four weeks after it ($p < 0.05$). Four of the seven self-employed people had no time off work; 21 of the 81 employees had no time off.

(i) Nature of the Job

The nature of people's work is associated with variations in the time at which they return to work after injury. Gardner et al. (1968) found that people with sedentary jobs returned earlier than those with light manual jobs, and that they in turn returned earlier than those with heavy manual jobs. Various aspects of work may be discussed.

(i) Table 14 shows the average time of return to work of the 79 employees (with fractures of the lower end of radius, metacarpals, fingers, metatarsals or toes), classified according to their social class. More than half the people in the professional or intermediate occupations had no time off work, and most of the rest had only two or three weeks. These were people who were for example ships' officers, school teachers or civil servants. There were a small number of people with skilled non-manual occupations such as secretaries, clerks and shop assistants. On the whole they had no time off or very little. People with skilled manual jobs (engineering trades, fitters, vehicle or engine drivers, craftsmen, cooks), partly-skilled jobs (seamen, laundry hands, machine operators, postmen) or unskilled jobs (cleaners, catering assistants) had about five weeks off on average. Table 15 shows that fewer people with professional, intermediate or skilled non-manual jobs than with other jobs had any time off work. It also shows that those with professional, intermediate or skilled non-

manual jobs, who do have some time off work, have less time off than those with other jobs.

(ii) The respondents were asked whether their jobs were physically light, moderate or heavy. These data are available for 76 of the 79 employees with fractures of the lower end of radius, metacarpals, fingers, metatarsals or toes. Table 16 shows that employees who said they had physically light jobs stayed off work for less time than those who said their jobs were moderately heavy, who in turn stayed off for less time than those with heavy jobs. Fewer people with light jobs had any time off; and those that did stayed off for shorter periods of time.

(iii) The nature of people's jobs, in terms of social class, and the physical demands of the job are related to each other; people in the higher social classes said more frequently that they had physically light jobs. Given this association, it is important to examine the relationship between social class, the heaviness of the job and the timing of return to work. Table 17 shows that the heaviness of people's jobs is related to their timing of return to work, independently of social class. It also suggests that manual workers take longer than non-manual workers to return to work, independently of the heaviness of their jobs.

(j) Attitude to Job

It might be expected that people who liked their jobs would return to work earlier than those who disliked them. In the second interview each respondent was asked whether they liked their work, and why. Very nearly all the respondents said that they did; they gave a variety of reasons for doing so. There was no relationship between people's like or dislike of their work, or the reasons they gave, (as displayed by the answers to direct but brief interview questions) and the timing of their return to work.

(k) Attitude to Returning to Work

It might be expected that people who wanted to go back to work would actually return earlier than those who did not want to.

(i) In each follow-up interview the people who were off sick were asked whether they wanted to go back to work, and why. These data are therefore only available for those who returned after the second interview, i.e. two or more weeks after their injury. The large majority of respondents said they did want to go back. There were no differences in the timing of return to work between those people who said that they did want to

go back and those who said they did not. But, among those who said that they did want to return, the reasons given were related to the time at which they returned. The small number of people who expressed a positive attitude to work (e.g. that they liked their work, or that they wanted to be getting on with it) tended to return earlier than those who expressed a negative attitude to being off work (e.g. that they did not like being off work, or that they were bored at home). These differences in attitude towards returning to work appeared to be independent of the type of work done by people.

(ii) In the interview following their return to work, the respondents were asked whether, apart from their income, they had wanted to go back to work, and why. Very nearly everybody said that they had wanted to. There was no relationship between wanting or not wanting to go back to work, or the reasons given, and the timing of return to work. It seems, therefore, that people's immediately expressed attitudes towards returning to work are not strongly related to their actual timing of return to work.

(1) Readiness to Return to Work

In each of the follow-up interviews, the respondents who were off sick were asked whether they were ready to return to work. Forty of the 48 people (with fractures of the lower end of radius, metacarpals, fingers, metatarsals or toes) at the second interview who were off sick said that they were not ready. They nearly always said that they were not fit enough to return or that their injury prevented them from working. Eight people at the second interview, and one of the ten who were off sick at the third, said that they were ready to go back to work. The reason they gave for not having returned was that the doctor had said not to. Most of these people returned fairly soon after having said that they were ready to go back. There did not appear to be any statistical relationship between expressed readiness to return to work and overall variations in the timing of return to work. Nevertheless, it seems possible that, for a small minority of people, doctors may delay return to work for longer than may be necessary.

(m) Employer's Attitude to Patient's Return to Work

It seems likely that sick people's behaviour in relation to their work would be influenced, not only by their own and their doctors' perceptions of the relationship between their injury and their work, but also by

their employers'. Employers might be concerned that their employees should return to work more or less quickly. To be effective employers' concern would have to affect employees' outlook. At each of the follow-up interviews the respondents who were off sick were asked what their employer thought about how soon they should return to work. The large majority of respondents said that their employer did not mind when they returned to work, or that they did not know what their employer thought. Only a very few people said either that their employer wanted them back at work or that he thought they should stay off. There was no relationship between these replies and variations in the timing of return to work. Employers' views about the length of sickness absence do not seem to be an important influence on individual employees' behaviour.

(n) Income

Taking an economic view of human behaviour, it would seem likely that a reduction in income during sickness absence from work would act as a stimulus to an early return to work. Gardner et al. (1968) tested this idea, but found that people with no reduction in their income (i.e. people in non-manual jobs, with occupational sickness benefit schemes) tended to return to work earlier than those with reductions (i.e. manual workers without occupational sickness benefit schemes).

(i) In the follow-up interviews respondents were asked what their own income was before their injury and currently. Therefore, we have data about the pre-injury income and the income during sickness absence from work for those people who first returned to work after the second interview. Among these people there was no relationship between changes in the level of income and variations in the timing of return to work. On this evidence reduction in income during sickness absence does not appear to stimulate early return to work.

(ii) In the interview following their return to work, the respondents were asked how important their income was in influencing their return to work. Nearly all of those people who did not experience a reduction in income during sickness absence said it was not important. Most of those, who did experience a reduction, said it was moderately important or very important. Table 18 suggests that, among people with fractures of the metacarpals, fingers, metatarsals or toes, the importance that was attributed to the effect of income on return to work was not systematically related to the actual timing of return to work. It appears that reductions in the level of income during sickness absence and people's reactions to them are not an important influence on the length of sickness absence.

(o) Compensation Claims

It is sometimes thought that people who make claims for compensation after an injury may return to work later than others, either because of the increased payments that may result from prolonged incapacity or because of delays associated with the timing of compensation hearings. In the present study nine of the seventy-six respondents with fractures of the metacarpals, fingers, metatarsals or toes made a claim for compensation (usually against their employer) at some time during the follow-up period. They returned to work on average six weeks after their injury, compared to the three weeks of those not making such a claim. The respondents were not asked about the effects of their compensation claim on the timing of their return to work. In six of the nine cases there were substantial clinical reasons, connected with the severity of the injury or the recovery process, that appeared to explain the timing of return to work. In only three cases, in which compensation was being claimed, did there appear not to be clinical reasons for a late return to work. It seems likely therefore that variations in the timing of return to work, that are associated with compensation claims, are relatively insignificant in numerical terms, when compared with variations associated with other causes.

(p) Other Factors

Examination of each case in the series, with a fracture of the lower end of radius, metacarpals, fingers, metatarsals or toes, shows that not all the variation in the timing of return to work is explained by the factors examined above. Comments may be made about three groups of people.

(i) Seven "manual" workers returned to work immediately, without having any time off, in contrast to the majority of manual workers. None of these people had physically heavy jobs, and several had light work (such as a trainee auxiliary coastguard, and a building foreman) that was presumably as much office work as manual work.

(ii) Three people returned to work later than they would have otherwise done because holidays intervened between their sickness absence and return to work.

(iii) Four manual workers were said to have almost or completely recovered at the time of their final outpatient attendance between three and five weeks after their injury; they returned to work between six and thirteen weeks. There was no apparent reason for the gap between the final attendance and return to work.

(q) Appropriateness of Timing of Return to Work

There are no explicit criteria for judging the appropriateness of timing of return to work after fractures, either in individual cases, or among series of patients as a whole. This issue will be discussed in the next section of this chapter in the light of the preceding findings. Meanwhile, we may report the results of a question asked during the interview following respondents' first return to work. Each respondent was asked whether, thinking about his injury, he returned earlier than he should have done, at about the right time, or later than he need have done. These data are available for 71 of the 86 respondents with fractures of the lower end of radius, metacarpals, fingers, metatarsals or toes. Table 19 shows that one quarter of the respondents felt they had returned earlier than they should have done. All but one of the rest felt they had returned at the right time. Those who felt they had returned too early tended to have gone back earlier than the others.

The respondents who felt they had returned too early or too late were asked why. This question was ambiguous: some people said why they had returned at the time they did; others said why they felt the time at which they returned was too early or too late. Some people gave more than one reason. People gave a variety of reasons for why they had returned early. All the self-employed identified the fact of being self-employed as a reason. And one or two people each said that the doctor had said to return, that they were needed at work, or that they needed the money. Nine of the ten people, who gave a reason why the time at which they returned was too early, identified pain or discomfort from their injury as the cause.

In summary, we can see that the majority of respondents felt they had returned to work at the right time. One quarter felt they had returned too early. A variety of factors had influenced the time at which they returned, but the result was usually that they experienced pain or discomfort at work. From the respondents' point of view, there might have been some benefits to a later return to work; there was no feeling of a need for an earlier return to work.

3. DISCUSSION

There was a large amount of variation between individuals in the time at which they returned to work. Although the average time of return to work of people with fractures of different sites was similar to that reported in other studies, there was no standard time of return to work among the

present series of patients. Almost one third of the respondents returned to work immediately after their injury, without having any time off at all. Most of the others had between two and eight weeks off, but a few had much longer. There were substantial variations in the timing of return to work to be explained.

The present study confirms and extends our knowledge about causes of variations in the timing of return to work. Four main groups of factors have been identified. The nature of the injury is important; the site of the fracture and the presence of lacerations or other associated injuries may result in a later return to work, presumably because physical recovery takes longer. The duration of treatment, both in terms of the length of immobilisation and of the date of the final outpatient attendance, is related to the timing of return to work. Presumably the relationship between the length of treatment and the timing of return to work is partly a result of clinical aspects of recovery; but the timing of treatment decisions may also affect return to work, independently of recovery. The nature of patients' work is related to the time at which they return; the physical demands of the job, and the nature of the work as reflected in its socio-economic classification are important. People with physically light jobs return before those with heavy jobs; people with office or shop jobs return before those with factory jobs or those with manual or unskilled jobs; and self-employed people return to work earlier than employees. And, finally, people's domestic circumstances appear to be important; patients with a spouse at home stay off work longer than those without a spouse at home. There are, therefore, a variety of distinct factors that influence the timing of return to work after minor fractures.

The practical significance of these causal factors is that they draw attention to areas in which intervention might be appropriate, if it is desired to alter the time at which people return to work. If, for example, the time of the final outpatient attendance is related to the timing of return to work, independently of state of patients' clinical recovery, then earlier appointments might result in earlier return to work. But, the factors identified here do not readily suggest obvious and effective interventions. Factors to do with the nature and severity of the injury have to be taken as given. Whether there are possibilities available for the more effective treatment of the injuries and the promotion of earlier physical and functional recovery is beyond the scope of the present report. It is possible that, if medical decisions about sickness absence certification were more closely related to other decisions and events during

treatment, there would be some changes in the timing of return to work. The nature of patients' work suggests that an initial return to light work would allow an earlier return; the costs of making such arrangements and the benefits to be derived from them would need to be examined before this could be advocated. Patients' domestic circumstances are a structural factor, not amenable to intervention; but perhaps the attitudes on which the related behaviour is based might offer some scope for change. It is unlikely therefore that there are any easy or straightforward ways of changing the length of sickness absence after minor fractures.

Explicit criteria for assessing the appropriateness of timing of return to work were not examined in the present study. Most patients felt that they had returned to work at about the right time, but some felt they had returned too early. Presumably most doctors and patients work with implicit criteria of appropriateness. It seems reasonable to argue that patients should return to work when they are fit to do a particular job. Analysis might then reveal a number of components: the absence of significant pain or other symptoms at the appropriate level of use; the likelihood that no damage to the injured part would occur through use at work; the presence of sufficient function to undertake the requisite tasks in the requisite manner. In the present series of patients, it seems likely that some people returned earlier than would be judged appropriate under such criteria, and it seems possible that some people returned later than would be appropriate. There is insufficient evidence to assess whether the series as a whole returned to work earlier or later than appropriate.

The issues examined in this chapter are sufficiently important and sufficiently unclear to merit further attention, both in professional and policy discussions, and in research.

(i) It seems worth exploring criteria of appropriateness of timing of return to work, and examining whether use of such criteria by clinicians in everyday practice affects the actual time of return to work. (This could be similar to the study by Simpson et al. (1977) of the "right" length of stay in hospital after surgery.)

(ii) There are questions raised, but not answered, by the present study about the relationship between patients' clinical condition and the time of their return to work. In particular, there is a need for closer study of the effect of variations in the extent and timing of patients' physical recovery on their return to work. More knowledge in this area might help doctors' decision-making in relation to patients' condition and work.

(iii) The finding that the nature of people's work has a substantial influence on the time at which they return suggests that the availability of modified, lighter jobs would allow earlier return to work. The potential significance of schemes designed for this purpose suggests that there should be a study of the extent to which arrangements of this kind operate at present, combined with an analysis of their advantages and disadvantages.

CHAPTER 3 THE PATTERN OF RECOVERY

1. INTRODUCTION

In this chapter we will broaden the focus, from the timing of return to work, to examine some other personal and social aspects of patients' recovery. In particular, we will examine the extent to which patients recovered by different times after their injury. In Chapter One we saw that there is a certain amount of data available to describe the anatomical and functional results of fracture and the timing of return to work; but there is very little information about the broader personal and social effects of the injury. Because such effects might be important to the individual and others around him, it is important to know something of their nature and possible frequency. We will be concerned particularly to examine the nature and extent of any unsolved problems experienced by the patients, in order to identify any needs for rehabilitation.

2. RESULTS

(a) Clinical Outcome at Final Outpatient Attendance

Clinical data about each patient were recorded by a consultant orthopaedic surgeon after the patient's hospital treatment was complete, on the basis of the hospital case notes. The date of the final attendance at outpatients was recorded, which allows us to calculate the time of the final attendance after the initial injury. The surgeon also recorded retrospectively the clinical outcome at final attendance, being required to classify the recovery as complete, almost complete, partial or none. If the recovery was not complete, he was required to say in what way it was not; but no explicit criteria for this classification of recovery were used.

Data about the timing and extent of recovery are available for 160 of the 171 respondents in the study. Table 20 shows that the large majority of respondents were said to have made a complete or almost complete recovery. Less than 10 per cent of the patients were last seen at outpatients one month or more after their injury and were said to have made a partial recovery or not to have recovered at all.

Table 21 shows the degree of recovery of the patients with fractures of different sites. There were some variations in the proportions making incomplete recoveries. But the small numbers in many diagnostic groups and the absence of any overall pattern make it impossible to provide a

coherent interpretation of these variations. More detailed examination of the timing of the final outpatient attendance and the degree of recovery in relation to each of the diagnostic groups revealed no further variations to suggest that people with some fractures recovered less fully than others.

Table 22 shows the reasons given for incomplete recovery, among those patients whose final attendance was five weeks or more after their initial injury. The five-week cut-off point has been selected because, before that time, many patients were discharged during their recovery, for example at the time when their plaster was removed and in the expectation that they would make good progress subsequently. The table shows that the main problems experienced were pain and stiffness. These problems were not restricted to patients with fractures of any one site, but were spread fairly evenly between all the diagnoses.

(b) Work

The timing of return to work has been examined in detail in the previous chapter. Tables 23 and 24 show the respondents' economic status and working position at each interview. The large majority of respondents were employees and at work before their injury. At the time of the second interview, two weeks after the injury, one-third were back at work and two-thirds off work sick. Subsequently, the proportion of the respondents at each interview, and of the total series, who had returned to work continued to rise with time.

People who have returned to work may still feel the effects of their injury in their work. But, in the present series, relatively few people identified much interference. Table 25 shows that very few people at any of the interviews were working a reduced number of hours compared to before their injury. Similarly, few people identified other alterations in their job because of their injury, as shown in Table 26.

In each interview the respondents were asked whether they had any problems with their job or their work because of their injury. Table 27 shows that almost a quarter of the series at the second interview, but fewer subsequently, said that they did have a problem. A higher proportion of housewives than of other employed people said they had a problem. Table 28 shows that the problems were mainly specific tasks or activities that the respondents said were difficult or would be difficult. Many of the problems appeared to be quite minor in nature, with the respondent coping with the difficulty while it lasted.

(c) Life at Home

Just as an illness or injury may interfere with people's work, so may it interfere with their daily activities at home. Patients' daily life at home is not given as much attention in the rehabilitation literature as is paid employment. But it may be important in several ways. For many people, their recreation and domestic tasks are a substantial part of their daily lives and are important to themselves. In addition, the activities that a person undertakes at home may contribute significantly to the processes of remobilisation and recovery. From the rehabilitation point of view, therefore, it is worth paying attention to patients' daily activities at home.

In each of the follow-up interviews the respondents were asked whether they had difficulty doing things around the house because of their injury. Table 29 shows that 60 per cent of the series at the second interview, 20 per cent at the third, and much fewer subsequently said they did have difficulty. At the second interview the majority of the patients with fractures of the arm or leg said that they had difficulty. These also were the patients among whom the difficulties tended to persist for the longest time. Less than half the respondents with fractures of the metacarpals, fingers, metatarsals or toes reported difficulties at the second interview. And for most of them, the difficulties soon disappeared.

Table 30 shows the nature of the difficulties experienced. Housework, getting around the house, lifting or carrying things, self-care and house repairs or maintenance were the activities most frequently affected. As would be expected, difficulties in lifting or carrying were reported most frequently by people with fractures of the upper limb, and difficulties in getting about by those with fractures of the lower limb. All the other difficulties were distributed fairly evenly among the patients with fractures of the different sites.

At each of the follow-up interviews, the respondents were asked whether there was anything more that needed to be done at home because of their injury. Only three people (two at the first interview and one at the fourth and fifth) said that there was. They said they needed help with specific items of housework or self care.

In the second interview, the respondents were asked what hobbies and spare-time activities they did before their injury, and what they were doing at the time of the interview. Table 31 shows the number of people who

identified each activity. There were two main kinds of change between the time before the injury and the second interview two weeks after it. There was a large increase in the number of people who identified non-physical indoor activities, especially reading and watching television. And there was a large fall in the number who identified physically demanding outdoor activities, especially gardening and participation in sports. The main effects of the injury were to change the nature rather than the total amount of spare-time activities undertaken by the respondents.

(d) The Grogono and Woodgate Index of Health

The Grogono and Woodgate Index of Health, as described in Chapter One, is a method of assessing the impact of an illness or injury on various aspects of patients' daily lives. The respondents were asked to say whether their injury, or anything to do with it, interfered with or affected any of the items in the index. They were asked to say whether each item was affected completely, slightly or not at all. Two points have been scored for each item affected completely, and one point for slightly. Each respondent might therefore score between nought and 20 points. Higher scores indicate a greater impact of the injury on the respondent's daily life.

Table 32 shows the distribution of the respondents' scores on the index at each interview. The majority of respondents scored between four and eight points at the first interview, and between three and six points at the second. This suggests that the injuries usually had light to moderate effects in the first two or three weeks after they occurred. Subsequently, the effects of the injuries were much smaller. Just under half the series at the third interview reported any effects at all, and most of them had low scores on the index. Around 10 per cent of the series at the fourth and fifth interviews reported any effects; again most of the scores were low. The large majority of patients appeared to feel no effects of their injury on their daily lives by about two to three months after it initially happened.

Table 33 shows the average score for each diagnostic group at each interview. The average scores have been calculated on the basis of the total number in the series with each diagnosis, rather than the actual number of respondents at each interview. The latter base would bias the results upwards, by excluding those patients who had recovered and were no longer being interviewed. Patients with fractures of the rib, humerus or tibia reported effects of the injury that tended to be relatively severe in the initial stages and that tended to persist somewhat longer than those of

other fractures. Patients with fractures of the metacarpals, fingers or toes reported slighter and less long-lasting effects than did other people.

The data from the index of health can also be used to identify the effects of the injury on each of the aspects of daily life included in the index. Table 34 shows that work and recreation were the activities most frequently affected. They were also the activities among which the effects lasted for the longest time. Many people also reported a certain amount of pain or discomfort from their injury. About one third of the respondents in the early weeks said that it interfered with their sleep or made them dependent on other people in their daily activities.

The respondents were asked to say whether the items on the index of health, that were affected by their injury, were very important, important or not important to them. Table 35 shows that the large majority of people whose work was affected said this was important or very important to them. Somewhat less importance was attached to interference with recreation or sleep, or to dependence in activities of daily living. Only about half the people at each interview, who said that their injury caused pain or discomfort, said that this was important to them. Interference with the respondents' work was the most common and the most important result of the injury.

After having completed the Grogono and Woodgate index of health, the respondents were asked which of the items was the most important. Table 36 shows that work was identified as the most important far more frequently than any other item. Hobbies or recreation were the only other item to be identified by 10 per cent or more of the respondents at any one interview. The diminishing significance of the effects of the injury is shown by the number of people, especially at the third and fourth interviews, who said that none of the effects were important to them. This table, therefore, re-emphasizes the importance of the effects of the injury on the respondents' work.

(e) Postal Follow-up at Six Months and One Year

The patients, who were not interviewed six months and one year after their injury, were sent by post a brief questionnaire asking about the effects of their injury. The six-months questionnaire asked about effects since the last interview. The one-year questionnaire asked about effects during the previous six months. The respondents were asked whether they had had any medical problems with their injury, whether they had any difficulties with their work or housework because of their injury, and whether they had

any other problems, worries or difficulties because of their injury. In each case they were asked to say what the problems were.

Table 37 shows that only a small number of respondents said that they did have any difficulties or problems at six months or one year. Table 38 shows that these were either the direct result of their injury, such as pain, swelling or restricted movement, or difficulties with specific tasks or activities. The use of a postal follow-up, after the patients had been identified from their interview replies as having recovered, revealed quite a small number of people with a variety of difficulties or problems caused by their injury.

3. DISCUSSION

In general, the respondents appeared to make a good recovery after their injury. They did not feel severe after-effects. The large majority made a complete or almost complete clinical recovery soon after the injury. The large majority experienced no significant restrictions or difficulties at work or at home after the first few weeks. And the large majority reported no effects of the injury, on the items included in the Grogono and Woodgate Index of Health, by two to three months after the injury. In these respects, a satisfactory level of recovery was achieved.

A small number of respondents experienced difficulties or problems. Some took a long time to make a complete clinical recovery or made an incomplete recovery. A few continued to feel physical discomfort for six months or more after their injury. And a few reported a certain amount of interference with their work or recreational activities for about six months after their injury. But only a small minority of people were affected in these ways.

These findings have revealed no major new areas in which there are unmet needs for rehabilitation.

If there is scope for improving the rehabilitation or aftercare services, it may lie in two aspects of recovery. The first is the timing of recovery and the resumption of particular activities. It is possible that the timing of the resumption of recreation, or other activities at home, could be improved. The second aspect is the level of recovery or activity achieved. Although there are no broad problem areas that are completely overlooked, it may be that more could be done to control the small amounts of discomfort felt by patients or to help them overcome the small amounts of interference in their daily lives caused by the injury.

CHAPTER 4 USE OF AND NEEDS FOR HEALTH AND REHABILITATION SERVICES

1. INTRODUCTION

The purpose of this chapter is to identify the health and rehabilitation services that the patients used, and to examine the nature of those services that they said they needed. This complements the material in the last chapter, that led from data about patients' recovery and problems to a discussion of needs for rehabilitation and after-care. In this chapter we will present data about the patients' own statements of their needs.

2. RESULTS

(a) Medical Care

In each of the follow-up interviews, the respondents were asked about their attendances at outpatients and contacts with their general practitioner. In the second interview they were asked whether they had seen their G.P. since their injury. On all other occasions they were asked about attendance or contact since the previous interview. They were also asked in each interview what the doctor had done for them.

As we saw from Table 20, nearly all the patients attended the fracture clinic, at least once after their initial attendance. The final attendance of the large majority was within six weeks or so of their initial injury. Table 39 shows the number of respondents at each interview who said they had been to the fracture clinic. Table 40 shows the different things that they said that the doctor had said or done. Obviously, there is a large amount of under-reporting of specific items: only a minority of patients said that they were examined or asked about their progress by the doctor. Presumably we have data about what the respondents remembered afterwards as being the most significant things in the consultation. The most frequent items mentioned were the doctor examining the patient or asking about his progress, making comments about progress, having the plaster removed, and giving advice to take exercise. Very few people said the doctor had prescribed physiotherapy and very few identified any involvement in sickness absence certification or decisions about when to return to work.

Table 41 shows that relatively few people consulted their general practitioner about their injury. Among those who did, the most common action identified was the provision of sickness absence certificates, as shown in

Table 42. Otherwise, the G.P.s. undertook a variety of tasks for small numbers of patients.

(b) Remedial Therapy

In each of the follow-up interviews the respondents were asked whether they had had any contact at all with a physiotherapist or an occupational therapist. Those with any contact were asked what had been done, whether it was useful and whether they had needed any extra therapy. Those with no contact were asked whether they were waiting to see a therapist, and, if not, whether they had needed any therapy.

Table 43 shows the respondents' contacts with physiotherapists and needs for physiotherapy. The majority of those with contact said that they had done exercises with the therapist, though a few said that they had received massage, heat treatment, ice treatment or other therapies. The majority, but not all of the respondents, said that the therapy had been useful in helping their recovery.

The table also shows that a small number of respondents - 10 at the third interview, and 10 at the fourth - said that they had needed some physiotherapy (or more physiotherapy) to help in their recovery. A total of 18 people said at some time during the follow-up period that they needed physiotherapy. When asked why they needed it they usually said in fairly general terms that they thought that physiotherapy might help their recovery, or some aspect of it such as regaining movement or walking properly again.

None of the respondents had any contact during the follow-up period with an occupational therapist. Only two people said that they needed any occupational therapy.

(c) Other Rehabilitation or Resettlement Services

In each of the follow-up interviews the respondents were asked whether they had been in contact with any rehabilitation or resettlement services. They were asked about rehabilitation doctors, hospitals and units, suppliers of aids or equipment, social workers, home helps or anyone else who had made special arrangements for the way they had been managing with their injury. Very few people had received such help. Five people said they had obtained crutches or walking sticks, two said they had seen a social worker and two other people. There was very little use made of these formal rehabilitation services.

The respondents were also asked whether they had needed any help of this kind. Only two people said that they had needed any help.

Later in each of the follow-up interviews, the respondents were asked whether they had been in contact with anyone about training or other special help in getting back to work. They were asked about employers, works' doctors, trades union officials, disablement resettlement officers, industrial rehabilitation units and training centres. Nobody said that they had been in contact with any of the public employment services. Ten respondents said they had been in contact with their employer, and about 10 each with a works' doctor and a trades union official.

The respondents were also asked whether they had needed any help, or any extra help, of this kind. Only one person said that he had.

(d) Desires for Information

It is well established that many hospital patients would like more advice or information about their illness and its effects. In the present study, the respondents were asked at each of the interviews whether there was anything to do with their injury or treatment that they would have liked to have been told more about. Table 44 shows that an appreciable minority of patients said that they would have liked more information. Altogether 60 patients (35% of the total) said at some time during the follow-up period that they would have liked more. The majority wanted to know more about the nature of their injury or their current progress. Some wanted to know more about their treatment: how long it would last; whether anything more could be done. And some wanted to know more about other things. There were a variety of items identified, relating usually to the individual's own condition or circumstances.

3. DISCUSSION

In this series, the main service used by the patients was the outpatient fracture clinic. The doctors at the clinic appeared primarily to provide medical care and to give advice about exercise and activities to restore function to the injured part. Some use was made of general practitioners, mainly to provide sickness absence certification. Very little use was made of any other rehabilitation or resettlement services.

Ten per cent of the respondents said they needed some physiotherapy or more physiotherapy to help improve the physical or functional aspects of

their recovery. Otherwise, virtually nobody expressed any needs for help from the rehabilitation or aftercare services in returning to work or managing in other ways with their injury.

Without a more detailed examination of the reasons why patients say they would like more information about their injury and related matters, it is difficult to assess the severity of this as a problem or what action, if any, is appropriate. Perhaps the desire for more information could best be dealt with by hospital doctors and general practitioners during normal consultations. What seems to be required is for the doctor to be sensitive to the patient's need for information, and to ask explicitly if there is anything more that he wants to know. It seems unlikely, given the variety of injuries involved and the variety of information requested, that the provision of standard packages of information, in the form of patient booklets, would meet the needs satisfactorily. What may be desirable is more discussion between patients and doctors on an individual, one-to-one basis.

In general, the patients included in this study appeared to make a satisfactory recovery and receive an acceptable service. The large majority made a good clinical recovery and experienced no restrictions or problems because of their injury after the first few weeks. The timing of return to work was very close to what is accepted as normal for patients with these injuries in Britain; it is likely that it would require fairly major efforts linking medical advice and work-place activities to alter it substantially. The respondents expressed very few unmet needs for rehabilitation. If the recovery of patients treated at one small general hospital without extensive rehabilitation facilities is representative of the situation elsewhere, then there is reason to believe that the nature and level of provision of rehabilitation and aftercare services in Britain for patients with minor fractures is satisfactory.

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Table 1 Diagnoses of Patients Included in the Study

I.C.D. Code	Site of Fracture	No. Respondents
N807	Rib, sternum	4
N808	Pelvis	1
N810	Clavicle	3
N811	Scapula	3
N812	Humerus	6
N813.0	Head or neck or radius	9
N813.4 (part)	Lower end of radius	14
N813.4 (part)	Styloid of radius or ulna	3
N814	Carpals	5
N815	Metacarpals	26
N816	Phalanges of hand	27
N822	Patella	2
N823 (part)	Fibula	6
N823 (part)	Tibia, or tibia and fibula	5
N824	Ankle	8
N825 (part)	Tarsals	4
N825 (part)	Metatarsals	28
N826	Phalanges of foot	15
N828	Multiple sites	2
Total		171

Table 2 Sources of Data

Site of Fracture	No. Respondents								
	Interview						Postal		Clinical Data
	1	2	3	4	5	6	6 months	12 months	
Rib, sternum	4	4	4	3	1	0	3	2	3
Pelvis	1	1	1	0	0	0	1	1	1
Clavicle	3	3	2	1	0	0	3	3	3
Scapula	3	3	3	1	0	0	1	2	3
Humerus	6	6	6	3	1	1	4	5	6
Head or neck of radius	9	9	8	4	2	0	7	7	9
Lower end of radius	14	14	14	9	3	1	10	11	13
Styloid of radius or ulna	3	3	3	2	0	0	3	3	3
Carpals	5	5	4	3	1	0	4	4	5
Metacarpals	26	26	17	5	0	0	25	17	26
Phalanges of hand	27	27	21	6	2	2	22	22	27
Patella	2	2	1	0	0	0	1	0	2
Fibula	6	6	6	4	1	0	5	5	6
Tibia, or tibia and fibula	5	5	5	4	3	2	1	2	4
Ankle	8	8	8	4	0	0	6	7	7
Tarsals	4	4	3	2	2	0	2	3	4
Metatarsals	28	28	23	7	3	1	21	19	26
Phalanges of foot	15	15	11	2	1	0	14	13	14
Multiple sites	2	2	2	1	0	0	1	2	1
Total	171	171	142	61	20	7	134	128	163

Table 3 Timing of Interviews

Site of Fracture	Average No. Weeks after Injury					
	1st	2nd	3rd	4th	5th	6th
Rib, sternum	1	4	6	12	29	-
Pelvis	2	2	6	-	-	-
Clavicle	1	3	8	12	-	-
Scapula	1	2	7	12	-	-
Humerus	1	3	7	15	27	61
Head or neck of radius	1	3	7	14	28	-
Lower end of radius	1	3	7	14	29	51
Styloid of radius or ulna	1	3	7	15	-	-
Carpals	1	3	7	12	31	-
Metacarpals	1	3	8	14	-	-
Phalanges of hand	1	2	7	13	29	57
Patella	0	2	6	-	-	-
Fibula	1	2	6	15	27	-
Tibia, or tibia and fibula	2	3	8	13	27	57
Ankle	1	2	6	15	-	-
Tarsals	1	2	6	13	25	-
Metatarsals	1	3	7	13	27	60
Phalanges of foot	1	2	7	15	27	-
Multiple sites	0	3	9	13	-	-
All respondents	1	2	7	14	28	57

Table 4 Sex and Age of Respondents

Site of Fracture	Sex	Age					Total
		18-19	20-29	30-39	40-49	50-59	
Rib, sternum	M	0	1	1	0	2	4
	F	0	0	0	0	0	0
Pelvis	M	1	0	0	0	0	1
	F	0	0	0	0	0	0
Clavicle	M	0	2	1	0	0	3
	F	0	0	0	0	0	0
Scapula	M	0	1	1	0	0	2
	F	0	0	0	0	1	1
Humerus	M	0	0	0	1	1	2
	F	0	1	0	0	3	4
Head or neck of radius	M	0	1	1	2	0	4
	F	1	0	1	0	3	5
Lower end of radius	M	0	1	1	1	1	4
	F	0	0	1	0	9	10
Styloid of radius or ulna	M	0	1	0	0	0	1
	F	0	0	0	0	2	2
Carpals	M	0	2	1	0	0	3
	F	0	0	0	0	2	2
Metacarpals	M	0	7	9	3	4	23
	F	0	1	0	1	1	3
Phalanges of hand	M	1	4	7	2	5	20
	F	1	2	1	0	3	7
Patella	M	0	0	1	0	0	1
	F	0	0	0	0	1	1
Fibula	M	0	3	0	1	1	5
	F	0	0	1	0	0	1
Tibia, or tibia and fibula	M	0	3	0	0	0	3
	F	0	0	0	1	1	2
Ankle	M	0	0	0	2	1	3
	F	2	1	0	1	1	5
Tarsals	M	0	2	1	0	1	4
	F	0	0	0	0	0	0
Metatarsals	M	0	3	4	1	4	12
	F	1	2	0	4	9	16
Phalanges of foot	M	0	3	0	2	1	6
	F	0	1	2	2	4	9
Multiple sites	M	0	1	0	0	0	1
	F	0	0	0	1	0	1
Total	M	2	35	28	15	22	102
	F	5	8	6	10	40	69
Total		7	43	34	25	62	171

Table 5 Relationship between Length of Treatment of Fractures and Length of Sickness Absence, (as reported in the literature)

Site of Fracture	Treatment	Sickness Absence
Distal end of radius (Colles' fracture)	Reduction, 6 weeks immobilisation, then exercises	Patients with some time off work: 7 weeks (Gardner et al.). All patients: 5½ weeks (Gardner et al.); 7 weeks (Pasila et al.).
Metacarpals	Undisplaced or slight fractures: active use of hand. Displaced fractures: immobilise for 3 weeks	Patients with some time off work: 5 weeks (Gardner et al.). All patients: 3 weeks (Gardner et al.; Hunter and Cowen).
Fingers	Strapping for 2 to 3 weeks	-
Metatarsals	Avulsion fractures; 3 weeks plaster, then exercises. Fractures of shafts: 3 to 4 weeks immobilisation; or immediate functional treatment	- Patients with some time off work: 5 to 7½ weeks (Johnson).
Toes	Treatment of soft tissue injuries, perhaps for a few days	Patients with some time off work: 2½ to 5 weeks. All patients: 0 to 4½ weeks (Johnson).

Table 6 Timing of Return to Work

Site of Fracture	No. of Respondents Weeks after Injury															Total Respon- dents	Mean Time off Work Weeks
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	>13		
Rib, sternum	1	1				1			1							4	4
Pelvis																0	-
Clavicle							2									2	6
Scapula						1	1									2	6
Humerus	1		1		1											3	2
Head or neck of radius	2		1										1			4	4
Lower end of radius	1	1	1			1	3		3							10	5
Styloid of radius or ulna	2															2	0
Carpals	1									1		1				3	7
Metacarpals	6		3	3	5	2	3	1					1			24	3
Phalanges of hand	7	1		4	1	1	1	2		1	1				1	20	3
Patella							1									1	6
Fibula	1			1						1	1		1			5	7
Tibia or tibia and fibula								1							2	3	18
Ankle									1		2				1	4	11
Tarsals												2				2	11
Metatarsals	7	2		2		2	2	2	1					1	1	20	4
Phalanges of foot	4		3		2	2			1							12	3
Multiple sites							1					1				2	9
Total	33	5	9	10	9	10	14	6	7	3	4	4	3	1	5	123	5
%	27	4	7	8	7	8	11	5	6	2	3	3	2	1	4	100	

Note: 5 respondents had not returned to work at 13 weeks.

1 with a fractured ankle and 1 with a fractured metatarsal returned at 17 weeks.

1 with a fractured tibia and fibula returned at 23 weeks and 1 at 24 weeks.

1 with a fractured thumb had not returned to work by one year. (This person has been excluded from the calculation of the mean time of return to work.)

Table 7 Average Times of Return to Work

Site of Fracture	Weeks after Fracture	
	Patients with Some Time Off	All Patients
Lower end of radius	(6)	5
Metacarpals	5	3
Fingers ⁽¹⁾	5	3
Metatarsals	6	4
Toes	(4)	3

Note: Figures in parentheses based on less than 10 patients.

(1) These figures exclude the respondent who did not return during the follow-up period.

Table 8 Additional Aspects of Clinical Condition and Timing of Return to Work

Additional Aspects of Clinical Condition	Metacarpals		Fingers	
	No. Respondents	Av. Time Return to Work Weeks	No. Respondents	Av. Time Return to Work Weeks
Absent	19	3	8	1
Present	5	5	11	5

$p < 0.05$

Table 9 Duration of Treatment

Length of Treatment Weeks	No. Respondents				
	Lower End of Radius	Meta- carpals	Fingers	Meta- tarsals	Toes
0					
1		1	4	3	1
2	1	6		2	5
3		7	2	3	4
4	4	3		5	1
5	1				
6	3			1	
7 or more			1		
Total	9	17	7	14	11

Table 10 Duration of Treatment and Timing of Return to Work

Relationship between Duration of Treatment and Timing of Return to Work	No. Respondents					
	Lower End of Radius	Meta-carpals	Fingers	Meta-tarsals	Toes	Total
Returned immediately, while immobilised or being treated in other way	1	6	6	7	3	23
Some time off work, but returned before end of immobilisation or other treatment	2	1	1	0	1	5
Returned 0-2 weeks after end of immobilisation or other treatment	3	7	4	6	5	25
Returned 3 or more weeks after end of immobilisation or other treatment	2	4	1	3	2	12
Other	1	0	1	0	0	2
Not available	1	6	7	4	1	19
Total	10	24	20	20	12	86

Table 11 Time of Final Outpatient Attendance

Time of Attendance Weeks after Injury	No. Respondents				
	Lower End of Radius	Meta- carpals	Fingers	Meta- tarsals	Toes
0					
1				2	3
2		4	4	4	3
3		10	7	4	2
4	3	3	2	3	2
5	1	3		2	1
6	1	1	3		
7	1	1		2	
8	1				
9	2		1		
10	1				
11					
12				1	
13			1		
More than 13	1	1	2		
Total	10	24	20	18	11

Table 12 Time of Final Outpatient Attendance and Timing of Return to Work

Relationship between Time of Final Attendance and Time of Return to Work	No. Respondents					
	Lower End of Radius	Meta-carpals	Fingers	Meta-tarsals	Toes	Total
Returned immediately; (before final attendance)	1	6	7	7	3	24
Some time off work, but returned 3 or more weeks before final attendance	4	2	1	2	2	0
Some time off work, but returned 1-2 weeks before final attendance	2	4	1	1	1	9
Returned 0-2 weeks after final attendance	2	10	8	5	5	30
Returned 3 or more weeks after final attendance	1	2	2	3	2	10
Not available	0	0	1	2	1	4
Total	10	24	20	20	12	86

Table 13 Household Composition and Timing of Return to Work

(Fractures of Metacarpals, Fingers, Metatarsals, Toes)

Household Composition	No. Respondents	Average Time of Return to Work: Weeks
Married		
Spouse not working		
Dependent children	16	5
No dependent children	4	5
Spouse working		
Dependent children	18	3
No dependent children	20	2
Not married		
Dependent children	3	2
No dependent children	14	3

Standard error of difference between means of married people whose spouses were not work and all others is statistically significant $p = < 0.05$.

Table 14 Social Class of Employees and Timing of Return to Work

(Fractures of the Lower End of Radius, Metacarpals, Fingers, Metatarsals, Toes)

Social Class	No. Respondents	Average Time of Return to Work: Weeks
I Professional) II Intermediate))	16	1
IIIN Skilled non-manual	9	2
IIIM Skilled manual	23	6
IV Partly skilled	24	4
V Unskilled	7	5

Social Class based on O.P.C.S., Classification of Occupations 1970.

Table 15 Social Class of Employees and Sickness Absence

(Fractures of Lower End of Radius, Metacarpals, Fingers, Metatarsals, Toes)

Social Class	No. with No Time Off	No. with Some Time Off	Average Time of Return to Work: Weeks
I - IIIN	13	12	3
IIIM - V	8	46	6

Table 16 Employees' Assessments of the Physical Heaviness of their Jobs, and Timing of Return to Work

(Fractures of Lower End of Radius, Metacarpals, Fingers, Metatarsals, Toes)

Heaviness of Job	No. with No Time Off	No. with Some Time Off	Average Time of Return to Work: Weeks	Total	Average Time of Return to Work: Weeks
Light	12	14	4	26	2
Medium	5	24	5	29	4
Heavy	2	19	7	21	6

Table 17 Employees' Social Class, Physical Heaviness of Jobs and Timing of Return to Work

(Fractures of Lower End of Radius, Metacarpals, Fingers, Metatarsals, Toes)

Social Class	Heaviness of Job					
	Light		Medium		Heavy	
	No. Respondents	Average Time of Return to Work: Weeks	No. Respondents	Average Time of Return to Work: Weeks	No. Respondents	Average Time of Return to Work: Weeks
I and II	7	1	6	2	3	1
IIIN	9	2	0	-	0	-
IIIM	3	3	7	6	11	7
IV	6	3	11	4	6	6
V	1	5	5	6	1	8

Table 18 Respondents' Views of Importance of their
Income in Influencing their Return to Work,
and Timing of Return to Work

(Fractures of the Metacarpals, Fingers, Metatarsals, Toes)

Importance of Income	No. Respondents	Average Time of Return to Work: Weeks
Very	11	2
Moderately	7	6
Slightly	3	3
Not	30	3
Better Off Sick	3	4

Table 19 Employees' Assessments of the Appropriateness of Timing of their Return to Work

(Fractures of the Lower End of Radius, Metacarpals, Fingers, Metatarsals, Toes)

Time of Return Weeks After Fracture	No. Respondents			Total
	Too Early	Right Time	Later than Needed	
0	4	10		14
1	2	2		4
2	2	5		7
3	3	4		7
4		8		8
5	2	6		8
6	2	7		9
7		4	1	5
8	1	3		4
9		1		1
10		1		1
11				
12		1		1
13		1		1
More than 13		1		1
Total	16	54	1	71

Table 20 Time of Final Outpatient Attendance and Degree of Clinical Recovery at Final Attendance

Time of Final O.P. Attendance Weeks after Injury	No. Respondents					Total
	Degree of Recovery at Final Attendance				Total	
	Complete	Almost	Part	None		
1	1	3	3	1	8	
2	6	12	3	0	21	
3	15	16	1	0	32	
4	9	10	2	0	21	
5	7	11	0	0	18	
6	4	4	2	1	11	
7	5	1	1	0	7	
8	2	3	1	0	6	
9	3	3	0	0	6	
10	0	2	0	1	3	
11	1	0	1	0	2	
12	2	0	0	0	2	
13	0	3	0	0	3	
More than 13	2	12	6	0	20	
Total	57	80	20	3	160	

Table 21 Degree of Clinical Recovery at Final Outpatient Attendance by Diagnosis

Site of Fracture	No. Respondents				
	Degree of Recovery at Final Attendance				Total
	Complete	Almost	Part	None	
Rib, sternum	0	1	0	1	2
Pelvis	1	0	0	0	1
Clavicle	2	1	0	0	3
Scapula	3	0	0	0	3
Humerus	2	1	3	0	6
Head or neck of radius	0	8	0	0	8
Lower end of radius	5	5	3	0	13
Styloid of radius or ulna	1	2	0	0	3
Carpals	2	3	0	0	5
Metacarpals	15	10	1	0	26
Phalanges of hand	8	12	5	1	26
Patella	1	1	0	0	2
Fibula	1	5	0	0	6
Tibia or tibia and fibula	0	2	2	0	4
Ankle	2	3	2	0	7
Tarsals	1	3	0	0	4
Metatarsals	10	14	1	1	26
Phalanges of foot	3	8	3	0	14
Multiple sites	0	1	0	0	1
Total	57	80	20	3	160

Table 22 Reasons for Incomplete Recovery

(52 Patients with Final O.P. Attendance 5 or More Weeks after Injury)

Reason for Incomplete Recovery	No. Respondents		
	Degree of Recovery		
	Almost Complete	Partial	None
Fracture not united	0	0	1
Pain, ache, tenderness	20	3	0
Swelling	2	0	0
Stiffness, limitation of movement	17	7	0
Deformity, unsightly	0	2	0
Post-traumatic osteo- arthritis	1	0	0
Not returned to work	4	0	0
Discharged early, before full recovery	7	3	0
Other	3	3	0

Table 23 Economic Status at Each Interview

Economic Status	No. Respondents					
	Before injury	2nd interview	3rd interview	4th interview	5th interview	6th interview
Self-employed	12	13	10	4	2	0
Employee	132	131	105	46	15	6
Student	2	2	2	1	0	0
Housewife	19	18	19	8	3	1
Not employed	6	7	6	2	0	0
Total	171	171	142	61	20	7

Table 24 Self-employed and Employees: Work Status at Each Interview

Work Status	No. Respondents					
	Before injury	2nd interview	3rd interview	4th interview	5th interview	6th interview
At work	130	48	79	42	14	5
Holiday	7	2	4	3	1	0
Sick leave	5	88	29	4	2	1
Other leave	1	6	3	1	0	0
Total	144	144	115	50	17	6

Table 25 Proportion of Pre-injury Hours per Week Worked after Injury

Proportion of Pre-injury Hours Worked	No. respondents				
	2nd interview	3rd interview	4th interview	5th interview	6th interview
- 69%	1	4	1	0	0
70% - 89%	1	6	4	0	0
90% - 109%	39	58	33	10	5
110% - 129%	0	6	3	4	0
130% +	2	2	1	0	0
Not available	5	3	0	0	0
Total interviewed and at work	48	79	42	14	5

Table 26 Alterations in Job Because of Injury

Nature of Alteration	No. Respondents				
	2nd interview	3rd interview	4th interview	5th interview	6th interview
Changed or lighter work	6	2	3	0	1
Shorter hours	1	1	0	0	0
Other people help	2	1	0	0	0
Other, not specified	0	2	0	0	0
Total	9	6	3	0	1

Table 27 Problems with Work Because of Injury

Employment and Work Status	No. Respondents				
	2nd interview	3rd interview	4th interview	5th interview	6th interview
Self-employed or employee					
At work	11	11	8	4	1
Holiday	1	0	0	0	0
Sick or other leave	16	5	1	0	0
Student	1	1	1	0	0
Housewife	9	5	2	2	1
Total with Problems	38	22	12	6	2

Table 28 Nature of Problems with Work

Nature of Problem	No. Respondents				
	2nd interview	3rd interview	4th interview	5th interview	6th interview
Tasks, activities difficult	24	15	7	4	1
Other people have to help	6	0	0	0	0
Pain, discomfort	4	5	3	2	2
Other	10	3	3	2	1

Table 29 Difficulty around the House

Site of Fracture	Total Respondents	No. Respondents with Difficulty				
		2nd interview	3rd interview	4th interview	5th interview	6th interview
Rib, sternum	4	3	1	1	1	0
Pelvis	1	1	0	0	0	0
Clavicle	3	2	0	0	0	0
Scapula	3	3	1	0	0	0
Humerus	6	6	4	2	1	1
Head of neck of radius	9	4	1	1	1	0
Lower end of radius	14	11	5	2	1	0
Styloid of radius or ulna	3	3	1	0	0	0
Carpals	5	4	1	1	0	0
Metacarpals	26	12	0	1	0	0
Phalanges of hand	27	12	3	1	2	1
Patella	2	2	0	0	0	0
Fibula	6	3	2	0	0	0
Tibia, or tibia and fibula	5	5	4	3	2	1
Ankle	8	8	5	0	0	0
Tarsals	4	3	1	0	0	0
Metatarsals	28	14	2	3	1	0
Phalanges of foot	15	5	1	0	0	0
Multiple sites	2	2	1	0	0	0
Total	171	103	34	15	9	3

Table 30 Nature of Difficulties around the House

Nature of Difficulty	No. Respondents				
	2nd interview	3rd interview	4th interview	5th interview	6th interview
Anything, everything	14	1	1	0	0
Most things	5	0	1	0	0
Lifting, carrying	17	11	4	4	1
Mobility	23	11	2	0	0
Toilet, self-care	17	4	0	2	1
Housework	46	13	4	3	1
House repairs, maintenance	15	5	1	1	0
Gardening	8	3	1	1	0
Things take longer	11	4	2	1	0
Other	21	10	5	2	1

Table 31 Spare-time Activities

Activity	No. Respondents	
	Before injury	2nd interview
None	6	11
<u>In the home</u>		
Housework	5	9
Do-it-yourself (e.g. decorating)	16	8
Crafts (e.g. sewing, knitting)	37	25
Arts (e.g. music, painting)	8	3
Games (e.g. jigsaws, cards)	0	4
Other pastimes (e.g. cross-words, pets)	4	4
Reading	22	67
Listen to music, T.V., radio	14	51
Letters, telephone	1	5
Visitors, family	0	3
Other in the home	5	5
<u>Around the home</u>		
Do-it-yourself (e.g. cars, outside repairs)	3	2
Gardening	29	12
Walks	18	16
<u>Away from home</u>		
Voluntary work	10	5
Arts (e.g. dance, sing)	17	4
Sports: participate	81	16
Sports: watch	2	7
Games	2	2
Other hobbies (e.g. nature study)	4	1
Drive, trips	13	7
Clubs, pubs, drink	13	11
Other away from home	5	8
Total respondents	171	171

Table 32 Scores on Grogono and Woodgate Index of Health

Score	No. Respondents					
	1st interview	2nd interview	3rd interview	4th interview	5th interview	6th interview
0	2	18	66	37	5	2
1	5	5	14	5	5	2
2	6	14	10	4	1	1
3	17	19	16	2	3	1
4	17	23	11	4	1	0
5	28	29	11	2	1	0
6	32	23	3	3	1	0
7	18	11	2	1	1	0
8	15	6	4	1	0	1
9	12	12	2	1	1	0
10	5	2	2	0	1	0
11	4	4	0	1	0	0
12	4	2	0	0	0	0
13	1	0	0	0	0	0
14	2	0	0	0	0	0
15	1	2	0	0	0	0
16	0	0	1	0	0	0
17	1	1	0	0	0	0
18	0	0	0	0	0	0
19	1	0	0	0	0	0
20	0	0	0	0	0	0
Total interviewed	171	171	142	61	20	7
Not interviewed	0	0	29	108	151	164
Total	171	171	171	171	171	171

Table 33 Diagnosis by Average Score on Grogono and Woodgate Index of Health

Site of Fracture	No. Respondents	Average Score					
		1st interview	2nd interview	3rd interview	4th interview	5th interview	6th interview
Rib, sternum	4	10	10	3	2	3	0
Pelvis	1	6	4	0	0	0	0
Clavicle	3	6	4	1	0	0	0
Scapula	3	8	8	1	0	0	0
Humerus	6	10	7	4	2	2	1
Head or neck of radius	9	5	4	1	1	0	0
Lower end of radius	14	8	6	3	0	0	0
Styloid of radius or ulna	3	5	6	2	0	0	0
Carpals	5	7	6	2	1	1	0
Metacarpals	26	5	4	1	0	0	0
Phalanges of hand	27	5	4	1	1	0	0
Patella	2	9	6	1	0	0	0
Fibula	6	7	5	3	0	0	0
Tibia, or tibia and fibula	5	11	12	9	4	2	1
Ankle	8	6	6	5	1	0	0
Tarsals	4	5	5	3	2	1	0
Metatarsals	28	6	4	1	0	0	0
Phalanges of foot	15	5	4	1	0	0	0
Multiple sites	2	10	5	2	1	0	0
All Sites	171	6	5	2	1	0	0

Note:

In calculating the means, all persons not interviewed have been scored as 0.

Table 34 Effects of the Injury on Aspects of Personal Life
Included in the Grogono and Woodgate Index of Health

Item	Level of Effect	No. Respondents					
		1st inter- view	2nd inter- view	3rd inter- view	4th inter- view	5th inter- view	6th inter- view
Work or Usual Daily Tasks	Complete interference	115	83	23	5	2	0
	Slight interference	51	60	38	11	7	1
	No interference	5	28	81	45	11	6
Hobbies or Recreation	Complete interference	77	54	17	4	2	1
	Slight interference	45	54	25	10	6	1
	No interference	49	63	100	47	12	5
Sleep	Complete interference	17	11	5	0	0	0
	Slight interference	79	47	18	8	3	1
	No interference	75	113	119	53	17	6
Eat and Enjoy Food	Complete interference	10	5	1	0	1	0
	Slight interference	41	33	4	3	2	1
	No interference	120	133	137	58	17	6
Pass Water or Move Bowels	Complete interference	4	2	0	0	0	0
	Slight interference	7	7	4	1	0	0
	No interference	160	162	138	60	20	7
Communicate with People	Complete interference	2	1	0	0	0	0
	Slight interference	13	12	7	1	1	0
	No interference	156	158	135	60	19	7
Depend on Others for Washing, Feeding, Moving or Dressing	Complete dependence	13	7	0	0	0	0
	Slight dependence	72	53	13	4	3	1
	No dependence	86	111	129	57	17	6
Sex	Complete interference	16	10	1	1	1	0
	Slight interference	15	23	6	4	2	1
	No interference	140	138	135	56	17	6
Discomfort Pain or Suffering	Severe	26	13	4	2	1	0
	Slight	116	114	54	17	11	5
	None	29	44	84	42	8	2
Worry or Unhappiness	Severe	9	10	7	4	2	0
	Slight	39	38	14	7	4	1
	None	123	123	121	50	14	6
Total interviewed		171	171	142	61	20	7
Not interviewed		0	0	29	110	151	164
Total		171	171	171	171	171	171

Table 35 Respondents' Assessments of Importance of Aspects of Personal Life Affected by Injury

Item	Level of Importance	No. Respondents					
		1st inter-view	2nd inter-view	3rd inter-view	4th inter-view	5th inter-view	6th inter-view
Work or Usual Daily Tasks	Very important	98	79	23	6	3	1
	Important	46	47	29	8	5	0
	Not important	22	17	9	2	1	0
Total identifying some effect		166	143	61	16	9	1
Hobbies or Recreation	Very important	56	41	15	3	2	1
	Important	36	41	17	8	4	1
	Not important	30	26	10	3	2	0
Total identifying some effect		122	108	42	14	8	2
Sleep	Very important	28	9	6	1	0	0
	Important	51	40	13	5	2	1
	Not important	17	9	4	2	1	0
Total identifying some effect		96	58	23	8	3	1
Eat and Enjoy Food	Very important	8	5	0	0	0	0
	Important	26	20	4	2	2	1
	Not important	17	13	1	1	1	0
Total identifying some effect		51	38	5	3	3	1
Pass Water or Move Bowels	Very important	3	3	1	0	0	0
	Important	6	4	3	0	0	0
	Not important	2	2	0	1	0	0
Total identifying some effect		11	9	4	1	0	0
Communicate with People	Very important	7	4	0	1	0	0
	Important	6	5	6	0	1	0
	Not important	2	4	1	0	0	0
Total identifying some effect		15	13	7	1	1	0

Continued

Table 35 contd.

Item	Level of Importance	No. Respondents					
		1st inter-view	2nd inter-view	3rd inter-view	4th inter-view	5th inter-view	6th inter-view
Depend on Others for Washing, Feeding, Moving or Dressing	Very important	18	14	4	1	0	0
	Important	35	27	3	1	2	1
	Not important	32	19	6	2	1	0
Total identifying some effect		85	60	13	4	3	1
Sex	Very important	11	6	3	3	2	1
	Important	15	21	4	2	1	0
	Not important	5	6	0	0	0	0
Total identifying some effect		31	33	7	5	3	1
Discomfort, Pain or Suffering	Very important	29	16	5	4	3	1
	Important	46	43	25	9	7	2
	Not important	67	68	28	6	2	2
Total identifying some effect		142	127	58	19	12	5
Worry or Unhappiness	Very important	13	16	6	4	4	1
	Important	29	25	9	6	2	0
	Not important	6	7	6	1	0	0
Total identifying some effect		48	48	21	11	6	1
Total Respondents		171	171	142	61	20	7

Table 36 Respondents' Assessments of Most Important Aspect of Personal Life Affected by Injury

Item	No. Respondents					
	1st inter-view	2nd inter-view	3rd inter-view	4th inter-view	5th inter-view	6th inter-view
Work or usual daily tasks	95	83	41	20	5	3
Hobbies or recreation	21	26	20	5	3	0
Sleep	5	4	3	0	0	0
Eat and enjoy food	1	0	1	0	0	0
Pass water or move bowels	0	0	0	1	0	0
Communicate with people	0	0	0	0	1	0
Depend on others for washing, feeding, moving or dressing	11	6	3	1	0	1
Sex	1	1	1	1	2	0
Discomfort, pain or suffering	2	7	10	1	2	1
Worry or unhappiness	3	3	2	2	1	0
Other	12	18	13	6	2	1
More than one item	12	9	6	4	2	0
None important	8	14	42	20	2	1
Total	171	171	142	61	20	7

Table 37 Problems Identified at Postal Follow-up

Problem	No. Respondents	
	6 months	1 year
Medical	10	10
Work	11	9
Other	16	9
Any problem	24	17
No problem	110	111
Total followed-up postally	134	128
Non-contact, non-response	17	36
Interview held	20	7
Total respondents	171	171

Table 38 Nature of Problems Identified at Postal Follow-up

Nature of Problem	No. Respondents	
	6 months	1 year
Medical		
Pain	5	5
Swelling	2	2
Deformity	1	0
Other	5	5
Any medical problem	10	10
Work		
Pain	3	3
Difficulty with tasks	7	6
Other	3	1
Any work difficulty	11	9
Other		
Injury, pain, recovery	9	3
Function, movement	3	2
Treatment	0	1
Difficulty with activities	7	1
Money	2	0
Compensation	0	1
Other	4	2
Any of these	16	9

Table 39 Attendance at Out-patient Fracture Clinic

Attendance	No. Respondents				
	2nd inter- view	3rd inter- view	4th inter- view	5th inter- view	6th inter- view
Attended outpatients	72	102	33	10	4
Not attended outpatients	99	40	28	10	3
Total	171	142	61	20	7

Table 40 Doctor's Action at Outpatient Consultation

Action	No. Respondents				
	2nd inter- view	3rd inter- view	4th inter- view	5th inter- view	6th inter- view
Physical exam, observation, X-rays	26	34	7	4	0
Asked about condition, progress	10	11	2	2	0
Made comment about current progress	8	31	10	5	2
Made comment about future progress	13	22	7	1	0
Splint, plaster removed at clinic	24	40	7	1	0
Plaster continued, replaced	8	5	1	0	0
Prescribed physiotherapy	0	6	3	2	0
Advised to take exercise, activities	19	28	6	1	2
Said to rest, limit activities	5	9	3	0	0
Provided, prescribed other treatment	12	14	5	0	1
Made further appointment	33	29	12	4	1
Discharged	14	44	16	3	1
Told to see G.P.	1	5	0	0	0
Gave sickness absence certificate	3	3	0	0	0
Said when to return to work	7	15	6	2	0
Other	17	18	6	3	0
Total attended outpatients	72	102	33	10	4

Table 41 Consultations with General Practitioners

Consultations	No. Respondents				
	2nd inter-view	3rd inter-view	4th inter-view	5th inter-view	6th inter-view
Consulted about injury	37	37	16	5	3
Consulted about other illness only	4	7	5	1	2
No consultation	130	98	40	14	2
Total	171	142	61	20	7

Table 42 General Practitioners' Actions

Action	No. Respondents				
	2nd inter-view	3rd inter-view	4th inter-view	5th inter-view	6th inter-view
Examination, asked about progress	3	2	1	0	0
Made comment about progress	3	5	3	1	1
Prescribed pain killers	6	3	1	0	1
Other treatment	4	3	2	0	0
Gave sickness absence certificate	23	22	8	2	0
Said when to return to work	1	4	7	1	2
Other	10	9	2	2	0
Total consulted G.P.	37	37	16	5	3

Table 43 Use of and Needs for Physiotherapy

Contact and Needs	No. Respondents				
	2nd inter- view	3rd inter- view	4th inter- view	5th inter- view	6th inter- view
Contact	0	8	10	4	2
No contact	171	134	51	16	5
Total respondents	171	142	61	20	7
Of those with contact					
Extra physiotherapy needed	-	1	2	2	1
No extra needed	-	7	8	2	1
Total with contact	0	8	10	4	2
Of those without contact					
Waiting to see physiotherapist	3	1	1	0	0
Physiotherapy needed	3	9	8	3	1
Not waiting or in need	165	124	42	13	4
Total without contact	171	134	51	16	5

Table 44 Respondents' Desires for More Information
about their Injury

Aspect of Injury	No. Respondents					
	1st inter- view	2nd inter- view	3rd inter- view	4th inter- view	5th inter- view	6th inter- view
Injury, diagnosis	7	10	7	0	2	0
Treatment	5	14	11	2	0	2
Progress, recovery	4	10	8	7	2	1
What to do or not to do	2	3	4	1	1	0
Effect on work	0	1	1	0	0	0
Effect on other activities	0	2	1	0	0	0
Other	4	5	7	4	0	0
Total wanting more information	20	31	28	12	5	3
Not wanting more information	151	140	114	49	15	4
Total respondents	171	171	142	61	20	7