

**LONG TERM FOLLOW-UP  
OF THE COGNITIVE-BEHAVIOURAL,  
PAIN MANAGEMENT PROGRAMME,  
ADAPT**

A thesis submitted in partial fulfillment of the  
requirements for the award of the degree of

**MASTER OF SCIENCE IN MEDICINE (PAIN MANAGEMENT)**

**UNIVERSITY OF SYDNEY**

by  
Lee Beeston

**DEPARTMENT OF ANAESTHESIA AND PAIN MANAGEMENT  
UNIVERSITY OF SYDNEY  
2001**

## DECLARATION

The work presented in this treatise was undertaken in the Department of Anaesthesia and Pain Management of the University of Sydney. The treatise is my own composition and to the best of my knowledge it contains no material previously published or written by another person, except where due reference is made in the text of the treatise.

A handwritten signature in black ink that reads "Lee Beeston". The signature is written in a cursive style with a large initial 'L'.

Lee Beeston

October, 2001

## ACKNOWLEDGEMENTS

The ADAPT Pain Management Programme, which is the basis of this treatise, is conducted at the University of Sydney, Pain Management and Research Centre, at the Royal North Shore Hospital.

I would like to thank my supervisor and Director of the Programme, Dr Michael Nicholas, for his dedication to the field of Pain Management, for generously sharing his expertise, and for his enthusiastic encouragement in my preparation of this study.

Professor Michael Cousins established the Pain Management and Research Centre and subsequently the Postgraduate Pain Management Study Programme was developed. I thank him for his vision, leadership, and inspiration.

I would also like to thank the Faculty staff, the ADAPT Programme staff and all staff of the Pain Management and Research Center with whom I have worked during the past seven years. Without their interest, humor and support, the completion of this task would have been inconceivable.

# TABLE OF CONTENTS

DECLARATION  
ACKNOWLEDGEMENTS  
LIST OF ILLUSTRATIONS  
LIST OF TABLES  
ABSTRACT

<b>CHAPTER 1</b>	<b>THE NATURE OF THE PROBLEM OF CHRONIC PAIN</b>	
1.1	DEFINITION OF PAIN	1
1.2	ACUTE PAIN	1
1.3	CHRONIC PAIN	2
1.3.1	COMMON FEATURES OF CHRONIC PAIN	3
<b>CHAPTER 2</b>	<b>THE PROBLEM OF CHRONIC PAIN</b>	
2.1	PREVALENCE	6
2.2	IMPAIRMENT, PERMANENT IMPAIRMENT, DISABILITY AND HANDICAP	8
2.2.1	IMPAIRMENT	8
2.2.2	PERMANENT IMPAIRMENT	9
2.2.3	DISABILITY	9
2.2.4	HANDICAP	10
2.3	DISABILITY MANAGEMENT	10
2.4	COSTS OF CHRONIC PAIN	11
2.5	DIAGNOSIS	12
<b>CHAPTER 3</b>	<b>TREATMENTS FOR CHRONIC PAIN</b>	
3.1	REVIEW OF TREATMENTS	14
<b>CHAPTER 4</b>	<b>DEVELOPMENT OF COGNITIVE BEHAVIORAL PROGRAMMES</b>	
4.1	BEHAVIOURAL AND COGNITIVE BEHAVIOURAL TREATMENTS FOR CHRONIC PAIN	21
4.2	SOME PROBLEMS ENCOUNTERED IN FOLLOW UP OF CBT PROGRAMMES	22
4.2.1	RELIANCE ON SELF REPORT	22
4.2.2	RANDOMISED CONTROL TRIALS	24

<b>CHAPTER 4</b>	<b>DEVELOPMENT OF COGNITIVE BEHAVIORAL PROGRAMMES (cont)</b>	
4.3	MAINTENANCE OF GAINS IN THE LONG-TERM	25
4.4	RELAPSE	32
4.5	SUMMARY	34
<b>CHAPTER 5</b>	<b>METHODOLOGY</b>	
5.1.1	THE ADAPT PAIN MANAGEMENT PROGRAMME	36
5.1.1	STAFF	38
5.1.2	THE PROGRAMME COMPONENTS	38
5.1.2.1	EXERCISE AND STRETCH	38
5.1.2.2	GOALSETTING	38
5.1.2.3	PACING OF ACTIVITIES	39
5.1.2.4	EDUCATION SESSIONS	39
5.1.2.5	COGNITIVE AND BEHAVIOURAL	39
5.1.2.6	MEDICATION REDUCTION	40
5.1.2.7	RELAXATION	40
5.1.2.8	SLEEP MANAGEMENT	41
5.1.2.9	COMMUNICATION ISSUES	41
5.1.2.10	RELAPSE PREVENTION	41
5.1.2.11	FAMILY INVOLVEMENT	41
5.1.2.12	REHABILITATION	42
5.1.2.13	OUTOFHOURS	42
5.1.2.14	FOLLOW UP	42
5.2	RECRUITMENT FOR THE PROGRAMME	43
5.2.1	ASSESSMENT	43
5.2.2	PRIOR TO ADMISSION	45
5.2.3	FOLLOW UP	45
<b>CHAPTER 6</b>	<b>STUDY METHODS</b>	
6.1	NON-COMPLETERS OF ADAPT	46
6.2	PROCEDURE	46

<b>CHAPTER 6</b>	<b>STUDY METHODS (cont)</b>	
6.2.1	TELEPHONE QUESTIONNAIRE	46
6.2.2	TELEPHONE INTERVIEW	47
6.2.3	WRITTEN QUESTIONNAIRES	48
6.2.3.1	BECK DEPRESSION INVENTORY	49
6.2.3.2	ROLAND AND MORRIS DISABILITY QUESTIONNAIRE	49
6.2.3.4	MEDICATION INTAKE CHART	51
6.3	CONTACTING SUBJECTS	52
<b>CHAPTER 7</b>	<b>RESULTS</b>	
7.1	SUBJECTS	53
7.1.1	NON-RESPONDERS	54
7.1.2	ANALYSIS OF DIFFERENCES BETWEEN RESPONDERS AND NON-RESPONDERS	55
7.2	CHANGE DURING TREATMENT	62
7.3	MAINTENANCE OF TREATMENT GAINS	65
7.4	MAINTENANCE OF TREATMENT GAINS AND THE USE OF PAIN SELF-MANAGEMENT STRATEGIES	69
7.4.1	USE OF STRATEGIES – TOTAL SAMPLE (n=123) AT FOLLOW UP	71
7.4.2	USE OF STRATEGIES – MAINTAINERS VS RELAPERS	79
7.5	USE OF HEALTH SERVICES	85
<b>CHAPTER 8</b>	<b>DISCUSSION</b>	
8.1	RESPONSE RATE	90
8.2	RELIANCE ON SELF-REPORT	92
8.3	FOLLOW UP INTERVIEWER	93
8.4	RANDOMISATION	94
8.5	STRENGTH OF THE STUDY	95
8.5.1	LENGTH OF FOLLOW UP	95
8.5.2	COMPREHENSIVE DATA	95

<b>CHAPTER 8</b>	<b>DISCUSSION (cont)</b>	
8.5.3	USE OF A PROSPECTIVE DESIGN	95
8.5.4	STATISTICAL ANALYSES CONTROLLED FOR INCREASED OF TYPE-1 ERRORS	96
8.5.5	USE OF A STANDARD PAIN CLINIC POPULATION	96
8.6	MAIN FINDINGS	97
8.6.1	DO PATIENTS WITH CHRONIC NON-CANCER PAIN IMPROVE ON MEASURES OF PAIN, DISABILITY, MOOD AFTER ATTENDING A COGNITIVE BEHAVIOURAL PAIN MANAGEMENT PROGRAMME?	97
8.6.2	WERE THESE CHANGES ACHIEVED IN THE PROGRAMME MAINTAINED AT LONG-TERM FOLLOW UP?	97
8.6.3	DID THOSE WHO MAINTAINED THEIR GAINS FOLLOWING TREATMENT DIFFER IN THE USE OF PAIN MANAGEMENT STRATEGIES FROM THOSE WHO DID NOT MAINTAIN THEIR GAINS?	99
8.7	GENERAL DISCUSSION	103
8.7.1	ISSUES FOR THE FUTURE	111
<b>REFERENCES</b>		<b>114</b>
<b>APPENDICES</b>		

## **LIST OF ILLUSTRATIONS**

**Figure 1:1 Common problems of chronic pain**

**Figure 4:1 Fordyces' model of pain**

## LIST OF TABLES

<b>Table 3.1</b>	<b>Treatments for chronic pain</b>	<b>15</b>
<b>Table 3.2</b>	<b>Effectiveness ratings of treatments for chronic pain</b>	<b>16</b>
<b>Table 4.1</b>	<b>Summary of long-term outcome studies</b>	<b>27</b>
<b>Table 4.2</b>	<b>Summary of long-term outcome studies</b>	<b>30</b>
<b>Table 5.1</b>	<b>Exclusion criteria</b>	<b>44</b>
<b>Table 5.2</b>	<b>Inclusion criteria</b>	<b>44</b>
<b>Table 7.1</b>	<b>Demographic characteristics of sample</b>	<b>57</b>
<b>Table 7.2</b>	<b>Median scores on main outcome variables at admission to ADAPT</b>	<b>60</b>
<b>Table 7.3</b>	<b>Comparison of subjects pre-programme, post programme and at long-term follow-up on main outcome measures</b>	<b>63</b>
<b>Table 7.4</b>	<b>Medication use (by number of classes of drugs) by all ADAPT completers (n=113) and ADAPT completers who returned questionnaires at follow-up (n=91)</b>	<b>64</b>
<b>Table 7.5</b>	<b>Use of opioids at Pre-treatment, Posttreatment; and Follow-up</b>	<b>65</b>
<b>Table 7.6</b>	<b>Work status at pre-admission and long-term Follow-up of total sample and ADAPT completers</b>	<b>67</b>
<b>Table 7.7</b>	<b>Use of pain management strategies/exercises taught in ADAPT</b>	<b>70</b>
<b>Table 7.8</b>	<b>Items from Pain Self-Management Checklist</b>	<b>73</b>
<b>Table 7.9</b>	<b>Comparison of relapsers vs. maintainers on main outcome measures at posttreatment and long-term follow-up</b>	<b>81</b>
<b>Table 7.10</b>	<b>Opioid use by ADAPT completers who maintained their gains and by those who relapsed by follow-up</b>	<b>81</b>

## LIST OF TABLES, (Cont'd)

<b>Table 7.11</b>	<b>Work status at pre-admission at long-term follow-up for the maintainers and relapser groups</b>	<b>82</b>
<b>Table 7.12</b>	<b>Use of health care services in previous 6 months before interview at follow-up</b>	<b>85</b>

## ABSTRACT

The aim of this study was to conduct a long-term follow-up evaluation of patients treated more than 2 years previously (mean 43 months, median 44 ), during a two year period in the ADAPT Pain Management Programme.

Of the 205 possible former patients 141 (70.7%) were contacted, leaving 29.3% uncontactable. Only 22 (10.7% of 205) were unwilling to participate, and 123 (59% of 205) participated in the telephone interview with 98 (47.8%) returning written questionnaires. Of this 98, 91(46.7% of 205) actually completed the programme originally (the remaining 7 withdrew during the programme). To check if there were any obvious differences between the responders and the non-responders, differences in outcomes at the end of treatment were checked but none were significant. There were also no obvious demographic differences between the two groups.

The data used covered the dimensions of pain severity, disability, interference by pain in activities and mood. The same measures were used at pretreatment, posttreatment and at follow-up. All outcome measures used had well-documented strong psychometric properties of reliability and validity.

The main questions addressed in the study were:

**(1) Do patients with chronic noncancer pain improve on measures of pain, disability, interference and mood after attending a cognitive-behavioural pain management program?**

From pre-treatment to posttreatment, group measures showed significant reductions for pain severity, pain-related disability and interference, and a significant improvement in mood.

**(2) Were these changes achieved in the programme maintained at long-term follow-up (more than 30-months later)?**

For the total sample of ADAPT completers (n = 91) significant improvements were achieved on measures of pain severity, disability, pain interference and depression severity during the treatment period and at follow-up these had been maintained.

There were no significant changes on these outcome measures from posttreatment to follow-up.

**(3) Did those who maintained their gains following treatment differ in their use of pain management strategies from those who did not maintain their gains.**

To assess whether those who improved at follow-up relative to baseline were using the pain self-management strategies more than those who had relapsed, the sample was divided by comparing their RMDQ scores at follow-up with those at pretreatment. Those whose follow-up scores were the same or worse (higher) than at pretreatment were identified as 'relapsers' and those whose follow-up scores were better (lower) than at pretreatment were identified as 'maintainers'.

There were no significant differences between the two groups at posttreatment on any of the outcome measures. The maintainers group were continuing to practice

regularly most of the recommended strategies from the programme, and most were not using regularly the strategies that were not recommended. Maintainers used each of eight specific strategies more frequently than the relapser group, especially the use of stretches, working on goals, (both statistically significant), the use of relaxation and exercising.

On items of the Pain Self-Management Checklist, a more general measure of common self-management strategies, significant differences were identified between the two groups. There was a clear trend towards higher use of recommended strategies and less of the 'not recommended' strategies, for the maintainer group in comparison to the relapser group.

In addition, data on medication use at pretreatment showed more than 83% of all subjects used medication, with polypharmacy a feature (>63% used more than 2 types of medication). At posttreatment, the use of two or more types of medication was reduced substantially from an overall 67.9% to 8.8% and opioid use was reduced from 68.5% (of respondents) at pretreatment to 7.3% at posttreatment. This reduction in overall use of medication was associated with a statistically significant reduction in pain severity and a statistically significant increase in activity level (reduced disability and interference scores). Overall, there was some increase in use of medication in the follow-up period, but at follow-up there were still 33.3% not using any medication for pain compared to 11.6% in this category before ADAPT. Of those using two or more different types of medication the proportions at follow-up were greater than at posttreatment but still well below the pretreatment levels

(42% versus 67%). A similar picture was found with opioid use, with an overall decrease from pretreatment to follow-up (from 68.5% to 41.6%).

Overall work status also improved with full-time work, part-time work, voluntary work, and those in training increasing from 26.8% to 51.2% (of the total sample, including those who are retired or in home duties), with full-time work increasing from 6.2% to 19.5%. Those unemployed due to pain decreased by just over 50% (from 60.2% to 27.4%). There was an increase also in those retired or occupied with home duties. Those who maintained their treatment gains actually reported a doubling in paid employment (from 18% to 37%), while the relapsers reported a reduction (from 27% to 16%).

This evaluation of outcomes at long-term follow-up shows that significant changes made during the treatment programme were maintained at long-term follow-up. The best outcomes were achieved by the majority who had continued to use the pain self-management strategies taught on the programme. The implications of these findings for further research and clinical practice are discussed.

# **CHAPTER 1. THE NATURE OF THE PROBLEM OF CHRONIC PAIN**

## **1.1 Definition of pain**

The International Association for the Study of Pain defines pain as, “An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (Merskey and Bogduk, 1994,p.210). This definition indicates that pain is always a subjective experience and that there are at least two broad factors reflected in pain experience. One is sensory and reflected in descriptors like burning, tingling, cold, etc. The second refers to the emotional elements. Thus, pain is defined not simply as a sensation but one with unpleasant and strong affective aspects. Furthermore, the IASP definition recognises that the relationship between tissue damage and pain is variable.

As early as 1953, chronic pain was recognized as that which persists past normal healing time (Bonica, 1953). Bonica also pointed to distinctions between acute and chronic pain. This distinction has since become generally accepted (Loeser and Cousins, 1990).

## **1.2 Acute Pain**

Acute pain occurs on noxious stimulation produced by injury or disease of skin, deep somatic structures or viscera or abnormal function of muscle or viscera. Its diagnosis is usually not difficult and therapy is usually effective. With normal healing

processes, acute pain may resolve by itself. Associated responses to acute pain involve unpleasant sensory, perceptual and emotional experiences and associated autonomic, cognitive, emotional and behavioural responses. With effective treatment the pain and responses usually disappear within days or weeks. If ineffective therapy is given, acute pain may persist to progress to a chronic condition. (Coda and Bonica, 2001).

### **1.3 Chronic pain**

In chronic pain, pain may be maintained long after normal healing time (Wall, 1989). The mechanisms of chronic pain are less well understood than for acute pain and there is considerable dispute over its relationship to acute pain (Chaplan and Sorking, 1997).

The actual definition of chronic pain also varies from study to study. Some researchers classify chronic pain at 1 month (Magni et al., 1990 ), others at 3 months (Andersson et al., 1993) and others at 6 months (Brattberg et al., 1989) after onset.

The IASP Subcommittee on Taxonomy identifies three time periods of pain occurrence: less than one month, one to six months and greater than six months. The IASP Classification of Chronic Pain, Second Edition (1994), states that non-malignant chronic pain is commonly recognised as pain persisting beyond three months, but for research purposes six months is often seen as an appropriate cut off. However, it should be noted that these cut-off times are essentially arbitrary and not based on any clear markers. Indeed, it is often debatable as to when such pain first developed.

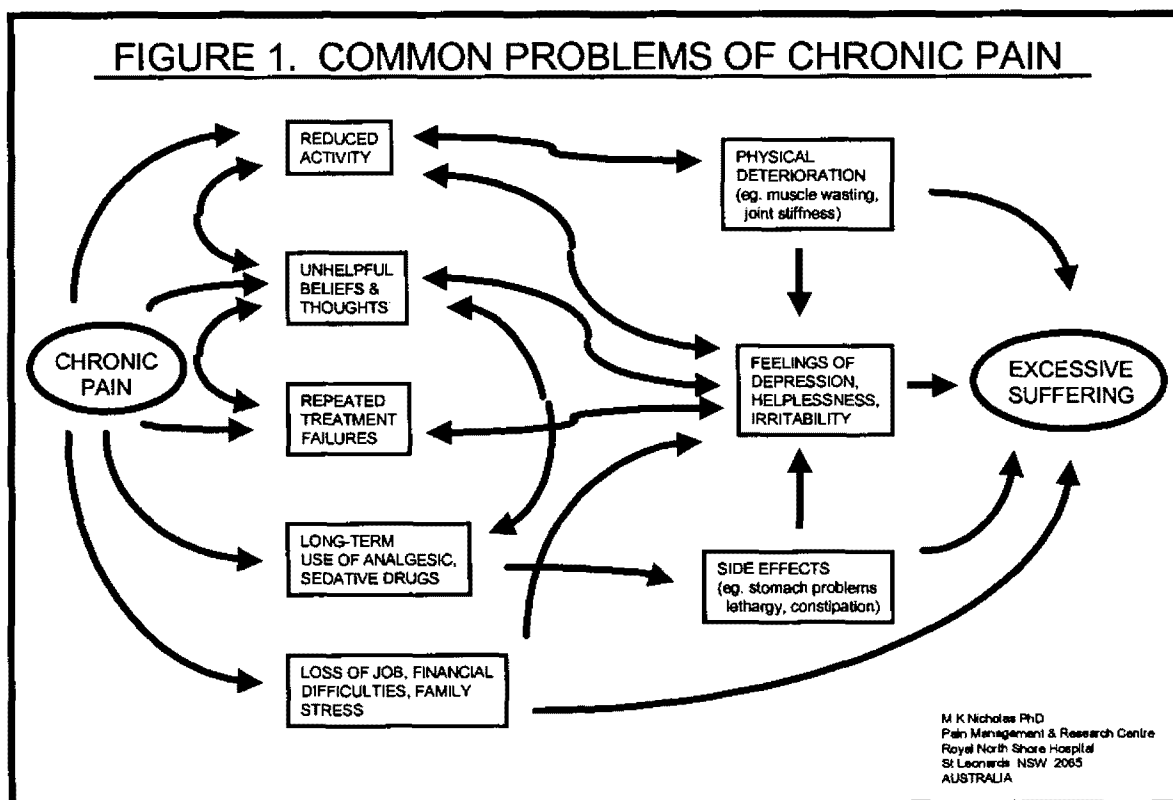
Chronic pain is usually elicited by an injury but may be perpetuated by factors that are remote from the originating cause. The person who develops chronic pain may continue to seek health care despite the intractable nature of their pain. Over time, many have argued that environmental and affective factors are likely to interact with the somatic factors that may have been associated with the original onset of pain, and eventually this interaction may contribute to the perpetuation of what have been termed pain and illness behaviours (Turk and Okifuji, 2001).

### **1.3.1 Common features of chronic pain**

Common features of chronic pain, despite the site of injury, are evident in patients presenting at pain clinics for assessment. Those presenting at pain clinics with complaints of pain often report suffering not only due to pain alone, but also as a result of altered lifestyle due to the impact of their persisting pain. The patient often presents with a history of continued treatment seeking, failed treatments, reliance on or excessive use of medications which have proved ineffective, reduced activity levels including reduced or ceased employment and family interaction, loss of confidence to do things despite pain, a view of themselves as disabled, with depressed mood. The development of suffering and the psychosocial effects of chronic pain are well documented by Fordyce (1967), Sternbach (1976) and Bonica (1977).

These common features of chronic pain are well demonstrated in the diagram below (Nicholas, 1996).

**Figure 1: Common Problems of Chronic Pain**



These include reduced activity, which leads to physical deterioration and further reduced activity. Unhelpful beliefs and thoughts may develop which lead to feelings of depression, helplessness and irritability, leading to further reductions in normal activities as well as treatment seeking. However, as there are no real cures for chronic pain, most treatments do not live up to the patient's expectations. As a result of repeated treatment failures dashing hopes, feelings of depression, helplessness, irritability, unhelpful beliefs and thoughts may be perpetuated. Long-term use of analgesics and sedatives often lead to unwanted side-effects, secondary medications, reduced activity, feelings of helplessness, irritability, physical deterioration, unhelpful beliefs and thoughts.

Commonly, people in persisting pain lose their jobs, leading to financial difficulties, family stress, and these in turn may reinforce feelings of depression, helplessness and irritability. The cumulative effect of all these interacting factors can be excessive suffering that goes well beyond the original cause of the person's pain.

While many patients presenting at pain clinics share these features, there is good evidence that chronic pain is not a uniform experience and there is little homogeneity amongst people with chronic pain. In a study by Crook et al. (1984), for example, of 500 Canadian families who attended a family general practice, the prevalence rate of those with persistent pain was approximately twice of those with temporary pain. Those with persistent pain used health services, both community physicians and hospital care, more frequently than did those with temporary pain. But amongst those with persisting pain in this study, 66% of subjects had not sought medical assistance in the past 2 weeks. The authors noted that many of these subjects demonstrated a combination of self-care and professional care in their management during the past 12 months.

## **CHAPTER 2. THE PROBLEM OF CHRONIC PAIN**

### **2.1 Prevalence**

According to *Back Pain in the Workplace* (1995), chronic pain is a widespread community problem in economically developed countries. Bonica (1987), estimated approximately 30% of the population in such countries are affected by chronic pain. A review of the frequency of chronic pain by Crombie et al. (1994), showed a wide variation in the prevalence of chronic pain. Reports of prevalence of chronic pain vary from 7% ( Bowsher et al., 1991) to 40% ( Brattberg et al., 1989 ), in large part due to variable definitions of chronic pain.

Nachemson's review (1992), of low back pain showed disability as a significant problem in Canada, Great Britain, the Netherlands and Sweden, as well as the United States and Germany. In the United States, medical consultations for back pain rate second highest in symptomatic presentations (Lemrow et al., 1990), and low back pain affects 5% of the adult population ( Frymoyer and Cats-Baril (1991). There is a lifetime incidence or risk of back pain of 60% -85% (Spengler et al.,1986; von Korff and Dworkin, 1989).

In Great Britain, a number of studies have reported on costs in sickness absence, lost output, medical treatment costs and severe disability rates of progression. Frank (1993), found sickness absence in 1988-89 of 52.6 billion certified working days, the largest single cause and 12.5% of total sick days; lost output of 2 billion pounds (1987-88); 2 million general practitioner consults per year; 300,000 outpatient

consults per year; 100,00 hospital inpatient episodes per year (1989-90); 50-1000 people were severely affected in an average health district of 250,000 population.

Raspe (1993), on reviewing current pain epidemiology literature, found back pain is one of the most prevalent persisting pain complaints; sufferers experience many episodes over a long period of time; women are more often affected than men; there is no unequivocal influence of age.

There have been few studies on chronic pain prevalence in Australia. The most recent (and largest) study was reported by Blyth et al. (2001). This was a state-wide (NSW) survey which found that approximately 20% of the population experience chronic pain. That is, pain experienced every day for three months in the six months prior to the study interview. In this study of 17,543 adults, 17.1% of males and 20% of females reported experiencing chronic pain. The study looked at the impact on daily activities, employment, socio-economic status and levels of psychological distress.

Overall, 11% of males and 13.5% of females reported interference with daily activities due to chronic pain. In the 55-59 years age group, 17.2% of males and 19.7% of females were affected. In the 20-24 years age group, 84.3% of females and 75.9% of males with chronic pain reported interference due to pain. Within the group experiencing interfering chronic pain, psychological distress occurred in both males and females. After adjustment for age, sex and co-morbidity differences, Blyth et al. also found unemployment for health reasons was strongly associated with having chronic pain (7.6%).

In a recent survey of patients presenting to health centers in Finland (Mantyselka et al., 2001), 40% of cases presented with pain as either the primary or secondary reason for presentation. One fifth had experienced continuous pain for over six months or experienced it several times per day and 20% had pain at least daily, which had continued for at least 3 months. Musculoskeletal pain was reported by 41% of the sample studied. Four out of five patients reported some activity limitations, 25% reported pain hindered work, and 10% reported pain limitations in all areas of life.

The impact of chronic pain on lifestyle, as described above highlights interference in daily activities, psychological distress and interference in relation to employment.

## **2.2 Impairment, Permanent Impairment, Disability and Handicap**

As these epidemiological studies have shown, chronic pain is often associated with disability. Before examining this issue any further it might be useful to briefly clarify the distinctions between some related terms that are often used in this area. These include impairment, permanent impairment, disability and handicap.

### **2.2.1 Impairment**

The World Health Organization (WHO, 1980) defined impairment as “any loss or abnormality of psychological, physiological or anatomical structure or function”(page.)

The American Medical Association, Guides to the Evaluation of Permanent Impairment, Fourth Edition, 1993 defines impairment as “...an alteration of an individual’s health status, it is assessed by medical means and is a medical issue – it

is a deviation from normal in a body part or organ system and its functioning”

(p1/1).

According to the American Medical Association, Guides to the Evaluation of Permanent Impairment, Fourth Edition, determination of impairment is based on examination of previous medical information since onset of the condition, examining the history and course of the condition and establishment that the condition has been present for a period of time, that it is stable and is unlikely to change despite treatment. The information gathered needs to be characterized according to the Guides’ requirements and compared with current clinical information about the person. If consistent, the findings can be compared with the Guides’ criteria to estimate impairment.

### **2.2.2 Permanent impairment**

“Permanent impairment”, in the Guides is defined as “one that has become static or stabilized during a period of time to allow optimal tissue repair, and one that is unlikely to change in spite of further medical or surgical therapy” (p. 1/1).

### **2.2.3 Disability**

Disability is defined by the Guides as an alteration of an individual’s capacity to meet personal, social or occupational demands, or statutory or regulatory requirements, because of an impairment. The WHO (1980) define disability as “any restriction or lack ( resulting from an impairment ) of ability to perform an activity in the manner or within the range considered normal for a human being”

An impairment does not necessarily mean that a person is disabled, as the person may continue to meet life’s demands, despite the impairment. Thus, a singer with an

injured hand would have an impairment but it would not necessarily disable him/her in relation to his/her occupation. Whereas, a violinist with the same injured hand would be disabled in relation to his/her occupation.

#### **2.2.4 Handicap**

The Guides define handicap as an impaired individual being unable to achieve life's basic activities without compensation for the impairment in the form of aids, and perhaps modification of the environment. (p. 1/2). Thus, handicap occurs when an impaired individual requires various forms of assistance, like a ramp or hand-rails, in order to perform activities of daily living.

In most countries, the responsibility for determining which status (and the degree of each status) normally lies with a physician, but is also guided by local statutes.

#### **2.3 Disability Management**

The concept of disability and the conditions for which it applies have become broader and more difficult to assess in many countries. The understanding and interpretation of pain and associated complaints and the subsequent management and treatment is often the subject of dispute. Concerns about disability management of non-specific low back pain led to the IASP initiating a study and report through the Task Force on Back Pain in the Workplace, (1995). This was in response to the rapid increase in economically developed countries of rates of disability assignment to injured workers.

In most industrialised countries, disability benefits (payments) provide economic support for injured workers and their families until the worker can return to function in the workplace. There have been alarming increases in the number of claims, duration of disability and cost. Disability assignment has often been made in the absence of evidence of specific back injury. The IASP Taskforce noted there was no medical distinction between those working or not working with a diagnosis of non specific back pain. The differences were attributed to psychosocial, fear-avoidance and work-related factors.

Reports in the USA (Lemrow et al., 1990; Volinn 1991) and the Grellman Report (1997) in New South Wales, showed an increasing number of investigations and treatments resulting in increased distress and disability corresponding to the increasing amount of time off work.

#### **2.4 Costs of Chronic Pain**

Chronic pain has become a significant economic problem. Costs are incurred with health care utilization, insurance claims, work absenteeism, loss of productivity, loss of tax revenue, social welfare, and loss of income for the family. Maniadakis (2000), reported in a “cost-of-illness” study the socio-economic costs of back pain in the United Kingdom. The costs for 1998 were £1632 million for direct care. The greater cost by far is in informal care and related production losses – a total of £10668 million. Disability and work loss due to back pain increased more rapidly in Britain than from any other form of incapacity, with a 104% increase in disability between 1986 and 1992. Other disability rises amounted to 60% for the same period.

Evidence of the financial impact of disability was highlighted in the New South Wales' inquiry into Workers' Compensation System (Grellman Report, 1997). The Workcover New South Wales Workers' Compensation Scheme moved from a surplus in 1994 to a deficit by June, 1996 without evidence of optimal health outcomes having been achieved (Molloy, Blyth, Nicholas, 1999). Blyth et al. (2000), found those with chronic pain were more likely to be receiving a government pension or benefit.

## **2.5 Diagnosis**

Diagnosis should give direction to treatment. In turn, there should not be an award of impairment or permanent disability without specific diagnosis or cause (Hadler 1992, 1993, 1994). However, the patient's presentation of pain to a physician may be similar to those who do not seek care. The difficulty for the physician is to define a diagnosis which is derived from reports of pain influenced by factors other than nociception. There is often no direct link between cause and diagnosis, and a diagnostic label, if it can be given, often does not lead to symptom reduction or elimination (Back Pain in the Workplace, 1995).

Back Pain in the Workplace (1995) cautions that diagnosis can be manipulated to sustain professional effort rather than to be useful in determining treatment and therefore becomes a legal or social situation, removed from medical science.

Bogduk (2000), discussed the need for a term or diagnosis which reassures the patient there is nothing seriously wrong, that it is possible to resume normal activities with appropriate and minimal management and that it is a useful tool for

the practitioner. However, there is currently no general agreement on this issue in the medical literature.

Labelling of pain impacts on the patient in regard to the treating doctor's completion of workers' compensation certificates. These issues were identified by Schonstein and Kenny ( 2000 ), who found that general practitioners use a variety of terms to complete workers' compensation certificates in the absence of defined terms.

Similarly, Cohen,et al. (2000), examining workers' compensation cases, found medical assessments were primarily somatic in focus, but the diagnoses made by the injured workers' doctors were quite variable, with some using 'pain' as a diagnosis, and many cases had several different diagnoses by different doctors for the same symptoms. Cohen et al. (2000) and Schonstein and Kenny (2000) argued that as diagnosis impacts on the award of disability as well as driving treatment decisions, it is an area that merits more concerted efforts, especially in medical education.

## **CHAPTER 3. TREATMENTS FOR CHRONIC PAIN**

Where there is a pathoanatomical explanation of pain, there usually is an expectation of resolution of the problem as it is treated as nociceptive pain (Loeser and Cousins, 1990). Degenerative back conditions may contribute to the development of chronic pain but it is not necessarily associated with pain or with complaints of pain (von Korff, 1994). Therefore, there is not always a causal relationship between physical findings on scans and the report of pain. It appears that those with pain who are working are often no different medically from those who are not working ( Back Pain in the Workplace, 1995; Cohen et al., 2000). Thus, pain relief is not always necessary in order for people with chronic pain to resume work and other normal activities.

The traditional way of managing chronic pain has been to treat it as if nociception was the main problem, as in acute pain. Thus, pain relief through the use of direct physical interventions or analgesic agents has characterised the bulk of medical efforts to treat chronic pain. However, as shown above with the rise in injury-related disability in industrialised countries, these methods have been of limited or of no lasting benefit for many patients.

### **3.1 Review of treatments**

Several authors have reviewed treatments offered for chronic pain.

1. Nachemson (1992), reviewed current literature and found bed rest up to 2 days and some medications up to six weeks post injury may be helpful. Manipulation and back school may help up to six weeks, and supervised back exercises may be helpful

from six to twelve weeks. He concluded facet joint injections, stretching, traction and surgery are unsubstantiated treatments.

2. McQuay, Moore, Eccleston, Morley and Williams (1997), in their systematic review of outpatient services for chronic pain treatment, assessed treatments primarily on the basis of the numbers needed to treat ( NNT ) having the most clinical relevance. This refers to the numbers of patients with the specific condition that are needed to be treated in order for one to improve (according to some criterion) that would not otherwise have improved. NNT's of 2-4 (ie. between 2 and 4 patients need to be treated in order for one to improve) are thought to indicate effective treatments. They found the following to be effective based on NNT analyses (using the criterion of 50% reduction in pain severity) although they pointed out that NNTs could not be calculated for all published treatments due to lack of sufficient detail in the papers:

**Table 3.1 Treatments for chronic pain**

TREATMENT	NNT
Minor analgesics –ibuprofen	2.5
Anticonvulsants	2.5
Antidepressants	2.5
Non-steroidal anti-inflammatory	3.0
Tropical capsaicin	4.0

**Table 3.2 Effectiveness ratings for treatment of chronic pain**

TREATMENT	EFFECTIVENESS FOR CHRONIC PAIN
Systemic local anaesthetic-type drug	Effective
TENS	Lack of evidence
Spinal cord stimulators	Lack of evidence
Relaxation	Lack of evidence
Regional sympathetic blockade	No effect
Corticosteroid injections for shoulder joints	No effect
Physiotherapy	Scant evidence (Aker et al. 1996)
Physiotherapy as exercise	Effective (Koes et al. 1996, Feine & Lund, 1997)
Cognitive-behaviour therapy	Large & sustainable improvements in a range of mental health problems in a review of 35 RCT'S

## **CHAPTER 4. DEVELOPMENT OF COGNITIVE-BEHAVIOURAL PROGRAMMES**

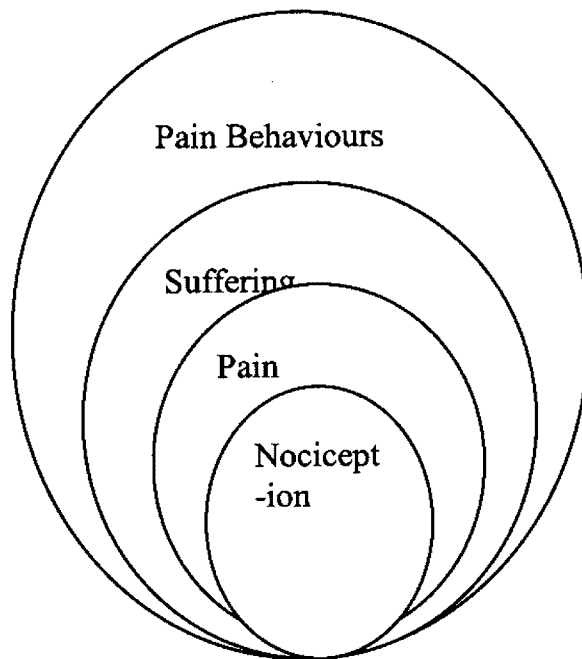
Partly as a response to the poor outcomes of traditional medical and surgical treatments for chronic pain, Fordyce et al. (1968a,b) introduced an approach to treating chronic pain which involved an understanding of the interaction between the patient and his/her environment. This led to the emergence of behaviourally-based treatment programmes which have now been applied in many countries for many different chronic pain conditions (Flor et al., 1992; Morley et al., 1996).

Unlike most traditional medical or surgical interventions, behaviourally based treatment programmes for chronic pain are not intended to deal with the possible underlying cause of the pain, but rather they aim to address the excessive suffering commonly associated with chronic pain and to reduce the overall level of disability, distress and impact of persisting pain on peoples' lives.

The biopsychosocial model (Turk, 1996) has provided a broader framework or model for our understanding of pain than the original behavioural model described by Fordyce (1976), - see below, although it incorporates the same behavioural principles. This model describes illness in terms of complex interaction of biological, psychological and social variables. It also provides an alternative to the traditional biomedical model (which largely excludes psychological and environmental facets) and provides a model to manage the complexities of chronic

pain by identifying issues at many different levels in the same person, from the somatic to the environmental. Fordyce's original diagram of the model provides a simple illustration.

**Figure 4.1 Fordyce's (1976) original model of pain.**



One of the main implications of this model is that interventions often require more than medical or somatic treatments. Accordingly, multidisciplinary teams have been developed where all members of different disciplines (eg. medical, psychology, nursing, physiotherapy, occupational therapy) are working towards shared goals in an integrated and co-ordinated approach. ( Jacobson and Mariano, 2001 )

Typically, according to the biopsychosocial model interventions attempt to address the following presentations by the patient in chronic pain:

Pain behaviours, which thought of as responses to (acute) pain which have become learnt (ie. withdrawing, avoiding activity, treatment seeking etc), and these may be reinforced by attention from a spouse, employer etc. Pain behaviours may continue long after healing has taken place. The original operant (behavioural) model of chronic pain described by Fordyce (1976) focused on extinction of these behaviours and positive reinforcement of well behaviours (desirable activities of daily living, like self-care, exercising).

Respondent learning mechanisms may also occur, where the patient has developed anxiety about pain occurring and therefore becomes avoidant, and over-predicts pain as a result of activity. This is known as fear-avoidance. When this is addressed by patient participation in activity which does not increase pain, confidence and activity can increase (Vlaeyen, 1995).

Originally, these methods were implemented in inpatient settings, with multidisciplinary staff reinforcing goal setting, reduction of unhelpful behaviours and reinforcing well behaviours (Fordyce, 1973). However, over time, most of these programmes have been changed to outpatient settings.

A variant of behavioural programmes is known as cognitive-behavioural pain management programmes (Philips, 1988). While employing the same operant principles described by Fordyce (1976), these programmes also emphasize the patient's cognitive processes as part of the treatment programme. Thus, challenging and changing of unhelpful beliefs and reactions to pain (cognitive challenging) is a key feature of these interventions. This involves the patient in learning to identify

thoughts and feelings associated with troubling pain, developing the ability to challenge any unhelpful thoughts and changing them to more helpful thoughts and reactions. All members of the multidisciplinary team on one of these programmes reinforce the patient in all efforts made along these lines. Gradually this support is withdrawn and patients are encouraged to reinforce themselves in an attempt to promote self-reliance and independence from the health care professionals.

Relaxation training is also a component of these programmes as a skill to enable the patient to cope more effectively with reducing anxiety and enhancing self-control.

Relaxation can also be used to reduce muscle tension (which can increase pain), and to reduce sleep disturbance.

Also addressed in these programmes are medication reduction, ceasing reliance on aids, as well as muscle strengthening and stretching exercises.

Exercises also provide an opportunity, under controlled conditions, for the patient to learn they can gradually increase their level of activity despite pain. Some involvement in the programme by the patient's family is often encouraged to assist them in reinforcing well behaviours and appropriately communicating about pain.

Learning to pace activities is also a central feature of these programmes and this involves helping the patient to not only try to work within their activity tolerances (eg, sitting or walking for specific amounts of time) but also to take regular breaks (to avoid overdoing and thus aggravating pain) and to seek to gradually increase their activity limits in a planned way. This method of managing pain by the patient

often takes a great deal of persistence and requires a lot of consistent reinforcement by the treating staff (Nicholas, 1996).

#### **4.1 Behavioural and Cognitive-Behavioural Treatments for Chronic Pain**

The following meta-analysis and systematic reviews of the effectiveness of these treatments have been reported.

- Flor, Fydrich and Turk (1992) reviewed the efficacy of multidisciplinary treatments for chronic back pain in 65 studies published between 1960 and 1990. This showed that multidisciplinary treatments for chronic pain are superior to no treatment, waiting list, single-discipline treatments such as medical or physical therapy treatments. The effect of the treatment was stable over time. Effects were reflected in improvements in pain, mood, interference in daily activities, return to work and reduced use of the health care system. Some caution is required in interpreting these results, however, due to the inclusion of uncontrolled or poorly controlled study designs and study descriptions. Overall, this review showed multidisciplinary treatments to be efficacious relative to the alternative.

McQuay et al. (1997) reviewed 35 Randomised Controlled Trials of cognitive-behavioural therapies for the treatment of chronic pain. They noted strong evidence of CBT efficacy across a range of mental health problems. For pain, this review found that large and sustainable improvements in targeted outcomes were achieved, especially in the better quality studies.

- Morley et al. (1999), of the above 35 studies reviewed 25 studies considered suitable for meta-analysis, comparing the effectiveness of cognitive-behavioural treatments with waiting list control and alternative treatment conditions. Cognitive-behavioural treatments demonstrated significantly greater changes in pain experience, cognitive coping, and appraisal (positive coping measures) and reduced behavioural expression of pain. This analysis demonstrated that active psychological treatments based on the principles of cognitive-behavioural therapy are effective.

In summary, these reviews showed that cognitive-behavioural treatments are effective in achieving targeted outcomes, such as increased function (activity), reducing unhelpful, catastrophic cognitions, reducing the use of medication, and reducing health care use. Interestingly, these reviews also found that reductions in pain severity were often achieved (even though this is often not a specific goal).

#### **4.2 Some problems encountered in follow-up of CBT programmes**

Long- term follow up of patients treated in these programmes is often difficult due to attrition in numbers which have often been small in the first place, as shown in Table 4.1. The reasons for this could be: time itself, where patients post-programme have moved and are no longer contactable through the last known address and phone number; they may not want to participate because they have not done well; or they are getting on with their lives despite pain and are too busy; or are simply not interested.

**4.2.1 Reliance on self-report.** Positive results at follow-up, especially when relying on self-report, have been questioned. There has been caution expressed in the

literature reviews because most of the results are often based on self-report of mailed or telephone contact, not direct clinic follow-up (Turk and Rudy, 1990). It is often argued that (i) those who respond are a biased subset of only those compliant with follow-up (which is hard to avoid);

(ii) that those who respond are more likely to be doing better; and

(iii) that responders are more likely to comply with other therapeutic

recommendations which may contribute to maintenance of benefits (Turk & Rudy, 1990).

Some have expressed the opinion that in follow-up within six to twelve months post treatment, the influence of the intensive treatment period, (often 3-8 weeks) with supportive, encouraging staff directly or indirectly puts pressure on patients to report positive outcomes. This was refuted by Williams et al. (1993), who cited failed previous treatments with no lasting benefits, but following an intensive CBT programme patients at 6-month follow-up reported no significant change in pain intensity, yet marked improvements in physical performance were observed.

Peters and Large (1990), found in their RCT programmes an absence of valid and reliable physiological and behavioural measures left no choice but to use self-report measures. It should also be noted that McQuay et al. (1997) systematic review of outpatient treatments for chronic pain reported that self-report (of pain and, in some cases, mood) by the treated patients was the only outcome measure. Clearly, pain and mood outcome measures can only be obtained by self-report.

Of 25 programmes reviewed by Morley et al. (1999), 77.4% of outcome measures were provided by patient self-report. Ideally, more objective measures, such as

observed performance of activities, return to work or observations by others in the patient's environment would be desirable to establish the validity of self-reported outcomes. In a number of studies of CBT programmes these types of measures have been reported (eg. Nicholas et al., 1991, 1992; Linton and Meyson, 2001; Sharp et al., 2001; Williams et al., 1996). However, it should also be mentioned that some outcome measures commonly sought by third party payers, especially return to work, are complicated by the involvement of issues well beyond the influence of any treatment (eg. availability of suitable work, employer flexibility) (Hadler). Thus, their relevance for assessing treatment outcomes can be doubtful.

**4.2.2 Randomised controlled trials.** Recent systematic reviews and meta-analyses of pain management programmes have shown that while there is now a reasonable number of randomized controlled trials, their comparability is not always straightforward. McQuay et al. (1997), found thirty five cognitive- behavioural treatments for chronic pain patients, excluding headache patients. Of this group of thirty five, Morley et al. (1999), identified 25 which met their more stringent criteria. The authors of these reviews noted considerable variation in outcome measures used. Control group patients' conditions also varied widely, from some receiving ongoing treatments such as medication and physiotherapy, where others may have received education, which is a treatment with some demonstrated benefit. Content between active treatment and control condition is also difficult to distinguish in some cases (eg. Altmaeir et al.1992). For long-term follow-up, Morley et al. concluded that waiting list control groups were difficult because these patients would normally progress to active treatment within a short period (mainly on ethical grounds) or drop out of the trial. Even when so-called 'no treatment controls' are examined it is

usually evident that most are in fact receiving some treatment (eg. Williams et al. 1996, 1999).

The obvious difficulty for non-randomised controlled studies is that the possible effects of the natural history of the condition being treated (or just the passage of time) cannot be excluded as possible explanations of the results obtained. Thus, many of the studies examined in the early meta-analysis by Flor et al. (1992), which were not randomised controlled trials are subject to this criticism. However, Fordyce (1976) has argued that in the case of chronic pain, when so many patients are seen years after the onset of their pain and after years of other treatments, remission or spontaneous improvement through the passage of time alone is unlikely. This could be contrasted with the rapid improvement, in terms of return to work at least, seen in the majority of people with acute back pain (eg. Turk and Waddell 1992). Even so, many of these do continue to experience persisting pain (Von Korff 1994).

#### **4.3 Maintenance of gains in the long-term**

As important as achieving improvements in functioning, mood and pain have been for pain management programmes, it is clearly important that these gains be maintained in the long-term. Table 1.1 presents a summary of long-term outcome studies from the chronic pain literature. From this table it can be seen that to date, there have been few long-term follow-up studies (longer than 18 months) to evaluate the long-term effectiveness of CBT programmes. Of the available studies, a number of features stand out. Consistent with Flor et al. (1992) and Morley et al. (1999), the reduction in pain severity ratings, when achieved, is usually maintained, and

improved function (or reduced disability) is also maintained in most studies.

However, these data are usually presented as mean figures and thus the proportion of patients who relapse could be effectively masked or understated. Where numbers of cases who met specific criteria are mentioned there is evidence of some relapse in a proportion of patients treated (eg. Cinciripini and Floreen, 1982). It is also evident that few studies actually assessed whether or not the patients followed-up were continuing to use the pain management strategies they had been taught. Where this was done, it appeared while many did report continuing to practice these strategies, a substantial proportion were not (eg. Williams et al.1996). As few studies checked if the patients followed-up were practising their pain self-management strategies, it is possible that at least some of the gains reported at follow-up in these studies could be due to other treatments received in the posttreatment period.

**Table 4.1 Summary of Long Term Outcome Studies**

STUDY	F/U PERIOD	F/U METHOD	RETURN RATE	OUTCOME
Fordyce et al. (1973) a.	22 mos.mean	mail	31/36(86%)	Disability: Reduced interference by pain in activities maintained from posttest gains; uptime greater at f/u than at pretest Pain: estimates based on recall, but reduced pain levels at discharge (mean 6/10) maintained at f/u (mean 6.2/10)
Swanson et al. (1979) a.	1 yr	mail	not stated	Disability: 53% improved at posttest, improved work status at f/u Medication:29% maintained posttest levels Pain: No change
Gottlieb et al. (1977) a.	6 mos	mail	23/72 (32%)	Disability: 82% employed or in vocational training
Roberts & Reinhardt (1980) a.	1-8yrs	mail,ph.	26/34 (76%)	Disability & medication:77% met all criteria for improvement
Malec et al. (1981) a.	6 mos.-2yr.	mail,ph.	32/40 (80%)	Disability:28/40 (70%) at admission, 86% (of 28) unemployed cf.25% at f/u; at f/u 14% had stopped all exercise,46% kept up 50-100% of exercise set Medication: (% at discharge vs. fu): Narcotics (0 vs. 23%; other analgesics (0 vs. 50%); relaxants (0 vs. 30%);  Antidepressants (3 vs. 3%) Mood: 705 rated better
Khatami & Rush (1982) a.	1 yr	mail	12/14 completers	Mood: mean BDI scores, 12.7 at admission; 3.6 at f/u Medication: (pills/day), at admission, mean 15.1; at f/u 7.2 Pain: mean ratings, at admission 53.9%, at f/u 19.8%
Cinciripini & Floreen 1982 a.	6 mos.  1yr	mail  mail	70%  60%	Disability: disability payments reduced from 41% of total at admission to 16% at 6 mos. f/u & 20% at 1 yr f/u. 53% working at 6 mos., 50% at 1 yr Medication: none: 2.4% at admission, 92.2% at discharge, 64.7% at 6 mos.f/u, 55% at 12 mos f/u Pain: 4.6/10 at admission,2.2 at discharge, 2.3 at 6 mos., 1.2 at 1yr

**Table 4.1 (Cont.)**

STUDY	F/U PERIOD	F/U METHOD	RETURN RATE	OUTCOME
Turner (1982) bc.	1 mo. 18 mos- 2yrs	mail	32/34 (94.1%) 24/34 (71%)	Disability: mean SIP scores, for RT group at pretest (14.8), posttest (8.9), 1m f/u 7.4). For CBT group (19.8), (10.4),(7.4); mean hours worked per week,for RT group pretest (23.8), posttest (23.8), 1m. (25.3), 1.5 yr (22.8), for CBT group pretest (18.4), posttest (18.9), 1 mo. (21.9), 18 mos (38) Mood: BDI mean scores, for RT pre (12.4), 1 mo. (7.4); for CBT group at pretest (15.7), posttest (8.7),1 mo. (5.6) Pain: visual analogue scale) weekly pain for RT group at pretest (64.4), posttest (42.1) 1 mo. (55.6);18mos. (25.8);for CBT group at pretest (55.9), post (37.4), 1 mo.(33.8), 18mos. (20.6)
Lutz et al. (1983) a.	23 mos. mean	mail	57 (74%)	Disability, medication, pain: 37%-59% improved from pretest to f/u on effects on life-style, medication use, and pain levels
Guck et al. (1983) a.	1-5 yr.	mail	random sample of 20 selected out of 77 (85% of total)	Disability, medication: 60% met all criteria vs 0/20 untreated comparison group  Pain, mood: (BDI) treated group significantly better than untreated group
Kerns et al. bc.	3 mos. 6 mos.	clinic attendance	15/20 (75%)	Disability: 65% relative to pretreatment, 16.3% for CBT group; change at 3 mos. f/u 1.2% for BT group  Mood: (BDI) change at 3 mos. f/u, 13.5% improve for CBT, -6.7% for BT group; at 6 mos., 7.6% for CBT, 13.8% for BT group Pain: change at 3 mos. f/u 16.6% for CBT 0.8% for BT; at 6 mos., 14.7% for CBT, 9.9% for BT group
Corey et al. (1987) b.	18.6 mos mean	Mail, phone	57/72 (79%)	Disability: all patients vocationally disabled at pretest; 71% working or equivalent at posttest, 69% at f/u Pain: of those working or equivalent at f/u, mean posttest reductions in pain levels maintained Mood: (coping ability); of those working or equivalent at f/u, mean gains at posttest maintained
Phillips (1987) bc.	2 mos. 1 yr.	clinic attendance	22/25 (88%)	Disability: improvement on pretest mean score (44.9) to (40.2) posttest, (30.3) 2 mos f/u, (27.6) at 1 yr f/u Mood: (BDI) improvement across 4 occasions, from mean 15.9 to 11.4 to 12 to 9.4 at 1 yr. Pain: mean intensity (0.5), improvement across 4 occasions, from mean 2.4 to 1.7 to 1.7 to 1& at 1 yr.1/2

Table 4.1 (Cont.)

STUDY	F/U PERIOD	F/U METHOD	RETURN RATE	OUTCOME
Melin & Linton (1988) ac.	20 mos. mean	mail	26/28 (93%)	Disability: RT/BT; 19% mean improvement in activities of daily living pretreatment to f/u ( 3% improvement posttreatment to f/u ), no improvement relative to wait-list % RT groups Pain: RT/BT group significant reduction relative to WL & RT groups Mood: (BDI) 48% improvement over pretest in RT/BT but no significant difference cf. WL and RT groups
Turner & Clancy (1988) bc.	6 mos. 1 yr	clinic attendance	43/53 (81%)	Disability: mean SIP scores, 92% held post test gains; no difference between cognitive & operant groups at 1 yr. Pain: ( McGill Pain Questionnaire) both groups continued to improve in f/u period Pain Behaviours (observer-rated) pretest to posttest improvements in operant group maintained at f/u; cognitive group little change
Maruta et al. (1989) a.	11 mos mean	phone	100/100	Mood: (research diagnostic criteria) 54% identified as depressed at admission; at discharge only 2/100 were depressed; at f/u, 8/100 were depressed
Hazard et al. (1989) a.	12 weeks 1 yr.	mail, phone, clinic attendance	40/59 (68%)	Disability: return-to-work rate: 81% at 1 yr f/u; mean Oswestry (disability) scores for those working at 1 yr f/u; pretest (98), posttest (68), 12 wk f/u (66), 1 yr (64)
Turner et al. (1990) bc.	6 mos. 1 yr	mail mail	45/57 (79%) 45/57 (82%)	Disability: compared to pretest, the 3 treatment groups maintained posttreatment improvements on SIP Mood: (CES-D Scale) the 3 groups generally maintained posttest gains, none returned to baseline levels Pain: (McGill Pain questionnaire) all 3 groups improved over pretest levels at both f/us
Skinner et al. (1990) b.	1 mo.	Clinic attendance	34/34 (100%)	Disability: mean Oswestry scores improved from 39 at 1 mo. baseline, to 37.6 at pretest 32.2 at posttest, & 30.8 at f/u Mood: (Zung SDS) mean pre-post score improved from 28 to 23.6 & at 1 mo. f/u was 21 (VAS) mean pre-post scores improved from 61.2 to 51.3 & at 1 mo. F/u was 51.2 Medication: (mean number analgesics per week) 22.0 at pre, 10.4 at post, 6.3 at 1 mo. f/u
Cott et al. (1990) b.	2 mos	Contact with	176 (100%)	Disability: of field-managed employer pain group, 82% and patients successful (resumed work, improved performance, job change, retraining, less-disabled - if retired) vs 6/17 (35%) office-treated pain group.

**Table 4.1 (Cont.)**

STUDY	F/U PERIOD	F/U METHOD	RETURN RATE	OUTCOME
Nicholas et al. (1991)	6 mos.	most by clinic	45/58 (83%)	Disability: compared to pretreatment, post-test gains on mean SIP scores generally maintained in treatment groups  Mood: (BDI) pre-post gains in mean scores generally maintained in treatment groups Pain: mean weekly prepost gains in mean scores generally maintained at f/u
bc.	12 mos.	attendance, some by mail	39/58 (67%)	

Note. BDI-Beck Depression Inventory; CES-D =Centre forEpidemiological Studies Depression Scale; SIP =Sickness Impact Profile; VAS= Visual Analogue Scale; Zung SDS = Zung Self-rating Depression Scale; CBT = Cognitive - Behavioural Therapy; RT = Relaxation Training; BT = Behavioural Therapy;  
a. Inpatient treatment (in some cases some cases (( e.g. Hazard et al.)) patients stay in nearby hotel and attend clinic most of each day for 3-4 weeks, which is essentially equivalent to inpatient treatment)  
b. Outpatient treatment (usually, patients attend clinic3-4 hours on 1-2 days a week)  
c. Controlled trial (patients randomly assigned to treatment, alternative treatment, or wait-list conditions)

**Table 4.2 Summary of Long-Term Outcome Studies**

STUDY	F/U PERIOD	F/U METHOD	RETURN RATE	OUTCOME
Chapman et al. (1981)	21 mos. mean	phone	88/100 (88%)	Pain: (VAS) mean 72.5 pretest; improved to 52.5 at posttest; 54.8 at f/u in all patients pending disability group; 73.1 at pretest, improved to 54.5 posttest, maintained and improved at f/u, 53.47 Current disability group; 73.1 pretest, 54.5 posttest improved to 53.5 No Disability group; 70.5 pretest, reduced well at posttest to 46.6,increased to posttest 50.5 ADL's (No. minutes per day, mean): pretest 224.6, posttest 368.4, f/u 390.2 PD group; 221.7 pretest, increased to 350.4 posttest, gained again at f/u 358.8 CD group; 232.6 pretest, 386.6 posttest, improved again to 439.1 at f/u Nd group; pretest 223, posttest 391.5, 396.4 at f/u Medications: (% using opiates, opioids, sedatives, anti-anxiety agents, phenothiazines and pentoacozine daily); Pretreatment, 14.6 using none, 32.9 using one, 52.4 using 2 or more; At f/u gains shown with 46.9 using none, 28.1 using 1, 25.1 using 2 or more
b.		mail		
Williams et al. (1993)	1 mo.	clinic	182/212 (85.8%)	Pain: no change shown at 1 or 6 mos f/u.  Distress (0-100): reduced from pretset to posttest by 10 points and at f/u was maintained. Physical measures, dysfunction, depression and self-efficacy: improvements in mean scores maintained at 1mo. & 6mos. f/u Medication: pre-test 81.6% were taking at least 1 class of drug, 24.2% were taking 3 or more; posttest 68.8% used no medication and this was maintained at f/u, with 5.4% taking 3 or more classes of drugs at 6 mos.
a.	6 mos.	clinic	118/166 (71.1%)	

**Table 4.2 (Cont.)**

STUDY	F/U PERIOD	F/U METHOD	RETURN RATE	OUTCOME
				<p>Satisfaction rating: 1mo. F/u 93.6% rated satisfied with treatment</p> <p>Adherence to treatment: at 1 mo.f/u of 189 subjects, 8.9% had stopped or were performing prescribed 66.9% did exercises 5 times per week or more; 75.6% did stretches; 66.5% did relaxation; 79.5% used coping strategies.</p> <p>At 6 mos. F/u of 118 subjects: 12-20% did exercises, stretches and relaxation less than once per week; 56.6% did exercises 5 or more times per week;54.3% did stretches; 36.1% used relaxation; 74.8% used coping strategies 1 mos. f/u</p>
Williams et al. (1996)	1mo.	clinic	96/108	<p>Pretest to 1 mo. f/u, IPs &amp; OPs made greater gains than WLCs in most measures ie pain impact depression,pain self-efficacy, catastrophising hopelessness, 3 measures of physical performance, walk distance, anxiety &amp; distress. IPs made greater gains than OPs on all physical measures, depression, pain self-efficacy, catastrophising, hoplessness, anxiety and medication use.</p> <p>1yr F/U</p> <p>IPs and OPs improved greatly from pretset to 1 Yr. f/u except pain intensity, pain distress &amp; arm endurance IPs improved more than OPs on catastrophising, pain distress, depression, distance walked in 10 min; &amp; stairs climbed in 2min</p> <p>Medication: IPs at 1 mo. f/u improved statistically from pretest to 1 yr f/u, in all categories,greater than OPs; at 1yr the IPs had remained the same, whereas OPS had improved in morphine use.</p>
ab.	1yr.	questionnaires phone	78%	
Maruta et al (1998)	13 yr.	mail phone	201/249 (84.3%)? 176/201 (87.6%)	<p>Quality of life (health-related) HSQ scores – poorer emotional/mental health - better than the norm</p> <p>Bodily pain: 28% reported worse-than-average, 40% reported abnormal levels These 68% reported difficulties with Role Limitation-Physical Health, Social Functioning and Physical Functioning</p> <p>Work: pretest median 24.5 unemployed, at f/u under 65yrs. age, almost 1/3 employed ft; 11% homemaker without restrictions, but 1/4 retired early due to pain, 1/3 received disability. Aim of f/u was not to evaluate outcome of treatment but to describe long-term outcome</p>

**Table 4.2 (Cont.)**

STUDY	F/U PERIOD	F/U METHOD	RETURN RATE	OUTCOME
Kendall & Thompson - 1998 b.	3 mos.	clinic (TGs)	TG 81 (100%)	Pain & disability: improved on all measures at post and generally maintained at f/u
	15 mos.	mail	TG	Pain intensity: no significant difference Work: Pretest to 3 mos f/u, increased from 1.2% to 9.9% to 11.1% at f/u (fulltime) Part-time remained basically the same Voluntary: increased from 0% pretest to 11.1% 3 mos. f/u, to 9.9% 15 mos f/u Compensation: 12.3% pretest, 44.4% 3 mos. f/u to 38.2% 15 mos. f/u Welfare benefit/homemaker: remained basically unchanged
	6 mos.	mail	(WLCs)  105/139 (76.6%)	No change in occupational status except 1 subject who moved from welfare benefit to support from spouse's income Pain & disability measures: no change  Those working - less depressed, less disabled, more in control of lives
Flavell et al.(1996) b.	3 mos.	clinic	55/125 (44%)	Pain interference & pain severity (MPI): remained improved from post treatment results. Sense of control (MPI): Reduced from post test to F/U, but not to pre-treatment levels. Negative mood (MPI): Decreased posttreatment, increased at F/U but not to pre-treatment levels Activity levels (MPI): improved post treatment, unchanged at F/U 4 Minute walk: improved at post treatment and again at F/U.

#### 4.4 Relapse

Turk and Rudy (1991) pointed out that despite impressive evidence of treatment gains following behavioural programmes, there was also evidence of varying degrees of relapse in the following months or years (from 30% to 70%). Furthermore, not all patients treated respond in the first place. There has been some debate about the actual definition of relapse in a chronic pain population, especially when the pain does not abate or is not expected to abate when they enter a cognitive-behavioural programme. Some have argued that relapse should refer to regression to levels of depression or disability baseline or pre-treatment (Turk and Rudy, 1991).

Alternatively, relapse might be seen as regression from changes made at the end of treatment even if they don't return to baseline levels.

Nicholas (1992) pointed out that the assumption that baselines were stable at pre-treatment may fail to take into account the fluctuations in the chronic pain condition, with many patients reporting relatively stable periods interrupted by periods in which their pain has flared up. Thus, the performance of a given task on any one day may not be an accurate assessment of how well they are functioning generally. Thus, performance on certain exercises in an assessment may be seen as 'objective' but it may have little relation to how the patient is able to function normally. In this regard, self-reports of general daily functioning (relating to periods of a week or more) may be seen as offering a more accurate representation of current levels of disability than performance of a task on one occasion.

However, relapse is defined it is clearly critical that it be clearly described as the term may have many possible interpretations.

As a result of relapse being identified as an important issue for pain management programmes, relapse prevention has become a focus of much investigation and many recommendations have been made on ways of promoting it.

Compliance or adherence to the strategies taught in these programmes has therefore been identified as a crucial component of treatment effectiveness, requiring patients' willingness to participate actively in performing specified behaviours. (Nicholas 1995; Turk and Rudy,1992). However, as noted above, few studies

actually mention the degree to which patients assessed at follow-up are continuing to practice the pain management strategies taught on these programmes. Thus, the degree to which continued practice of these strategies is necessary is not clear, nor if some strategies are more useful than others.

It is also not clear why some patients appear to relapse but not others. It may be those who relapse are those who stop using the pain management strategies they have been taught, but as mentioned above, there is little published evidence concerning this. However, in one of the strongest (methodologically) studies reported to date (Williams et al., 1996) where maintenance of treatment gains was high, it was also evident that a high proportion of those followed up were continuing to use the pain management strategies they had been taught.

It is also possible that relapse itself is not steady state, but something that fluctuates, with the patients having 'good' periods when they manage quite well and would not be considered to have relapsed. At other times, however, the same people could have 'bad' patches when they could be considered 'relapsed', at least for a period. To date, there is little evidence on this aspect of relapse.

#### **4.5 Summary**

In an attempt to investigate some of these issues, this study is intended to address the following questions:

1. Do patients with chronic non-cancer pain attending a CBT pain management programme improve on measures of pain, disability, and mood from pre- to post-treatment?

2. Do patients attending a CBT programme improve relative to pre-treatment levels on measures of pain, disability, and mood at 30-months or longer posttreatment?
3. Do those patients who maintain improvement at long-term follow-up (as compared to pre-treatment levels of disability) differ from those who do not in terms of :- use of pain management strategies taught on the programme (eg. pacing, challenging unhelpful cognitions, use of relaxation, use of medication, exercises, reduced use of health-care services)?

## **CHAPTER 5. METHODOLOGY**

Before describing the methodology employed in this study, the programme on which it is based will be described.

### **5.1 The ADAPT Pain Management Programme**

The ADAPT Pain Management Programme, which commenced in late 1994 at the Royal North Shore Hospital, was based directly on The INPUT programme at St Thomas' Hospital in London (see Williams et al., 1993, 1996, 1999). The ADAPT programme uses the same manual as that developed for the INPUT programme (with some modifications for Australia, like different drug names) and both programmes were established by the same director (Dr M.K. Nicholas). However, there are some important differences between the programmes. The ADAPT programme is conducted on a day-stay basis and patients do not stay at the hospital (as in the INPUT programme) and ADAPT is 3-weeks in duration, compared to INPUT's 4-weeks. In most other respects, especially in terms of content and methods, the programmes are very similar.

The ADAPT Pain Management Programme is an intensive cognitive-behavioural treatment which involves three weeks' attendance, Monday to Friday, from 9am to 5pm. Particularly, it is for patients who have met the criteria set out in Table 5.1

Who:

- have not responded to evidence -based medical or surgical treatments
- have not progressed in rehabilitation due to pain,
- have become disabled in terms of normal daily activities due to their pain,
- have become reliant on medication to cope with their pain,
- and have become distressed secondary to their pain.

The aims of ADAPT include:

- acceptance by the patient that s/he must play an active role in the management of their pain
- acquisition by the patient of effective self-management skills (for pain and distress)
- increased function in daily activities (especially those relevant to the patient)
- reduced reliance on medication (especially stronger analgesics, sedatives/hypnotics, antidepressants and alcohol)
- reduced reliance on aids (sticks, braces etc.)
- improved mood and adjustment
- ability to resume/commence an active rehabilitation plan
- return to work (where relevant and within a realistic period)
- cease ongoing medical treatment or physiotherapy for pain.

During the three weeks' attendance patients stay at home overnight or in accommodation nearby. They attend in groups of eight to ten patients at a time.

After the three week attendance phase, patients are required to implement a four week home programme where they put the skills learnt at ADAPT into practice at home and at work, (if employed).

### **5.1.1 Staff**

The ADAPT multidisciplinary team consist of a clinical psychologist, a physiotherapist, a specialist nurse, a pain medicine specialist, a rehabilitation adviser and a recreational therapist. A clinical psychologist directs the overall running of the programme. All staff involved during the study period had extensive experience in the field of pain management, with the minimum being 4-years and the maximum being 14 years at the time the programme started. All staff reinforce the principles of the programme and are equally conversant with every area of the programme.

### **5.1.2 The programme components**

The main components of the programme, using cognitive behavioural principals and methods throughout, were as follows:

#### **5.1.2.1 Exercise and stretch**

These were aimed to improve fitness and flexibility, to build muscle strength, and to remedy specific postural problems. Exercises began at a baseline around 80% of patients' current performance, and increased gradually on a quota system; patients recorded and were reinforced with contingent praise (or reinforced themselves) for achievement of quotas.

#### **5.1.2.2 Goal setting**

Long and short-term goals were identified by patients and covered work, leisure and social pursuits, and domestic duties. Short-term goals usually included increasing

sitting, standing and walking tolerances. Baselines and a rate of increase were set as for exercises.

### **5.1.2.3 Pacing of activities**

A regular schedule of activities and breaks, with activities increasing on the quota system described above was taught, to counteract patients' tendencies to exceed their current physical capacity, and/or to take prolonged rest. A timer with an alarm was carried by patients to remind them to change position or activity (Gil et al. 1998).

### **5.1.2.4 Education sessions**

Education sessions conducted by all team members covered concepts of chronic and acute pain, medical/surgical treatments, disuse, healthy function, medication, and sleep and sleep problems. All teaching was interactive, using patients' own experiences.

### **5.1.2.5 Cognitive and behavioural training**

Sessions were held with the clinical psychologist with a particular focus on developing helpful problem solving strategies as well as identifying unhelpful thoughts and beliefs in relation to pain and mood disturbance, and changing them to more helpful responses. The use of cues (or reminders) and self-reinforcement was encouraged, as was self-monitoring and thought recording. All staff systematically reinforced patients' achievements with praise (fading this towards the end of the patient's stay), and avoided reinforcing pain behaviours.

### **5.1.2.6 Medication reduction**

Reduction applied to all pain-related drugs, including analgesics, opioids, tranquillisers, sedatives, hypnotics, anti-inflammatories, anticonvulsants and antidepressants, which had not proved helpful in improving patients' pain or function. Current drug intake was medically reviewed with the patient, and the rate of reduction of each substance jointly agreed; the aim was usually nil by the beginning of the third week. The patient achieved this by self-controlled reduction using the patient's own supply of tablets. Patients were encouraged to substitute alternative coping strategies for their usual recourse to medication.

Also addressed in this context were secondary medications required to counteract side-effects of initial medications, herbal preparations, alcohol, recreational drugs and the use of aids such as braces, crutches, sticks, TENS, hot packs and support cushions.

### **5.1.2.7 Relaxation**

Relaxation consisted of a simple breathing technique (Benson, ) to be used in different settings and whenever the patient recognised s/he was starting to feel stressed. Patients were encouraged to practice during the day and evening, and to monitor their performance. In conjunction, use of distraction and imagery were taught, and by contrast, dispassionate focus on pain was also taught as a means of helping patients to distance themselves from their pain.

### **5.1.2.8 Sleep management**

Management of sleep consisted of sleep hygiene techniques, relaxation and cognitive methods (Lacks 1987; Morin et al. 1989).

### **5.1.2.9 Communication issues**

Issues addressed included relationship changes, daily communication about pain using assertiveness skills, the spouse/partner relationship and sexual relationships.

### **5.1.2.10 Relapse prevention**

Relapse prevention and maintenance of new behaviours and skills were promoted throughout. Patients made “setback plans” for dealing with crises, including revision of techniques using the patient manual and contact with staff and with fellow patients. The discharge letter to referrer and GP included recommendations for further management and help in crises. All patients kept their programme manual following the programme to act as a reminder and resource (for themselves and significant others) for ongoing maintenance of the programme strategies.

### **5.1.2.11 Family involvement**

Spouses and ‘significant others’ were encouraged to attend ‘family day’ in the second week of the programme, or at another time if this was not suitable; staff were available for discussion.

Detailed description of programme components can be found in Pither and Nicholas (1991), Williams (1993), and Nicholas (1996). All these programmes were based on the work of Fordyce (1976), Phillips (1988), and Turk et al. (1983), and incorporated

operant and cognitive behavioural principals in all aspects of the programmes. No other active treatments (such as nerve blocks or acupuncture) were used. It was expected that other treatments would cease prior to ADAPT and that passive treatments would no longer be required.

All teaching was supported by written handouts and recording forms, which constituted a manual taken away by the patient at the end of the course.

#### **5.1.2.12 Rehabilitation**

Rehabilitation to return to work or retraining should be possible after completion of the three week component of ADAPT. Liaison was made by the rehabilitation adviser with the rehabilitation coordinator or occupational health or insurance case manager and the patient to co-ordinate the next step in their return to work plans. Rehabilitation providers/coordinators were encouraged to meet with staff during the patient's attendance of the programme.

#### **5.1.2.13 Out of hours**

Patients were encouraged to continue their activities applying ADAPT strategies without direct staff supervision when not in attendance at the programme (ie. evenings and weekends, and then at home following the programme).

#### **5.1.2.14 Follow up**

Follow up at the seven week period involved patients returning to the Centre for reviewing the use and integration of the strategies into normal life, to check progress on physical measures and medication use. The psychologist, physiotherapist and

nurse attend this review. Follow up at six and twelve months is attended by the clinical psychologist and nurse.

## **5.2 Recruitment for the programme**

### **5.2.1 Assessment**

Patients were referred by their treating doctor (GP's and Specialists). All were assessed by a multidisciplinary team. This involved a medical examination by a medical pain management specialist, an interview with a clinical psychologist or psychiatrist and physical examination by a physical therapist. The case was then presented for discussion at a team meeting of all involved in the assessment, and a treatment plan was determined. In general, any further medical or surgical treatments or investigations thought appropriate were undertaken initially. To be eligible to attend ADAPT, patients needed to have completed the multidisciplinary assessment and met none of the exclusion criteria (Table 5.1) and at least two of the inclusion criteria (Table 5.2).

**Table 5.1 Exclusion Criteria**

Not motivated or unwilling to participate in the programme

Unable to speak adequate English

Presence of active, major mental disorder (eg. Psychotic disorder, clear suicide risk)

Suitable for further medical/surgical treatment or investigations

Pain less than three months

Primary addiction problem

**Table 5.2 Inclusion criteria**

Widespread reduction in normal activities due to pain

Habitual overactivity leading to increased pain

Excessive or inappropriate medication intake

Use of unnecessary aids (eg. Crutches, braces etc)

High levels of pain behaviour (eg. Excessive focusing on pain)

Work reduced or ceased due to pain

Distressed mood secondary to pain-related problems (eg. anxiety, depression)

And, in the assessment of the Centre's staff, the patient is highly likely to benefit from the programme.

### **5.2.2 Prior to admission.**

All patients were required to attend a pre-admission interview with ADAPT staff to ensure they understood the nature of the programme, had appropriate goals and expectations, and were willing to actively participate. If insurance funding was required, this was negotiated with the insurer prior to entry to the programme.

### **5.2.3 Follow up.**

Patients were requested to attend the clinic for follow-up visits one month, six months and twelve months after the three week attendance. Assessment was made of progress since discharge and recommendations made for the next step.

## **CHAPTER 6. STUDY METHODS**

Patients from thirteen consecutive groups were studied. In total, this comprised 205 patients, 97 ( 47% ) females, 108 ( 52.5% ) males (see Table7.1) for a description of demographic variables). The subjects included in this study were contacted between 33 and 55 months (mean 43, median 44 ) after they attended the ADAPT programme. These subjects were not specifically selected but rather, represented a consecutive series of attendees over an 18-month period.

### **6.1 Non completers of ADAPT**

A proportion of patients admitted to ADAPT withdrew at some stage during the programme. These subjects were included in the study as part of intention to treat analysis and to allow comparison with those who completed the programme.

Although they did not complete the programme, they did have an understanding of the programme through preparation appointments, initial attendance at ADAPT and they retained a copy of the manual.

### **6.2 Procedure**

#### **6.2.1 Telephone Questionnaire**

The author, who had been a nurse on the programme at the time the patients attended the programme, made telephone contact. She was known to the subjects but there had been no contact between the subjects and the author for more than two years, since their last (12-month) follow-up, which few attended. It was decided to use someone the subjects knew rather than a blinded research assistant (who would have been unknown to the subjects). This was done in the expectation that it would

encourage a higher number of subjects to participate (compared to using someone the subjects did not know). Cohen et al (2000) for example, had found great problems in achieving a high response rate with workers' compensation claimants in NSW when contacted by an unknown research assistant. In many cases subjects in that study appeared suspicious over the medico-legal aspects of their case. Given that 70% of the subjects in the present study had workers' compensation claims, it was felt that a better return rate would be achieved if they were able to talk with someone they knew and generally were able to relate to.

### **6.2.2 Telephone interview**

The telephone interview was conducted using a prepared questionnaire. (see APPENDIX). Opportunity was also given for general feedback by the former patients about their ADAPT attendance experience. On contact with the former patient, the interviewer explained the purpose of the call and checked that it was a convenient time to call. If not, a more suitable time was arranged and the interviewer called back then. The telephone questionnaire sought information on current pain ratings; development of new pain conditions; the use of strategies to cope with pain; mood; sleep satisfaction; interference; distress; the need for assistance in activities of daily living; employment, return to work or retraining status; leisure activities participated in the last month; use of medical and treatment services in the last six months; use of medications, aids, alcohol and recreational drugs in the past six months.

In addition, the Self-Management Checklist - Self Rated ( PSMC-SR1), was used to assess the patients' use of a range of pain management strategies in the past month (Nicholas, 1999).

Eliciting the information by telephone required a minimum of twenty-five minutes to ninety-five minutes, with an average of forty-five minutes.

For the purposes of this study, only selected data was analyzed to answer the questions on page 1. The remaining data will be analyzed in separate studies at a later date.

### **6.2.3 Written Questionnaires**

Written questionnaires used at the beginning and end of the programme (APPENDIX) were posted to all who participated in the telephone questionnaire. To encourage returns, a stamped, addressed envelope was included. Follow up phone calls were made to ensure questionnaires were received by the patient, and calls were repeated up to four times to encourage returns.

The questionnaires were the Roland Morris Disability Questionnaire, the MPI, Beck Depression Inventory, PRSS, Self- Efficacy Questionnaire and the Self-Management Check List (see Appendix )

### **6.2.3.1 The Beck Depression Inventory (BDI)**

The BDI (Beck, Rush, Shaw and Emery, 1979) is a widely used measure of depression with strong psychometric properties which have been confirmed in numerous studies using various clinical populations (see Rehm, 1988, for a review). It is generally agreed to be an easily administered self-report instrument, which correlates well with other depression measures, has good discriminant validity and is sensitive to change.

The BDI consists of 21 items. Each item includes 4 response options ranging from absence of, to maximal depression severity. Patients are asked to choose the response that best fits him/her 'over the past week, including today'. Scores on each item range from 0 (e.g., "I do not feel sad") to 3 (e.g., "I am so sad or unhappy I can not stand it"). A total score is obtained by simply adding the 21 items and can vary, therefore, from 0 to 63. Higher scores reflect more severe depression.

### **6.2.3.2 The Roland and Morris Disability Questionnaire (RMDQ)**

The RMDQ was originally developed and validated as a self-report instrument to measure physical disability in patients with low back pain (Roland and Morris, 1983). Twenty-five items were initially selected from the Sickness Impact Profile (Bergner, Bobbitt, Carter and Gilson, 1981) covering a range of normal daily tasks. Following modifications made to differentiate disability due to pain, from disability due to other causes, the final version of the RMDQ included 24 items.

Because this study used a heterogeneous sample of chronic pain patients, a modification was made to the wording of all but one statement (item 13). In each statement, the phrase “because of my back” was replaced by the phrase “because of my pain”. For item 13, “I am in pain almost all the time” replaced the statement “my back is painful almost all the time”. This modification of the RMDQ has been previously reported and found valid (Jensen, Storm, Turner and Romano, 1992). The psychometric properties of the RMDQ have been well established. It has been found to be reliable, valid and sensitive to change among patients with chronic low back pain (Beurskens, de Vet and Koke, 1996), and among various other chronic pain conditions (Jensen, Storm, Turner and Romano, 1992). When compared to other measures of function or disability, it has been judged favourably and is generally considered a useful and valid tool (Beurskens, de Vet, Koke, van der Heijden and Knipschild, 1995).

The self-report questionnaire requires patients to tick a statement if they think it applies to them ‘today’. It is easy to complete and takes a minute to score. Scoring is quite simple and involves counting up the responses to the 24 items. Total scores range from 0 (no pain related disability) to 24 (extreme pain related disability).

### **6.2.3.3 The West Haven-Yale Multidimensional Pain Inventory (MPI)**

The MPI was developed as a self-report questionnaire to assess the range of psychosocial variables relevant to the chronic pain experience (Kerns, Turk and Rudy, 1985). It was directly derived from the cognitive-behavioural model of chronic pain (Turk, Meichenbaum and Genest, 1983). Its emphasis, therefore, is on

patients' reactions to their pain, their cognitive appraisals of the pain experience, the degree to which pain impacts upon their lives, as well as their perceptions of the responses of significant others. It is designed to provide a brief and comprehensive assessment of relevant cognitive, behavioural and environmental factors. It has been fully described and discussed in numerous publications (see Kerns and Jacob, 1992). Initial claims for the good psychometric properties of the MPI have subsequently been confirmed as the questionnaire has been widely used in a number of studies. It has good reliability and validity (Kerns et al, 1985), is sensitive to change (Kerns and Haythornthwaite, 1986) and can be used to assess the role of psychosocial factors in a range of pain conditions (e.g., Turk, Rudy, Kubinski, Zaki and Greco, 1996). It is quick for patients to complete, and can be easily scored by hand or by computer (Rudy, 1989).

#### **6.2.3.4 Medication Intake Chart**

In order to measure pain-related medication consumption, it was decided to employ a categorical approach for the use or non-use of drugs, rather than attempt to assess reports of drug dosage which are thought to be less reliable (e.g. Turner et al., 1982; Karoly and Jensen, 1987; Nicholas et al., 1992). This method provides information about the pattern of drug use (Karoly and Jensen, 1987). In this study, pain-related medications were divided into 8 different classes of drugs: (i) muscle relaxants (e.g. baclofen, diazepam); (ii) simple analgesics (e.g. Paracetamol); (iii) compound analgesics (e.g. antihistamine or paracetamol and codeine < 30 mg); (iv) strong opioids (e.g. morphine, oxycoden); (v) antidepressants (e.g. amitriptyline, imipramine); (vi) sedative-hypnotics (e.g. flurazepam, temazepam); (vii) anti-

convulsants (e.g. mexiletine, phenobarbital); and (viii) non-steroidal anti-inflammatory (e.g. ibuprofen, naprosyn). For scoring, each category received one point. Therefore, the total possible score in this system can range from 0 to 8.

### **6.3 Contacting Subjects**

Telephone contact was attempted up to 8 times. Contacting subjects involved repeat calls due to disconnected numbers, unanswered calls, engaged numbers, answer machine messages and messages left with a household member, all requiring follow up until direct contact was made and an interview was conducted.

It was difficult in a lot of cases to find a current phone number, due to the length of time since subjects had had contact with the clinic. One of the expected outcomes of ADAPT was that patients would be able to manage pain themselves and therefore no longer require contact with the clinic. Many had moved or changed telephone numbers. Tracing them involved contacting their general practitioners to cross-check numbers, contacting next of kin where that information was available on file, contacting other patients from the same ADAPT group or consulting the telephone directory.

## **CHAPTER 7. RESULTS**

### **7.1 Subjects**

A total of 205 patients entered the program during the study period of 22 months (see Table 3.1 for details of demographic characteristics). Of these, telephone contact at 33-55 months (mean 43.2 months) since the end of treatment at ADAPT was made with 145 (70.7% of 205). Sixty patients (29.3% of the original 205) were not able to be contacted despite repeated efforts, including contact with their treating doctors (at the time of attendance at the program). Twenty-two (10.7% of 205) of those who were contacted refused to participate in the survey (see section below). Typical reasons given were that they were too busy (three were working full-time) or were not interested. Telephone interviews were conducted with 123 (60% of 205) and of these two were not fully completed. Of this 123, 10 were people who had dropped out of the program prematurely (and thus, did not complete the full 3-weeks). Thus, telephone interview data were available for 113 (55% of 205 or 57.8% of program completers).

The written questionnaires were posted to 121 of this group who had agreed during the telephone interview to complete them. Of these questionnaires, 98 (47.8% of 205) were returned. Of this 98, 7 were completed by patients who had dropped out of the program prematurely (and thus, did not complete the full 3-weeks), leaving a total of 91 (44.4% of 205 or 46.7% of the 195 who completed the program). Data for this sample of 91 were available for each of the measurement occasions (pretreatment, posttreatment and long-term follow-up).

### **7.1.1 Non-responders**

Of the 145 contacted, 22 ( 10.7% ) were unable to participate in the interview. This was indicated directly or by not returning the call or by not being available to be interviewed at a time arranged. Of the 22 who did not return calls or who were unavailable, the following is known:

#### **(a) Those who completed ADAPT.**

Five claimed to have been unhappy with treatment in ADAPT. One of these would have participated in this study if it would benefit the author, but not if senior staff would benefit.

One claimed the treatment had made her worse.

One said he was 'bedridden' from another illness and unable to speak on the phone. He was sent both the phone questionnaire and the written questionnaire to complete if possible - neither were returned.

One arranged appointments 3 times but was unavailable each time. This involved a minimum of 6 phone calls. He was working and functioning to a high level.

One was not available at the appointment time and failed to return a call to arrange another appointment.

Two were working and presumed to be too busy to respond.

One patient's husband advised after 2 phone calls that the patient was too emotional to participate.

One was too busy on first contact, but agreed to be contacted in one month. At the next contact, she was grieving (over a recent loss) and unwilling to participate at that time.

One responded that he was unsure of participating and would have to think about it.

No further contact was made with this patient.

Eight did not respond to messages left with household members or left on the answer machine (1 of these involved 8 calls).

**(b) Those who did not complete ADAPT .**

One who had not completed ADAPT had settled her claim, was working and preferred not to participate, as she said she had put it all behind her.

One, whose husband advised the patient was unable to speak on the phone, was waiting for community support for funding an intrathecal pump. Both sets of questionnaires were sent to the patient but the patient's husband had indicated she would probably not be able to do them because of pain and illiteracy. None were returned.

One patient agreed to an interview but was unavailable at the appointed time, and subsequently did not return calls to arrange another appointment.

**7.1.2 Analysis of differences between responders versus non-responders**

In order to check for systematic differences between those patients who responded (ie. agreed to participate) to the follow-up study and those who did not (ie, refused or could not be found), one-way analyses of variance (ANOVAs) (using SPSS version 6.0 for Windows) between the responders (n = 113), leaving out the 10 program 'drop-outs' who did respond to the survey, and non-responders (n = 82) were conducted on scores on the main outcome measures at posttreatment (Pain severity (MPI), depression (BDI), disability (RMDQ) and interference in activities due to pain (MPI)). No significant differences were found on any variable between

the two groups. As a further check, a discriminant function analysis (using SPSS version 6.0 for Windows) was conducted to determine if some combination of the outcome measures (at posttreatment) could have accurately predicted actual response rates at follow-up (ie. responders versus non-responders). In this analysis, the variables entered were BDI, RMDQ, Pain severity (MPI) and Pain interference (MPI). The predictions were correct for only 57.95% of subjects. It was therefore concluded that the responders (those available for follow-up) and the non-responders were not different on any of these domains of interest (or on any combination of these variables) at the end of the program. In other words, the outcomes at the end of treatment did not differentiate between the responders and non-responders at follow-up.

**Table 7.1. Demographic characteristics of sample at admission to ADAPT.**

Demographic data	Total Sample (n = 205)	Responders at F/U (n = 123) Includes 10 ADAPT non-completers	Lost to F/U (n = 82) ADAPT completers	Full data at F/U (Q+Ph) (n = 91) ADAPT completers
Proportion of Original sample of 205		123 (60%)	82 (40%)	91 (44%)
Proportion of ADAPT completers (n = 195)		113 (58%)	82 (42%)	91 (47%)
<b>Mean Age (yr)</b>	40.5 (19-66)	42.2 (20-66)	38.0 (19-65)	42.4 (20-66)
<b>Sex :</b> Male	108 (52.7%)	64 (52%)	44 (53.7%)	44 (48.44%)
Female	97 (47.3%)	59 (48%)	38 (46.3%)	47 (51.6%)
<b>Pain Duration (Mean Mnths)</b>	61.7 (5-490)	59.1 (6-320)	65.6 (5-490)	62.7 (6-320)
<b>Education:</b>				
Tertiary	38.8%	38.7%	39%	37.8%
HSc	14.4%	12.6%	16.9%	11.0%
Yr 9 or less	24.5%	27.0%	20.8%	31.7%
<b>Australian Born</b>	75%	75.6%	74.1%	84.6%
<b>Marital Stat::</b>				
Married/live with partner	71.1%	75.6%	64.2%	74.7%
Single	19.6%	18.7%	21%	18.7%
<b>Medication</b>				
None	13.5%	11.7%	16.3%	13.3%
1 class or type	23.0%	21.7%	25%	23.3%
2	28.5%	27.5%	30%	26.7%
3	20.0%	20.8%	18.8%	22.2%
4	11.5%	13.3%	8.8%	12.2%
5.	3%	5.0%	0	2.2%
<b>Work status:</b>				
F/T	6.4%	6.5%	15.9%	3.3%
P/T	13.6%	13.8%	7.3%	16.5%
Voluntary	0.8%	0.8%	0%	1.1%
Training	5.6%	5.7%	1.2%	6.6%
Unemployed due to pain	62.4%	61.8%	69.5%	59.3%
Retired/home duties	7.2%	7.3%	4.8%	8.8%
<b>Compensation or litigation</b>	70.2%	67.5%	72%	66.3%
<b>Pain site</b>				
Head	7.3%	6.5	8.5%	5.5%
Cervical	12.2%	13.8%	9.8%	15.4%
Shoulder/arm	14.1%	16.3%	11.0%	13.2%
Thoracic	2.0%	3.3%	0%	2.2%
Abdo/Pelvic	1.5%	1.6%	1.2%	2.2%
Low back	28.8%	24.4%	35.4%	28.6%
Low back + Legs	12.2%	10.6%	14.6%	9.9%
Legs	3.4%	4.9%	1.2%	3.3%
>3 main sites	16.6%	17.9%	14.6%	19.8%

The demographic characteristics of the total sample (n = 205), responders at follow-up (n = 123), non-responders (n = 82), and responders who completed the program (n = 91) are presented in Table 7.1. From this table it can be seen that the groups were similar in terms of mean age (range: 38.0 – 42.4 years) and sex (ratios slightly favouring males on all groups except the final one, but little real difference). Mean pain duration for the whole sample (at the time of admission to the program) was quite lengthy (all around 5-years), but ranging from 6-months to over 40 years, and there were no major differences between the groups. Educational levels between the groups were also very similar, although there were slightly more with 9-years or less formal education in the final follow-up group (31.7% versus 20.8% to 27.0% in the comparison groups).

The majority (over 74%) in all groups was born in Australia, but the final follow-up group also had a slightly higher proportion of these (84.6% versus 75% in the total sample of 205). Most patients (71.1% in the total sample of 205) indicated they were married or lived with a de facto spouse.

Medication was used by more than 83% of all subjects in each group (range 83.7% to 87.3%). Polypharmacy was a major feature of all groups, with more than 63% of the total sample (n = 205) taking two or more types of medication for their pain and related problems. There were no major differences between groups on this measure.

Work status overall was quite low, as might be expected, with only 20% of the total sample reporting being in either full- or part-time employment before the program

(the majority of those with jobs said they were part-time, except for the non-responder group). Overall, 62.4% of the total sample indicated they were unemployed due to pain. Only 7.2 % of the total sample indicated they were retired or saw home duties as their main occupation. This pattern was similar in each of the groups except for the non-responders who indicated that more of them were in full-time employment than those in the other groups (15.9% versus 3.3% to 6.5% in the other groups).

The majority (over 66%) in all groups indicated they were involved in some form of compensation or litigation in relation to their pain before they entered the program. There was little difference between the groups in this regard (range: 66.3% to 72%). This finding is probably due to a selection bias as the program was dependent on insurance company funding which meant that those patients whose treatment was approved by their insurance company were given priority for admission (unfunded patients were also admitted, but the ratio was 6/10 or 7/10 of funded to unfunded per group).

Main pain sites reported by the patients indicated that by far the most common site was the back (including back plus legs) with 41% of the total sample. This figure was almost three times more than those who reported their main pain site as shoulders/arms which was the next most common (14.1%) and cervical the next (12.2%). However, 16.6% indicated they had three or more main pain sites. A similar pattern was reflected in each of the other groups of patients, although the actual proportions varied a little.

**Table 7.2. Median Scores (25<sup>th</sup> and 75<sup>th</sup> percentiles) on main outcome variables at admission to ADAPT**

VARIABLE	Total Sample (n = 205)	Responders at F/U (n = 123) Includes 10 ADAPT non-completers	Lost to F/U (n = 82)	Full data at F/U (Q+Ph)(n = 91) ADAPT completers
Pain Severity (0-6) (MPI)	4.33 (4.00-5.00)	4.33 (4.00-5.00)	4.67 (3.67-5.00)	4.33 (4.00-5.00)
Depressed mood (0-63) (BDI)	20.0 (14.0-26.0)	20.0 (14.5-26.0)	20.0 (14.0-26.0)	21.0 (15.0-27.0)
Disability (0- 24) (RMDQ)	15.0 (10.0-18.0)	15.0 (11.0-18.0)	14.0 (10.0-17.3)	15.0 (11.0-18.0)
Pain Interference (0-6) (MPI)	4.82 (4.20-5.40)	5.00 (4.29-5.43)	4.70 (4.08-5.40)	4.90 (4.27-5.45)

MPI: Multidimensional Pain Inventory (Rudy, Turk, Kerns, 1985)

BDI Beck Depression Inventory (Beck et al., 1963)

RMDQ: Roland & Morris Disability Questionnaire (Modified to refer to pain rather than backs)  
(Roland & Morris, 1991)

Q+Ph: Questionnaire plus telephone interview completed

The scores (at admission) on the psychometric measures employed to assess outcomes are reported in Table 3.2. From these data it can be seen that most patients reported experiencing moderately high levels of pain severity (median 4.33 on a 0-6 scale, with a 25<sup>th</sup> to 75<sup>th</sup> percentile range of 4.0 to 5.0 for the full sample). Severity of depressive symptoms, as measured by the BDI, was also quite high (with a median of 20 on a 0-63 scale). Scores of 13 or more in chronic pain populations (taking account the somatic items in the questionnaire) are thought to be in the depressed range (Jensen and Karoly, 1992), while scores of 21 or more are thought to be indicative of clinically significant levels of depression (Beck and Beamesderfer, 1974). Disability, as measured by the Roland and Morris scale, was also quite high (median 15 on a 0-24 scale). By way of comparison, the mean score on this measure for a consecutive series of chronic pain patients attending this tertiary referral pain centre for initial assessment is 12.8 (SD, 5.78) (Sharp and

Nicholas, 2000). This would suggest that, as might be expected, those referred to the ADAPT program were at the more disabled end of the spectrum of patients attending the centre. There were no major differences between the different follow-up groups at the pretreatment stage.

In summary, the patients attending the program were generally experiencing chronic pain (mean length of around 5-years, but ranging from 6-months to over 40-years), with the lower back or lower back and legs as the most commonly indicated main pain sites. The sex ratio of the sample was quite even and the majority lived with a spouse or de facto spouse. The majority was born in Australia and, due to the entry criteria, all were able to at least understand English. Most patients reported using two or more different types of medication for their pain (eg. compound analgesics and anti-depressants). Most (around 80%) were not working at the time of admission to the program and 62% said they were unemployed due to pain. Seventy-percent indicated they were involved in some form of compensation or litigation in relation to their pain at the time of admission to the program. The psychometric measures used indicated that the sample was generally experiencing moderately high levels of pain and disability and about half were reporting clinically significant levels of depressive symptoms. Overall, the sample of patients attending the program could be said to be quite typical of patients attending tertiary referral pain centres.

## **7.2 Change during treatment**

The first aim of this study was to establish whether or not there were significant changes in the patients treated from pre- to posttreatment.

Changes between pre- and posttreatment on the main outcome measures of pain severity (as measured by the MPI), pain-related disability (as measured by the RMDQ and MPI Interference sub-scale), and depression severity (as measured by the BDI) are presented in Table 3.3. The data were analysed by the Wilcoxon matched-pairs signed-rank tests, rather than paired t-tests, due to the skewed distribution of the scores (Altman, 1996). This was also the same method employed by Flavell et al. (1997) in their similar and uncontrolled study of a pain management program. In an attempt to reduce the chances of Type I errors (claiming a finding as significant when it isn't due to the large number of analyses increasing the likelihood of getting a significant finding by chance), the significance levels were set according to the Bonferroni adjustment in which  $P < 0.05$  was divided by the number of separate analyses (4 x 3, or 4 comparisons repeated 3 times – pre- to posttreatment, pre- to follow-up and posttreatment to follow-up) (Tabachnick and Fidell, 1996). This yielded a family-wise significance level of  $P < 0.004$ . In other words, to be considered a significant difference, a p value of  $< 0.004$  or better was required for each analysis.

**Table 7.3. Comparison of Subjects (n=91) Pre-program, Post-program and at long-term****Follow-Up on Main Outcome Measures**

Variable	Median (25 <sup>th</sup> – 75 <sup>th</sup> percentile)			z-value for Comparison		
	Pre- (n=91)	Post- (n=91)	F/U (n=91)	Pre- v. Post	Pre- v. F/U	Post- v. F/U
Pain Severity (MPI)	4.33 (4.00-5.00)	4.0 (3.33-4.67)	3.67 (2.67-4.67)	3.72 <sup>†</sup>	4.53 <sup>‡</sup>	1.99
Disability (RMDQ)	15.0 (11.0-18.0)	8.0 (4.0-11.0)	7.5 (2.0-14.0)	7.01 <sup>‡</sup>	6.35 <sup>‡</sup>	0.33
Pain interference (MPI)	4.90 (4.27-5.45)	4.10 (3.27-4.64)	3.48 (2.45-4.60)	6.82 <sup>‡</sup>	7.21 <sup>‡</sup>	2.05
Depression (BDI)	21.0 (15.0-27.0)	10.0 (5.0-17.0)	12.0 (6.0-19.0)	7.43 <sup>‡</sup>	6.13 <sup>‡</sup>	1.91

† P &lt; 0.0002

‡ P &lt; 0.0000

MPI: Multidimensional Pain Inventory (Rudy, Turk, Kerns, 1985)

BDI Beck Depression Inventory (Beck et al., 1963)

RMDQ: Roland &amp; Morris Disability Questionnaire (Modified to refer to pain rather than backs) (Roland &amp; Morris, 1991)

As can be seen in Table 7.3, Wilcoxon tests showed there were significant changes (all well beyond  $p < 0.004$ ) between pre- and posttreatment on all 4 measures. In other words, significant reductions in pain severity, disability and interference, as well as significant improvements in mood were obtained.

Examination of the use of medication (see Table 3.4) also shows a substantial reduction in the use of different types of medication from pre- to posttreatment by both the sample 91 patients and the fuller sample of 113 patients, with the number not using any medication increasing from 13.3% and 11.6% to 82.2% and 81.3% respectively. At the same time, the proportion of patients using two or more types of medication was reduced from 63.3% and 62.6% to 4.4% and 9.0%, respectively.

In terms of specific types of medication, the main one examined was use of opioids (including compound analgesics, like Panadeine Forte, and strong opioids, like Endone) which are particularly targeted for reduction during the programme. These data are presented in Table 7.5. As can be seen in this table, 76 (68.5% of 113) of patients reported taking these drugs at admission to ADAPT, with 32 (28.8%) taking none. By discharge, this number had reduced to 8 (7.1%).

**Table 7.4. Medication use (by number of classes of drugs) by all ADAPT completers (n=113) and ADAPT completers who returned questionnaires at follow-up (n = 91)**

Medication (By class/type)	Total sample of ADAPT completers (n = 113) %			Follow-up sample (with all data) (n = 91) %		
	Pre	Post	F/ U	Pre	Post	F/ U
None	11.6	81.1	33.3	13.3	82.2	34.8
1	20.5	9.9	26.1	23.3	8.9	24.7
2	28.6	4.5	18.9	26.7	4.4	19.1
3	19.6	3.6	12.6	22.2	4.4	13.5
4	14.3	0.9	6.3	12.2		4.5
5	5.4		1.8	2.2		2.2
6			0.9			1.1
Missing cases	1	1	2	1	1	2

**Table 7.5. Use of Opioids at pretreatment, Posttreatment and Follow-up**

OPIOIDS	TOTAL SAMPLE of ADAPT completers (n = 113) (%)			FOLLOW UP SAMPLE (with all data) (n = 91) %		
	Pre	Post	F/U	Pre	Post	F/U
Yes (> 6 time since last month)	68.5	7.1	41.6	66.7	6.6	38.9
No	28.8	88.5	54.9	31.1	91.2	57.8
Missing cases	1	1	1	1	1	1

**7.3 Maintenance of treatment gains.**

The second aim of this study was to determine if the changes made during treatment were maintained at long-term follow-up. This was addressed by firstly assessing whether there were significant differences on the main outcome measures between pretreatment and follow-up. Then changes from posttreatment to follow-up were assessed. These results are summarised in Table 7.3.

As for the data on pre- and posttreatment occasions, the data for pretreatment and follow-up were analysed by the Wilcoxon matched-pairs signed-rank tests, rather than paired t-tests, due to the skewed distribution of the scores. As with the initial analysis as well, the same family-wise significance level of  $P < 0.004$  was employed.

Wilcoxon tests showed there were significant changes between pretreatment and follow-up on all 4 measures. In other words, significant reductions in pain severity, disability and interference, as well as significant improvements in mood were obtained. Inspection of the median values, as well as 25<sup>th</sup> to 75<sup>th</sup> percentile

range, presented in Table 7.3 indicates that the median values for pain severity, disability and interference due to pain were slightly better at follow-up compared to posttreatment. However, there was a slight elevation in depression severity (as measured by the BDI), although the median score at follow-up was still below the depression cut-off score for chronic pain patients recommended by Jensen and Karoly (1994). When the data from posttreatment and follow-up were analysed by the Wilcoxon tests, no significant changes were found. Overall, this indicates that the changes on these measures made during the program were maintained at follow-up.

Examination of the use of medication (see Table 7.4) also shows a substantial reduction in the use of different types of medication from pretreatment to follow-up by both the sample of 91 patients and the fuller sample of 113 patients, with the number not using any medication increasing from 13.3% and 11.6% to 34.8% and 33.3% respectively. Thus, compared to pretreatment, there was a reduction in polypharmacy use at follow-up. At the same time, the proportion of patients using two or more types of medication was reduced from 63.3% and 62.6% to 40.4% and 40.5%, respectively. However, inspection of Table 3.4 also shows that there was increased use of medication from posttreatment to follow-up, even though it did not return to pretreatment levels. At follow-up, 47 (42%) reported taking opioids at least 6 times per month, with 62 (55.4%) taking none at all. Thus, a substantial proportion of patients remained off these drugs at long-term follow-up, although just over 50% of those who stopped using them during the program clearly resumed using them.

Thus, the substantial reductions in medication use (at least in terms of polypharmacy and use of opioids) obtained during the program were not maintained as well as the changes in measures of pain, disability, interference and mood. However, it should also be noted that at follow-up three times as many patients were taking no medication compared to pretreatment levels and twice as many were not taking opioids at follow-up compared to pretreatment, indicating that the gains made during the program in this regard were not fully lost.

Work status could be seen as another indicator of maintenance effects. Table 7.6 presents the work status data from the full follow-up sample (n = 123) and the full ADAPT Completers sample (n = 113) at pre-admission and long-term follow-up.

**Table 7.6. Work status at pre-admission and long-term follow-up for total sample and ADAPT completers.**

Work Status	Group			
	Full F/U sample (N = 123)		ADAPT completers (N = 113)	
	PRE	F/U	PRE	F/U
F/T	8 (6.5%)	25 (20.3%)	7 (6.2%)	22 (19.5%)
P/T	17 (13.8%)	21 (17.1%)	17 (15.0%)	20 (17.7%)
Vol. Wk	1 (0.8%)	6 (4.9%)	1 (0.9%)	5 (4.4%)
Training	7 (5.7%)	11 (8.9%)	7 (6.2%)	11 (9.8%)
UDP	76 (61.8%)	36 (29.3%)	68 (60.2%)	31 (27.4%)
Home Duties	3 (2.4%)	9 (7.3%)	3 (2.7%)	9 (8.0%)
Retired	6 (4.9%)	13 (10.6%)	6 (5.3%)	13 (11.5%)
Missing	5	2	4	2

F/T (full-time); P/T (part-time); Vol. Wk. (voluntary work); Training (re-training /student); UDP (unemployed due to pain); Home/Rtd (home duties or retired)

As can be seen in Table 7.6, the data for the total sample indicate that 33/123 (26.8%) were in some form of work (F/T, P/T, voluntary, or training) at the time of admission to ADAPT. At long-term follow-up, this proportion had risen to 63/123 (51.2%). Interestingly, those who designated themselves as either in home duties or retired also increased, from just over 7% to just on 18% in total. The pattern was similar for the ADAPT completers, with 32/113 (28.3%) being in some form of work prior to ADAPT versus 60/113 (53.1%) at long-term follow-up. If the home duties/retired patients are taken out of the sample (as they would not be seen as being part of the potential workforce), then at follow-up 60/91 (65.9%) of ADAPT completers reported they were in some form of work. This could be contrasted with 32/104 (30.8%) at admission to ADAPT. The denominators differ for the two occasions as the numbers designating themselves as retired or in home duties changed. This outcome is consistent with the numbers who described themselves as unemployed due to pain decreased from 61.8% to 29.3% in the full sample and from 60.2% to 27.4% in the ADAPT completers sample.

In sum, although still based on self-report, at long-term follow-up the majority of patients who attended ADAPT reported they were in some form of purposeful work (paid or unpaid). By follow-up as well, most patients (around 70%) also reported that pain was not precluding their ability to work (versus around only 40% in this category at admission).

#### **7.4 Maintenance of treatment gains and the use of pain self-management strategies**

The third aim of this study was to examine the possible relationship between maintenance of treatment gains and the use of the pain self-management strategies taught during the ADAPT programme.

This issue was addressed in two ways. Firstly, the data for the total follow-up sample ( $n = 123$ ) was examined and secondly, the data for those identified as having maintained their progress (relative to baseline disability levels), called here 'maintainers', were compared with those identified as having relapsed (to baseline levels of disability, or worse, at follow-up) and called here 'relapsers'.

**Table 7.7 Use of pain self-management strategies/exercises taught in ADAPT**

STRATEGY	TOTAL F/U SAMPLE (N = 123) (%)	MAINTAINERS (N = 73) (%)	RELAPSEERS (N = 18) (%)
<b>PACING</b>			
Hardly ever	9.8	9.6	5.6
Once/day	18.9	15.1	22.2
> once/day	70.5	75.3	72.2
<b>RELAX</b>			
Hardly ever	23.8	19.2	33.3
Once/day	35.2	34.2	44.4
> once/day	40.2	46.6	22.2
<b>CHALLENGE THOUGHTS</b>			
Hardly ever	38.5	35.6	44.4
Once/day	16.4	15.1	22.2
> once/day	45.1	49.3	33.3
<b>STRETCHES</b>			
Hardly ever	23.8	16.4	50.0
Once/day	28.7	28.8	22.2
> once/day	45.9	53.4	27.8
<b>EXERCISES</b>			
Hardly ever	37.7	30.1	50.0
Once/day	35.2	35.6	33.3
3x/week	12.3	16.4	5.6
>once/day	14.8	17.8	11.1
<b>INCORP. EXERCISES</b>			
No	18.0	16.4	16.7
Yes	23.0	26.0	27.8
<b>WALK/ EXERCISE</b>			
Hardly ever	30.3	24.7	38.9
Once/day	45.9	49.3	44.4
> once/day	23.0	24.7	16.7
<b>WORK ON GOALS</b>			
Hardly ever	21.3	15.1	33.3
Once/day	26.2	21.9	55.6
> once/day	52.5	63.0	11.1

#### **7.4.1 Use of strategies. Total sample (n = 123) at follow-up**

Data for the total sample at follow-up, based on telephone interviews, are presented in Table 7.7. Inspection of the data on the use of specific strategies and exercises taught during the program indicates that most (70.5%) reported continuing to pace their activities more than once a day. Relaxation was also still being done frequently, with 75.2% reporting doing this at least once a day. Challenging unhelpful thoughts, a key feature of cognitive management strategies was reportedly being used by most responders (61.5%) at least once a day. Interestingly, while quite a substantial group (38.5%) reported they were 'hardly ever' doing this, comments made by a number of patients during their interview suggested that for at least some of this group, the reason they were seldom challenging unhelpful thoughts was largely because they seldom had these thoughts any more.

A large majority reported continued practice of the physical exercises taught on the program, with 74.6% reporting continued use of stretch exercises, 50% doing other exercises at least once a day (and another 12.3% doing them 3 times a week), and 68.9% reporting they were walking for exercise at least once a day. However, specifically incorporating exercises into other activities was reported by only 23%. That 18% said they did not do this (while 68% were walking at least daily for exercise) suggests that they may not have understood this question very well. It has consistently been reported by many patients post-programme that stretches 'are invaluable', that they 'have to do them', and that they 'can't live without them'. These comments were reiterated by a large number of study subjects. Exercising does not receive the same emphasis and perhaps this is because patients are doing

more as a result of having reached a level of fitness and flexibility to enable resumption of normal activity.

Finally, a large majority reported they were continuing to work on achieving their goals (short- and long-term) which was another key element of the ADAPT program, with 78.7% saying they were doing this at least once a day. However, it is interesting to note that this question was not well understood by some patients, who appeared not to realize that planning the day's activities was a form of goal-setting.

In sum, these data indicate that most responders (60% of the original sample of 205) reported that they were continuing to implement most of the pain self-management strategies taught during their attendance at the ADAPT program 3 to 4 years previously.

**TABLE 7.8 Items from Pain Self-Management Checklist (0 = Never; 2 = sometimes; 4=v.often)**

STRATEGY		TOTAL F/U (N=123) (%)	MAINTAINERS (N = 73) (%)	RELAPSEERS (N = 18) (%)
PROBLEM SOLVING	0	9.2	11.1	11.1
	1	5.8	5.5	5.6
	2	25.0	20.5	33.3
	3	30.8	30.1	33.3
	4	28.3	32.9	16.7
TAKING REGULAR BREAKS	0	5.0	5.5	0.0
	1	4.2	2.7	5.6
	2	14.2	13.7	22.2
	3	41.7	41.1	38.9
	4	35.0	37.0	33.3
EXPECTING CURE	0	73.4	80.8	72.2
	1	5.8	2.7	5.6
	2	7.5	4.1	16.7
	3	4.2	4.1	0.0
	4	9.2	8.2	5.6
USING DRUGS TO OVER-DO ACTIVITIES	0	63.3	72.6	38.9
	1	6.7	4.1	22.2
	2	12.5	8.2	22.2
	3	10.8	11.0	5.6
	4	6.7	4.1	11.1
TAKING XS DRUG	0	76.7	79.5	83.3
	1	4.2	2.7	0.0
	2	12.5	13.7	5.6
	3	5.0	4.1	5.6
	4	1.7	0.0	5.6
TAKING UNHELPFUL DRUGS	0	38.3	41.1	16.7
	1	10.8	11.0	16.7
	2	23.3	23.3	27.8
	3	14.2	16.4	5.6
	4	13.3	8.2	33.3
ONE OR MORE LONG RESTS DURING DAY	0	36.7	42.5	22.2
	1	11.7	13.7	5.6
	2	19.2	17.8	16.7
	3	22.5	20.5	22.2
	4	10.0	5.5	33.3
LYING IN BED AT NIGHT WORRYING (+ getting stressed)	0	40.0	41.1	22.2
	1	8.3	6.8	16.7
	2	19.2	19.2	22.2
	3	15.8	16.4	5.6
	4	16.7	16.4	33.3
HAVING OTHERS DO ONE'S NORMAL CHORES	0	28.3	31.5	11.1
	1	8.3	8.2	11.1
	2	26.7	21.9	44.4
	3	23.3	21.9	22.2
	4	13.3	16.4	11.1
DOING AN ACTIVITY UNTIL COMPLETED, REGARDLESS OF PAIN, THEN RESTING	0	31.7	31.5	27.8
	1	5.8	1.4	16.7
	2	32.5	37.0	27.8
	3	21.7	19.2	22.2
	4	8.3	11.0	5.6

**TABLE 7.8 (continued)**

STRATEGY		TOTAL F/U SAMPLE (N = 123) (%)	MAINTAINERS (N = 73) (%)	RELAPERS (N = 18) (%)
USING AIDS (STICKS, BRACES, ETC.)	0	46.7	53.4	27.8
	1	7.5	6.8	5.6
	2	12.5	15.1	5.6
	3	17.5	16.4	16.7
	4	15.8	8.2	44.4
SEEING PT. DOCTOR, OTHER THERAPIST IN LAST MONTH	0	46.2	52.1	17.6
	1	14.3	13.7	23.5
	2	22.7	24.7	11.0
	3	14.3	9.6	41.2
	4	2.5	0.0	5.9
THINKING INCREASED PAIN=MORE DAMAGE	0	70.0	74.0	61.1
	1	10.0	11.0	5.6
	2	14.2	15.1	22.2
	3	5.0	0.0	11.1
	4	0.8	0.0	0.0
THINKING DR'S HAVE MISSED SOMETHING	0	67.2	72.6	61.1
	1	5.0	5.5	5.6
	2	15.1	13.7	11.1
	3	9.2	6.8	11.1
	4	3.4	1.4	11.1
THINKING PAIN RELIEF NECESSARY BEFORE ACTIVITIES CAN INCREASE	0	59.2	69.9	38.9
	1	7.5	4.1	16.7
	2	15.0	6.8	22.2
	3	11.7	15.1	5.6
	4	6.7	4.1	16.7
HAVING UPSETTING THOUGHTS WHEN PAIN INCREASES	0	47.9	46.6	33.3
	1	9.2	9.6	5.6
	2	21.0	24.7	22.2
	3	18.5	16.4	33.3
	4	3.4	2.7	5.6
TAKING A TABLET/INJECTION WHEN PAIN WORSE	0	30.3	34.2	11.1
	1	20.2	20.5	16.7
	2	22.7	26.0	38.9
	3	21.0	16.4	16.7
	4	5.9	2.7	16.7
MAKING COMPARISONS WITH PRE-PAIN SELF	0	30.3	32.9	33.3
	1	15.1	13.7	22.2
	2	24.4	21.9	22.2
	3	19.3	23.3	5.6
	4	10.9	8.2	16.7

Examination of the data on the Pain Self-Management Checklist items (see Appendix 3), which address a broader range of activities and cognitions thought to be relevant to pain self-management reveals a similar pattern. Overall, there is a strong tendency in all items for the responses to be in the expected direction, although, inevitably, not for all patients. In particular, 59.1% reported using problem solving strategies more often than 'sometimes' to deal with their pain and 76.7% reported taking regular breaks in activities (pacing) more often than 'sometimes'. Both of these are key strategies promoted during the program. A number of subjects reported being able to do more and for longer by pacing their activities appropriately.

The remaining items (3-18) on this checklist are activities or responses that are specifically discouraged during the program and it would be expected that patients would engage in these as little as possible following the program. To a substantial degree this expectation is confirmed by the reports obtained from the responders. In particular, 79.2% reported expecting a cure for their pain less than 'sometimes', (which many said they learnt in the programme), 70% reported using drugs to enable them to overdo activities they knew would aggravate their pain less than 'sometimes', and 80.9% reported taking more than the recommended dose of any drug or using alcohol to cope with their pain less than 'sometimes'. A large number reported this as something they learnt in the programme. Interestingly, a smaller proportion reported taking minimally effective drugs (which only 'take the edge off the pain') less than 'sometimes', with 49.1% in this category, but 50.8% reported taking them more often. This would be consistent with frequent observations that continued use of minimally effective drugs is a common feature of chronic pain

patients attending pain centres. There was a trend for these subjects to also use aids which, with minimally effective medication they believed were helping them to avoid the use of stronger medication. Similarly, 48.4% reported taking one or more long rests (more than 45 minutes) during the day less than 'sometimes', with the remainder saying they did this more often and 48.3% reported lying in bed at night worrying or getting stressed less than 'sometimes'. Almost 17% said they did this 'very often', suggesting that sleep continues to be a problem for many of these patients. Of this group, there were some who were worrying or getting stressed for other reasons than pain – relationship issues, financial concerns and the future were mentioned.

The use of others to perform their normal household chores was also quite common, with only 36.6% saying they did this less than 'sometimes'. While this could suggest a higher degree of dependence on others than desirable, it could also be interpreted to mean that most patients had reached accommodation with their significant others on a new division of labour in the home which might be seen as adaptive. Some reported having put limits on how much and to what degree they would attempt physical tasks – this was worked out over time and involved others in a paid or unpaid capacity. The use of activity pacing was partly addressed in item one, but item 10 (doing an activity until it is completed regardless of pain and then resting) also touches on this issue. The respondents indicated that 30% were doing this more than 'sometimes' and only 37.5% were doing it less than 'sometimes'. While this pattern might appear to contradict pacing, it could also be interpreted to indicate that the responders saw this question as referring to their doing things despite pain, which to varying degrees they clearly have to do, given the

unremitting nature of their pain, if they are to have any sort of life at all. Some indicated that it was now possible to do this because they knew how to pace activities without causing too much difficulty later, or if they were to overdo, they knew how to cope with the consequences.

Most patients reported using aids like sticks or braces quite rarely (54.8% less than 'sometimes'), but about a third (33.3%) reported using them more than 'sometimes'. As mentioned above, some who use aids, do so to avoid or to avoid escalating use of medication. Reliance on healthcare providers also seemed quite low, with 60.5% saying they had seen a provider (of any sort) less than 'sometimes' in the last month. A number reported that their doctor couldn't do anything, anyway, and the subjects no longer saw it as necessary. Encouragingly, given the aims of the program and the recommendations of current guidelines on managing persisting non-specific pain problems, most patients rarely thought that increased pain meant more damage (80% thought this less than 'sometimes') and most also did not think their doctors had 'missed something' in their examinations of them (72.2% thought this less than 'sometimes'). The majority reported this as a very clear message they learnt in the programme.

From a pain management perspective, it is interesting to see that few respondents thought that pain relief was necessary before they could increase their general activity level (66.7% saying they thought this less than 'sometimes'). This would seem to accord with the approach promoted during the program that people can learn to do more despite pain rather than waiting for pain relief first. Nevertheless,

6.7% of this sample did report holding the view that pain relief was necessary before they could become more active.

Catastrophising thoughts, or thinking the worst when one's pain is aggravated has often been shown to be a poor pain management strategy and is linked with greater distress in chronic pain patients. The responders indicated that most (57.1%) had such responses only rarely (less than 'sometimes'), although 21.9% reported they had these responses more than 'sometimes'. Similar figures were reported for the use of medication (or an injection) when pain was aggravated, with 50.5% saying they did this rarely (less than 'sometimes'), but 26.9% saying they did this more than 'sometimes' (5.9% doing it 'very often'). Making comparisons between their current state and their remembered selves before the onset of their pain was more common than not, with only 45.4% doing it rarely (less than 'sometimes') and 30.2% doing it more than 'sometimes'. Some subjects reported that they now think about how they were before learning to manage their pain, and how they are much better now, in response to this question.

Overall, the responses reported by the responders at follow-up, who included 10 who had dropped-out during the program, provided clear evidence that in most instances, patients who had attended the ADAPT program 3 to 4 years previously were continuing to practice most of the recommended pain self-management strategies taught or promoted during the program and conversely, most were not practising those strategies or holding those beliefs not recommended or encouraged during the program. These findings would seem to be consistent with the results of the outcome measures which indicated that, as a group, the patients who had

attended the program were generally doing better 3- to 4-years later than was the case prior to the program. However, not all patients who attended the program were doing well and many were continuing to use strategies thought to be unhelpful in the management of pain. In order to determine if there was a link between the use of particular coping strategies or responses and poor maintenance of program gains a second analysis was conducted to compare those who had maintained their gains following the program and those who had not.

#### **7.4.2 Use of Strategies. Maintainers versus Relapsers**

The second phase of this analysis involved using the sample of 91 patients for whom full data at pretreatment, posttreatment and follow-up occasions were available, the patients were divided into maintainers and relapsers on the basis of whether or not their follow-up disability score on the RMDQ was the same or worse than their score on this measure at pretreatment. In other words, if their disability score returned to baseline (or worse) by follow-up they were regarded as having relapsed. Those patients whose scores on this measure were better (ie. less) than their baseline scores were regarded as maintainers. The disability score was chosen for this role given that the key aim of a cognitive-behavioural program like ADAPT is to reduce disability despite persisting pain.

Using this method of classifying the patients at follow-up, 73 (80.2% of 91) patients were identified as maintainers and 18 (19.8% of 91) as relapsers. To some extent this statistical definition of maintainers and relapsers is overly harsh as at least two of the 18 relapsers had quite low RMDQ scores even at follow-up (3 and 6, out of

24). However, they still met the relapse criterion as their pretreatment scores were 3 and 1, respectively. It might be wondered why they were in the program at all if their disability was so low to start with. However, it should be remembered that distressed mood and high use of unhelpful medication are also criteria for admission and it is possible for a person in chronic pain to be managing to perform most normal daily activities but only at the cost of great distress and high use of medication (which they may not want to take). These could be the patients who are identified as 'overdoers' who need to learn to pace their activities better in order to have a more comfortable and sustainable lifestyle despite their ongoing pain. However, as they technically met the criteria for relapse they were kept in this group because to start removing cases could raise concerns about bias or interference by the investigator.

One-way Analyses of Variance (ANOVAs) comparing mean scores on the main outcome measures (Pain Severity, RMDQ, MPI-Interference and BDI) at posttreatment revealed no significant differences between these two groups (which were only identified on the basis of their follow-up PDQ score returning to baseline levels) on any measure at posttreatment (ie. the end of the ADAPT program). However, the same analyses conducted on the same measures at long-term follow-up revealed significant differences on all measures (see Table 7.8). In each case, the maintainers were doing better than the relapsers. This finding would seem to add weight to the classification of the two groups as maintainers or relapsers.

**TABLE 7.9. Comparison of Relapsers versus Maintainers on Main Outcome Measures (Medians and 25<sup>th</sup> to 75<sup>th</sup> percentiles) at Posttreatment and Long-term Follow-up.**

Measure	Posttreatment		Follow-up	
	Maintainers (n = 73)	Relapsers (n = 18)	Maintainers (n = 73)	Relapsers (n = 18)
Pain severity (0-6) <sup>‡</sup>	4.0 (3.33-4.67)	4.5 (3.59-4.75)	3.67 (2.17-4.33)	4.67 (3.84-5.0)
Disability (RMDQ) (0-24)	7.0 (4.0-11.0)	9.5 (6.0-13.0)	7.0 (2.0-12.0)	13.5 (10.0-18.5) <sup>‡</sup>
Pain-interference (MPI) (0-6) <sup>‡</sup>	4.0 (3.20-4.62)	4.36 (3.75-4.7)	3.3 (2.36-4.5)	4.4 (3.58-5.15)
Depression (BDI) (0-63) <sup>‡</sup>	10.0 (5.0-17.0)	9.50 (5.25-15.8)	10.0 (5.0-18.0)	16.5 (11.5-23.5) <sup>‡</sup>

Key for 1-way ANOVAs for Follow-up comparisons only (Posttreatment comparisons were not significant): <sup>‡</sup> P< 0.0018; <sup>‡</sup> P<0.0000; <sup>‡</sup> P<0.016; <sup>‡</sup> P< 0.0025

**Table 7.10 . Opioid use by ADAPT completers who maintained their gains and by those who relapsed by follow-up (in terms of disability).**

OPIOIDS	TOTAL SAMPLE of ADAPT completers			MAINTAINERS			RELAPERS		
	(n = 113) (%)			(n = 73) (%)			(n = 18) (%)		
	Pre	Post	F/U	Pre	Post	F/U	Pre	Post	F/U
Yes (> 6 time sin last month)	68.5	7.1	41.6	65.8	5.5	32.9	70.6	11.1	64.7
No	28.8	88.5	54.9	31.5	93.2	63.0	29.4	83.3	35.3

Differences in use of opioids were also evident at follow-up (see Table 7.10). At posttreatment, 5.5% of maintainers were taking opioids, versus 11.1% of relapsers. But at follow-up, only 32.9% of maintainers reported using opioids, versus 64.7% of relapsers. Thus, when the two groups were reporting similar pain levels opioid use was at its lowest for both groups and they were quite similar (5.5% versus 11.1%), but at follow-up when the relapse group reported higher pain levels,

proportionately twice as many of this group were taking opioids again compared to the maintainers group. This would suggest that the use of opioids by these relapse patients did not provide any real assistance in terms of pain, function or mood.

Work status differences between the two groups were also compared and a summary is presented in Table 7.11.

**Table 7.11. Work status at pre-admission and long-term follow-up for the Maintainers and Relapser groups.**

Work Status	Group			
	Maintainers (N = 73)		Relapsers (N = 18)	
	PRE	F/U	PRE	F/U
F/T	3 (4.1%)	14 (19.2%)	---	1 (5.6%)
P/T	10 (13.7%)	14 (19.2%)	5 (27.8%)	2 (11.1%)
Vol. Wk	1 (1.4%)	4 (5.5%)	---	1 (5.6%)
Training	5 (6.9%)	6 (8.2%)	1 (5.6%)	2 (11.1%)
UDP	42 (59.3%)	16 (21.9%)	12 (66.7%)	8 (44.4%)
Home Duties	2 (2.7%)	7 (9.6%)	---	1 (5.6%)
Retired	6 (8.2%)	10 (13.7%)	---	3 (16.7%)

F/T (full-time); P/T (part-time); Vol. Wk. (voluntary work); Training (re-training /student);

UDP (unemployed due to pain); Home/Rtd (home duties or retired)

Although the small size of the Relapse group makes comparisons difficult, it is notable that while overall employment (F/T, P/T, voluntary, training) increases in the Maintainers group (from 26% to 52%) there is no change in the Relapse group (remaining at 33.3%). In fact, paid work (F/T, P/T) in the Maintainers group

doubles (from 18% to 38%), while in the Relapse group there is a decline in the proportion in paid employment (from 27% to 16%).

The use of specific strategies and exercises taught during the program were compared for the two groups and are presented in Table 7.7 . Table 7.8 includes the patients' responses to the Pain Self-Management Checklist items, which address a broader range of activities and cognitions thought to be relevant to pain self-management.

Mann-Whitney U tests were employed to determine whether there were any significant differences between the groups on each item (Altman, 1996). As this amounts to a large number of univariate tests (26), there is a high risk that the Type I error rate will be elevated, making it possible that some of the findings could be due to chance. However, if a Bonferroni adjustment was applied, the level of significance would be so restrictive ( $P < 0.05/26 = 0.0019$ ) that the risk of Type II errors would be raised, making it possible that some positive findings could be overlooked. As this study was primarily exploratory, although based on testing a hypothesis, it was decided that more would be learned about the question being addressed by setting the significance level at a compromise level of  $P < 0.01$ , consistent with recommendations by Jensen et al. (1994).

As can be seen from Table 7.7, there was a trend for each of the 8 program strategies to be used more frequently by the maintainers group relative to the relapsers group. This difference reached statistical significance only for the use of stretches ( $P < 0.0069$ ) and especially continued working on goals ( $P < 0.0002$ ). The

use of relaxation and exercises approached significance but were well short of the levels achieved by stretches and working on goals.

In relation to the items of the Pain Self-Management Checklist, the Mann-Whitney U tests indicated there were significant differences between the groups on item 7 (having one or more long rests during the day,  $P < 0.008$ ); item 11 (using aids, like sticks, braces,  $P < 0.0035$ ); item 12 (seeing a healthcare provider about pain in the last month,  $P < 0.002$ ); item 15 (thinking pain relief is necessary before you can become more active,  $P < 0.001$ ); and item 16 (having upsetting thoughts when your pain gets worse,  $P < 0.0009$ ).

Differences between the groups approached significance on item 4 (using pain killers to do things you know will aggravate your pain,  $P < 0.023$ ) and item 18 (making comparisons between how you are now and what you were like before the onset of pain,  $P < 0.012$ ).

Overall, on the items of this checklist, apart from two exceptions, there was a clear trend towards higher use of the two 'recommended' strategies (Items 1 and 2, referring to the use of problem solving and pacing, respectively), and lesser use of the 'not recommended' strategies (all other items). The two exceptions were item 9 (having others do one's normal chores) and item 10 (doing an activity until it is completed regardless of pain). In these two instances, however, the differences were not statistically significant.

## 7.5 Use of health services

**TABLE 7.12: Use of health care services in previous 6-months before interview at follow-up**

STRATEGY	TOTAL F/U SAMPLE (N = 123) (%)	MAINTAINERS (N = 73) (%)	RELAPERS (N = 18) (%)
TESTS IN LAST 6/12			
NIL	82.8	86.3	77.8
X-RAY	2.5	2.7	5.6
MRI/CT scan	5.8	4.1	11.2
GP visits for pain in last 6/12			
Nil	35.5	42.5	11.1
1-3	27.2	28.7	38.9
4-6	11.6	9.1	11.2
More than 6	25.6	19.2	38.9
SPECIALISTS SEEN IN LAST 6/12			
Nil	69.7	74.0	50.0
Pain	3.3	2.7	5.6
Orthopaedic	4.1	4.1	5.6
Rheumatologist	4.9	4.1	16.7
Psychiatrist	3.3	2.7	5.6
> one type	8.8	6.9	16.7
HIGHEST No. VISITS TO ONE OF THESE SPECIALISTS			
1-2	16.4	15.0	27.8
3-4	3.3	5.4	5.6
5-6	5.0	4.1	11.1
More than 6 times	5.7	4.1	5.6

**TABLE 7.12 (continued)**

	TOTAL F/U SAMPLE (N = 123) (%)	MAINTAINERS (N = 73) (%)	RELAPERS (N = 18) (%)
NON-MEDICAL HCP'S SEEN IN LAST 6/12			
NIL	52.9	60.3	41.2
Physiotherapist	9.1	8.2	5.9
Psychologist	4.1	1.4	17.6
Chiropractor	5.0	5.5	0
Acupuncturist	4.1	2.7	0
Masseur	5.8	5.5	0
Naturopath/Osteopath	3.4	4.1	5.9
More than one type	14.0	11.0	23.5
HIGHEST No. NON-MED. TREATMENTS RECEIVED IN LAST 6/12			
1-2	9.1	8.2	11.8
3-4	7.4	5.4	0
5-6	5.8	8.2	5.9
More than 6 times	26.4	20.5	41.9
MEDICATION (by class)			
Nil	33.3	72.3	40.0
1	25.8	16.9	40.0
2	18.3	7.7	13.0
3	14.2	3.1	6.7
4	5.8		
5	1.7		
6	0.8		

Although, not one of the main aims of this study, it was interesting to compare the relapsers and maintainers on the use of health services in the 6-months before the follow-up assessment. Given that the ADAPT program is intended to help patients

increase their self-reliance (reflected in their higher use of self-management strategies) and, correspondingly, their reduced reliance on others, especially health care providers.

These data are presented in Table 7.12 and indicate that, encouragingly (given the amount of assessment and treatment most patients had received for their pain prior to ADAPT) the vast majority had had no further radiography (X-rays or CT/MRI scans) in the previous six-months (86.3% and 77.8% for the maintainers and relapsers respectively). Of those who had had further tests, more of the relapsers had taken this course (16.8% versus 6.8%, respectively). The maintainers had seen general practitioners a lot less than the relapsers (42.5% versus 11.1%, respectively, had not seen one at all). Overall, the numbers seeing GPs more than 6 times in the last 6-months strongly favoured the relapsers (38.9%) over the maintainers (19.8%). A similar pattern emerged for visits to specialists, with 74% of the maintainers not seeing one at all, versus 50% for the relapsers. Of the specialists seen by the relapsers the main finding was that Rheumatologists were the most frequently seen. Overall, 16.7% of the relapsers saw more than one type of specialist versus only 6.9% of the maintainers. Of those who did see a specialist in the preceding 6-months, the majority saw them only one or two times, although 11.1% of the relapsers saw one five or six times, or almost monthly.

Of the other health care providers seen, 60.3% of the maintainers saw none (versus 41.2% of the relapsers), but physiotherapists were seen by more of the maintainers than the relapsers (8.2% versus 5.9%) but the numbers were small. Interestingly, the relapsers saw psychologists far more than any other provider (17.6% saw

psychologists in this group versus 5.9% for both physiotherapists and the combined figures for naturopaths/osteopaths). In comparison, only 1.7% of maintainers reported seeing a psychologist in this period. Of those patients who were seeing these practitioners, the relapsers saw one more often than the maintainers (with the ratio of more than 6 visits being 41.9% to 20.5%, respectively). It is recommended at the end of treatment for some patients to attend a psychologist for reinforcement of programme strategies. Perhaps the use of psychologists is as high because treatment has not been limited, or because there are other issues to be explored. It is known that some of these subjects only began seeing a psychologist recently, and so this may be as a result of still not managing pain independently.

In terms of medication used, proportionately more of the maintainers were not taking any medication compared to the relapsers (72% versus 40%), but more of the relapsers were taking two or more classes of drugs (10.8% for the maintainers versus 19.7% for the relapsers).

In summary, as might have been expected, the group identified as relapsers reported a heavier use of health services generally than the maintainers, with some specific services standing out, particularly the higher use of rheumatologists and psychologists by the relapsers. Interestingly, very few reported continued use of pain specialists (2.6% of maintainers and 5.6% of relapsers). Encouragingly, however, there was a relatively low use of further radiography and the majority had not seen a specialist at all in the last six-months, perhaps suggesting that they were not actively seeking more interventions. The use of GPs was higher than that for specialists, with a significant minority (just under 40%) of relapsers attending their

GPs at least monthly. In contrast, the maintainers reported using their GPs much less often. Reasons given for seeing GPs included needing help with a flare up, getting medication, seeking more investigations or treatments, searching for a cause of pain, and a number required Workcover certificates to be issued on an ongoing basis.

## **CHAPTER 8. DISCUSSION**

This study examined three main questions: (1) whether patients with chronic noncancer pain improved on measures of pain, disability, and mood after attending a cognitive-behavioural pain management program; (2) whether these changes were maintained at long-term follow-up (more than 30-months later); and (3) whether those who did maintain their gains following treatment differed in their use of pain management strategies from those who did not maintain their gains. Before examining the results some mention should be made of methodological issues concerning the study.

### **8.1 Response Rate**

As previously noted, long-term follow-up of former patients is difficult because of the response rate being lessened over time. Final subject numbers are often small and may not be representative of the total sample as a result of some unknown 'response bias' on the part of former patients. In this study, 141 (70.7% of the original 205 patients treated) were contacted, leaving 29.3% uncontactable. Only 22 (10.7%) were unwilling to participate, and 123 (59%) participated in the telephone interview with 98 (47.8%) returning written questionnaires (91(46.7% of the original 205) being programme completers). The question of how representative the responders were was addressed in two main ways. Firstly, it might be thought that the non-responders (those who could not be contacted and those who declined to participate) were those who did less well in the programme, compared to the responders. However, when each of the main outcome variables Was examined (pain severity,

were found at posttreatment. Secondly, to further test whether the initial outcomes of those who responded were different from those of the non-responders a discriminant function analysis was conducted to see if some combination of the main outcome measures could allow us to predict whether or not the patients would fall into one or other category (responder versus non-responder). This analysis resulted in a very low correct prediction rate (57%). This is very similar to the 53% reported by Flavell et al. (1996). Thus, there is no evidence that the two groups differed in their outcomes by the end of treatment. Whether they differed subsequently is, of course, unknown. However, from the analysis of maintainers versus relapsers it is clear that at least around 20% of those who agreed to participate in the study (the responders) did not maintain their posttreatment gains. Thus, the responder group were not solely the 'successful' patients as some have indicated could be the case in follow-up studies (Turk and Rudy, 1992). This point is given further emphasis when it is noted that at least 3 of those who were contacted but declined to participate in the study were working. Furthermore, inspection of demographic characteristics did not reveal any major differences in that area between those who participated in the study and those who did not. Overall, there are no obvious sources of bias in the selection of responders versus non-responders, but that does not rule out some unknown bias.

It has been suggested that a follow-up rate of over 80% is ideal (Evans, 1991; Turk and Rudy, 1991). In this respect the current study is well short, although about 70% of the total sample were actually contacted (but not all wished to participate and some had not completed the programme anyway). Attrition (loss of subjects at follow-up) is a well recognized problem (Peters and Large, 1990; Williams et

al.,1996), and not easy to overcome. It is interesting to note that the follow-up rate from the present study is still well above that reported by Flavell et al. (1997), but less than those reported by Nicholas et al. (1991, 1992), all of which were conducted in Australia. Equally, the length of follow-up may have contributed to the present findings as this study had a much longer follow-up than any of these previous Australian studies.

## **8.2 Reliance on self-report**

Phone or mail contact is presumed to be not as reliable a means of follow-up as clinic attendance (Turk and Rudy, 1992). However, it should be noted that the majority of follow-ups reported in the literature are some combination of telephone and mailed questionnaires (see TABLE 4.1), like the present study. It would seem unrealistic to expect patients to attend in person to the clinic when at least 50% live outside the metropolitan area. This expectation would incur considerable cost for travel and in some cases, accommodation. Those who participated in this study had little to gain from their participation and so incentive to have attended the clinic would be small.

The self-report outcome measures used in the study did have sound psychometric properties of reliability and validity and it should be noted that there is doubt about these properties in relation to more 'objective' measures like clinic observations, observed performance of tasks and clinical impression (Rudy et al., 1992). It would have been desirable for the outcome measures to be validated against external sources, such as the patients' general practitioner's files or insurance company records, but in Australia patients are able to attend several different general

practitioners and the different doctors a patient is seeing may not know about the others involved. Insurance company records would show data on fees charged for treatments and frequency of treatments, but not all the patients in this study were claiming compensation insurance and access to these files is restricted. Return to work is another outcome that might be thought of as 'objective', but many of the patients in this study did not have this as their goal (eg. they were retired or in home duties) and for others, there may be no suitable work available for them locally, so for them work status could not reflect an outcome of the programme. Thus, as desirable as they might be, useful and relevant objective outcomes that suit a heterogeneous sample of patients like those attending ADAPT are difficult to obtain.

### **8.3 Follow-up Interviewer**

Another concern about the methodology is the use of a member of the treating staff as the follow-up assessor. It has been argued that this could influence former patients to report more favorably on the outcome of the programme than might have been the case with a more obviously neutral or impartial interviewer (Turk and Rudy, 1992). However, as noted in Chapter 6, this concern needs to be balanced against the response rate issue. If an unknown research assistant had tried to contact these former patients the concern was that they might have been less willing to participate in the study and a lower response rate would have caused further difficulties in interpreting the results. This concern about the possible impact of an unknown research assistant was based on previous experience with workers compensation claimants in New South Wales (Cohen et al., 2000) who experienced a response rate of 31% following telephone and mail contact when the research assistant was unknown to the subjects. In comparison, the overall response rate in

the present study (60%) would seem to justify this concern. It should also be noted that despite being contacted by a member of the treating staff just over 15% (of those contacted) still declined to participate at all and 20% of those who did participate fully felt able to report they had relapsed since attending the programme. Thus, the use of a person known to the subjects for follow-up data collection did not seem to preclude non-compliance.

#### **8.4 Randomisation**

This was not a randomized controlled trial so it cannot be claimed that the results reflect the effect of the treatment relative to some other intervention.

However, the results were consistent with those reported by previous randomised controlled trials of programmes like ADAPT (eg. Morley et al., 1999; Williams, 1996). It should also be noted that the subjects were from the more distressed and disabled spectrum of patients attending the Pain Management and Research Centre despite numerous previous treatments which had generally failed to achieve the types of results achieved after ADAPT and the subjects were certainly chronic, with a mean duration of pain just over 5-years - by which time spontaneous remission of symptoms and return to work is usually thought to be very unlikely (Von Korff, 1994).

In summary, these methodological issues do provide a cause for caution when interpreting the results of the study, but considered in the context of other published studies in this area, the flaws are not exceptional. As with most results from studies of this type, replication by future studies will be needed for confirmation of the present findings.

## **8.5 Strengths of the study**

In addition to the flaws mentioned above, the study also has a number of strengths which deserve mention.

### **8.5.1 Length of Follow-up**

Unlike many previous studies in this area, this study has investigated the outcomes of patients treated more than 2 years previously (mean 43 months, median 44 ).

As shown in Table 1.1, most follow-up studies have been undertaken up to 18-24 months post-treatment.

### **8.5.2 Comprehensive Data**

The data is comprehensive, in that the measures used covered the important domains of pain severity, disability and mood. The same measures were used at pretreatment, posttreatment and at follow-up. The measures used were widely used in the pain management literature and had well-documented strong psychometric properties of reliability and validity.

### **8.5.3 Use of a Prospective Design**

The data on outcomes were obtained at the relevant times in the study. Thus, the pretreatment data on the outcome measures were gathered at pretreatment, the posttreatment data on the same measures at posttreatment and the follow-up data on these measures similarly. This means that the data collected at each occasion were not dependent on hindsight or interpretation in the light of how things turned out in

the end. The only retrospective data obtained related to the patients recall of their use of health services in the 6-months prior to the follow-up assessment.

#### **8.5.4 Statistical analyses controlled for increased risk of Type I errors**

Due to repeated analyses there is an increased risk of finding significant results by chance. This was controlled for in the analyses of outcome measures. As a result, the significant findings could be accepted with a degree of confidence.

#### **8.5.5 Use of a Standard Pain Clinic Population**

As all those treated were referred to the pain centre by their treating doctors and they were people seeking help for their pain the results obtained may be more generalisable to other pain clinic populations than would be the case if they were selected, say, from people responding to media advertisements. The demographic details and the scores on the different outcome measures at pretreatment also add weight to the sample's similarity to other pain clinic populations. Overall, then, the sample of patients attending the programme could be said to be quite typical of patients attending tertiary referral pain centres.

In summary, while the study has a number of methodological short-comings, it also has many methodological strengths which mean that the results may be interpreted with a degree of confidence.

### **8.6 Main Findings**

The main findings are discussed in terms of the questions addressed.

### **8.6.1 Do patients with chronic noncancer pain improve on measures of pain, disability, and mood after attending a cognitive-behavioural pain management program?**

From pre-treatment to posttreatment, group measures showed significant reductions for pain severity, pain-related disability and interference, and a significant improvement in mood.

In addition, data on medication use showed more than 83% of all subjects used medication, with polypharmacy a feature (>63% used more than 2 types of medication) at pre-treatment. At posttreatment, the use of two or more types of medication was reduced substantially from an overall 67.9% to 8.8%.

In particular, opioid use was reduced from 68.5% (of respondents) at pretreatment to 7.3% at posttreatment. This reduction in overall use of medication was associated with a statistically significant reduction in pain severity and a statistically significant increase in activity level (reduced disability and interference scores). The change in disability could also be considered clinically significant as the median reduction in RMDQ items was 7 items. Deyo et al. (1998) have indicated that a change of 5 or more on this scale is clinically significant. The change in pain severity (median 4.33 to 4.0) is well below the amount of pain reduction (50%) considered to be clinically significant by most reviews (eg. McQuay et al. 1997). Even so, the finding that it

does not increase when analgesics are withdrawn and activity levels increase is suggestive of a clinically important outcome.

### **8.6.2 Were these changes achieved in the programme maintained at long-term follow-up (more than 30-months later)?**

For the total sample of ADAPT completers (n = 91) with pre-, post- and follow-up data, significant improvements were achieved on measures of pain severity, disability, pain interference and depression severity during the treatment period and at follow-up these had been maintained. There were no significant changes on these outcome measures from posttreatment to follow-up.

In terms of medication use for the total sample of ADAPT completers followed-up (n=113), there was some increase in the follow-up period, but at follow-up there were still 33.3% not using any medication for pain compared to 11.6% in this category before ADAPT. Similarly, for those using two or more different types of medication the proportions at follow-up were greater than at posttreatment but still well below the pretreatment levels (42% versus 67%). A similar picture was found with opioid use, with an overall decrease from pretreatment to follow-up (from 68.5% to 41.6%). In sum, while there was an increased use of medication from posttreatment to follow-up there was no return to baseline levels and the proportions taking different types of medication were lower at follow-up compared to pretreatment in every class except the one person who reported using 6 types of medication at follow-up.

The ongoing use of pain self-management strategies was an important part of the ADAPT programme. When asked specifically about the use of these strategies taught on the programme, patients reported continued practice of stretch exercises (74% at least daily), other exercises (62% at least 3 times per week), walking for exercise (69% at least daily), working on goals (79% at least daily). In addition, 89% reported pacing activities at least daily, 75% used relaxation at least daily and 62% used thought challenging (when unhelpful thoughts occurred) at least daily. A number also said that they no longer did this as they hardly ever had negative or unhelpful thoughts any more.

### **8.6.3 Did those who maintained their gains following treatment differ in their use of pain management strategies from those who did not maintain their gains.**

To assess whether those who improved at follow-up relative to baseline were using the pain self-management strategies more than those who had relapsed, the sample was divided by comparing their RMDQ scores at follow-up with those at pretreatment. Those whose follow-up scores were the same or worse (higher) than at pretreatment were identified as 'relapsers' and those whose follow-up scores were better (lower) than at pretreatment were identified as 'maintainers'.

There were no significant differences between the two groups at posttreatment on any of the outcome measures. But at follow-up, the maintainers were significantly improved on all measures compared to the relapsers.

At follow-up, far fewer maintainers than relapsers were using medication (72.3% versus 40% using nil, respectively). In relation to use of opioids, 63% of maintainers were not using these agents at follow-up versus only 35% of the relapsers.

Compared to pretreatment use of opioids, the relapsers had basically returned to close to their pretreatment levels, but the maintainers were more than twice as likely not to be taking these agents at follow-up compared to pretreatment.

In sum, although initially selected on the basis of their return to baseline on the disability measure (RMDQ), the relapsers seem to have relapsed on a number of measures by follow-up. The next question was to compare their use of recommended pain self-management strategies at follow-up.

The results indicated that the subjects in the maintainers group were continuing to practice regularly most of the recommended strategies from the programme, and most were not using regularly the strategies that were not recommended.

The comparison between the maintainers and relapsers showed the maintainers used each of the 8 specific strategies more frequently than the relapser group, especially the use of stretches, working on goals, (both statistically significant), the use of relaxation and exercising.

Significant differences between the groups were also found on items of the Pain Self-Management Checklist. In particular, taking rests, use of aids, seeing health care providers in the past month, thinking pain relief is necessary before you can

become more active and having upsetting thoughts when your pain gets worse were all more commonly reported by the relapser group. Approaching a significant difference were the items referring to 'using pain killers to do things you know will aggravate the pain', and 'making comparisons between how you are now and what you were like before the onset of your pain'.

There was a clear trend towards higher use of recommended strategies and less of the 'not recommended' strategies, except for 'having others do one's normal chores' and 'doing an activity until it is completed regardless of pain'.

Data on the use of health care services showed the majority had no further radiography, with more relapsers seeking tests more than maintainers (16.8% and 6.8% respectively). Health care services in the 6 months prior to follow-up were used more by the relapser group than maintainers, with higher use of rheumatologists and psychologists by the relapsers most notable. Very few reported using medical pain management specialists. The majority had not seen a specialist in the past 6 months but the use of GPs was higher, with 40% of relapsers (versus 20% of maintainers) seeing the GP monthly. This may have been related to medication prescription as more of the relapsers were taking medication, especially opioids. Of other health care providers, almost two thirds of maintainers saw none, but physiotherapists were the main type seen (with more maintainers seeing physiotherapists than relapsers, although the proportions were very small, 8% versus 6%, respectively).

The differences between the maintainers and relapsers is best reflected in maintainers using strategies more consistently and often. This may be reflected in their reduced use of health care services, medication, and higher return to work rates compared with relapsers.

## **8.7 GENERAL DISCUSSION**

The results of this cognitive -behavioural programme long-term follow-up of 205 subjects having attended 33 to 55 months previously are important for a number of reasons. A study of this size and length of time posttreatment is rare and the data is comprehensive, with pre-treatment, posttreatment and follow-up data available for 91 (44% of 205, or 47% of 195 programme completers). Data from telephone questionnaires was available for 123 (60% of 205).

During treatment, significant reductions were made in pain severity, disability and interference, with significant improvements in mood (depression). Substantial reductions were made in medication use posttreatment. Follow-up has shown improvements made at posttreatment have been maintained for pain severity, disability, interference, and depression. Medication intake increased from posttreatment to follow-up but did not return to pretreatment levels and, in fact, three times as many patients as at pre-treatment were using no medication at follow-up.

Division of programme completers into maintainers and relapsers, based on the disability measure (RMDQ), showed the maintainers were continuing to use the pain self-management strategies taught on the programme much more often than the relapsers. The maintainers were also reporting much less frequent use of healthcare services in the 6-months before the follow-up assessment and this was reflected in their reduced use of medication compared to the relapsers, especially with regard to polypharmacy and opioids. Return to work rates were also much higher in the maintainers compared to the relapsers. Despite these long-term outcome differences

between these two groups, there were no major differences between them at posttreatment on the measures of pain, disability, interference in activities due to pain, mood, and use of medication. This suggests that they were not different groups to start with. In particular, the relapsers were not those in more pain or more depressed at the end of treatment. Their relatively poorer outcome at long-term (compared to the maintainers) is associated with less use of the pain self-management strategies and this is consistent with the hypothesis that continued application of these strategies is an important factor in maintaining treatment gains.

The outcomes achieved in this study are comparable with those reported by a number of other outcome studies, especially those reporting long-term follow-ups (eg. Flavell et al. 1996; Williams et al. 1993, 1996). It should be noted that, to the best of the author's knowledge, this is the first study of this size specifically to investigate the role of pain self-management strategies in the maintenance of treatment gains following a cognitive-behavioural programme. As such, the results could be seen to make an important contribution to the literature on this topic.

The reduction in pain severity was statistically significant at posttreatment and again at follow-up. It is not an expectation of CBT programmes that pain levels will be reduced but other outcomes reveal this, as in Fordyce (1973); Khatami and Rush (1982); Phillips (1987); Kendall and Thompson (1998). The recent meta-analysis by Morley et al. (1999) confirms this as a more common finding than might be realised. This may be seen as consistent with a biopsychosocial model of pain which holds that pain report can be influenced by organic and psychological and environmental factors. Even so, the consistency of this finding means that it is possible to tell

patients considering a CBT programme that it can help them to reduce the severity of their pain, even though their analgesics will be withdrawn and their activity level increased.

Disability scores (RMDQ) showed significant reduction from pre- to posttreatment and further significant improvement at follow-up. This is consistent with outcomes of other programmes where improvements made in the programmes were generally maintained at follow-up (Cinciripini and Floreen, 1982; Corey et al., 1987; Nicholas et al., 1991;). Similarly, Pain Interference (or interference by pain in a range of normal daily activities) improved significantly from pre-to posttreatment and was maintained at follow-up. This was the general outcome from other studies where measured. (Fordyce, 1973; Lutz, 1983; Flavell et al.1996).

Depression (BDI) scores at pretreatment (median: 21/ 63) were higher than those reported by many other programmes at pretreatment ( Khatami and Rush,1982; Turner, 1982; Kerns et al., 1992; Flavell et al., 1996). Subjects in the other studies were less depressed at the beginning of treatment and so cannot be equated with the current study subjects. The outcome from the current study (12/63) is impressive as it is below the cut-off for depression in chronic pain patients recommended by Jensen et al. (1994). That it was maintained at follow-up, especially by the maintainers, is also important to note.

Medication intake at follow-up was still considerably less than at pretreatment, but like the use of opioids, there had been an increased use compared to posttreatment. This would appear consistent with outcomes from Cinciripini and Floreen, (1982), at

twelve months follow-up, and with Chapman et al. (1981) at 21 months mean follow-up. However, this was unlike the achievements of Williams et al.(1996) at twelve months follow-up, where posttreatment achievements were maintained. Given the similarity of the ADAPT and INPUT (ie. Williams et al., 1996) programmes the reason for this difference is unclear. It may be related to the fact that a higher proportion of the present study's sample was taking medication in the first place (88% in ADAPT versus 71% in the INPUT inpatient sample). Thus, more of the patients attending ADAPT were more used to taking medication for their pain and so may have more readily resumed it. The difference may also relate to differences in the health systems in the two countries and the relative proportions of insurance compensation cases in the two programmes. Anecdotally, a number of former ADAPT patients have reported that their lawyers, some medical examiners and even some judges have commented to them (after ADAPT) that they couldn't be in that much pain as they weren't taking any medication. Thus, there may be greater social pressure to take medication for pain in this country compared to the UK.

Implementation of pain management strategies for the 123 (60% of 205) telephone responders, including non-programme completers, was continued at a more than sometimes level by 60%. Key strategies of the programme, problem solving and pacing activities, were used more often than sometimes by 59.1% and 76.7% (of 123 of 205), respectively. Other strategies thought not to be helpful were being used much less. Those strategies that are thought to be helpful were reported by the subjects as being used in most instances. However, there were many who continued to use unhelpful strategies for pain management.

As noted earlier, few previous studies have reported continued use of self-management strategies. Williams et al.(1993) reported at six months use of relaxation (36.1%), (general) coping strategies (74.8%), and exercises and stretches (56.6%). Williams et al. (1996), reported at one year follow-up use of pacing strategies (62% inpatients and 43% outpatients), stretches daily (55% and 41%), exercising a minimum of five times per week (43% and 32%). The results for the current study, coming from a similar programme, especially for inpatients, to the one described by Williams et al. (1993, 1996), are clearly consistent with those reported in those studies, but they are also more comprehensive and cover a much longer time span than those reported by the London group. Interestingly, the greater practice of strategies by the inpatient group in the Williams et al. (1996) study, who also had better overall outcomes than the outpatient group in that study, are more consistent with the practice reports by the patients in the present study. This suggests that the intensity and amount of time on the programme may have an important influence on the continued practice of these strategies. The Williams et al. inpatient group received daily treatment (4.5 days) for 4-weeks (a little under 144 hours), while the outpatient group in that study received 3.5 hours on one day for 8 weeks (28 hours). In contrast, the ADAPT group received daily treatment for 3 weeks (about 116 hours). All three groups received basically the same approach with the same manual.

Attempts have been made in some studies to screen entry to treatment according to predictions of success (Lanes et al., Roberts and Reinhardt, 1980); whereas Maruta (1996) rated subjects at the end of treatment as 'successes', 'partial successes' or 'failures'. From the current study, one message is clear, that long-term outcome of

treatment is not immediately predictable as the maintainers and relapsers were no different on their outcome measures at the end of treatment. It is possible that some other factors, such as cognitive factors (self-efficacy beliefs and catastrophising) could provide pointers (Coughlan et al., 1995), but these were not examined in the present study.

Outcome comparisons with other programmes are difficult to make because there are many differences in length of treatment; programme goals; content of programmes; contact hours per component; staffing; expectations of daily practice of components; setting (ie. inpatient or outpatient); expectations of staff and patients; family involvement; follow-up; measures used. Peters and Large (1990), noted treatment components changed in response to staffing levels and availability of resources. They encouraged more consistency with treatment content. The range of outcomes of other programmes can be seen in Table... and include disability, mood, pain rating, medication use, distress, adherence to treatment, self-efficacy, catastrophizing, return to work or meaningful activity and compensation status. Some studies have as few as two outcomes. There is also wide variation in measures used between studies. Measures used in this study were consistent with some earlier studies (eg. Flavell et al., 1996; Nicholas et al., 1991, 1992; Williams et al., 1993, 1996, 1999) but not in all cases.

Adherence to treatment is difficult to assess but the results of this study show that overall, subjects who have continued to use pain self-management have largely maintained post treatment results. Interestingly, the high rates of continued practice of self-management strategies are considerably higher than found in many previous

studies with non-pain samples (eg. Meichenbaum and Turk, 1987; Nicholas, 1995). This may reflect the focus on relapse prevention and the importance of maintaining these strategies taken during the programme – all of which have been recommended in the relapse prevention literature (Meichenbaum and Turk, 1987; Turk and Rudy, 1991). No doubt the regularity of use of strategies has varied at times, as is normal for anyone with a regimen to follow, but overall, maintenance has been achieved with strategies having become integrated into the subjects' lifestyles. Subjects reported times when they stopped using the strategies but resumed them when they started to get into difficulties, realising they couldn't do as well without using them. They also reported use of strategies having become 'second nature' and that they were no longer needing to think about them. Some stated it had taken up to two years to accept they needed to keep up using strategies; some only accepted this when they had a goal to achieve, such as return to work – because there was no other choice. Clearly in regard to the 'relapser' group, there is further work to be done in fully implementing the strategies. Other factors which may have an unhelpful influence in the use of strategies are environmental factors of reinforcement in the home from spouse and/or family, the role and advice of the treating doctor who may reinforce unhelpful strategies, work environment, social support environment and the goals of the patient himself. Areas not explored in this study are the influence of the patient's beliefs about pain and its meaning; the role of litigation and 'guidance' from solicitors in mitigating the patients' circumstances for best outcome of the case.

Lanes et al.(1995), rated programme effectiveness by return to work, with expectations of longer time to follow-up being equated with expected poorer employment outcomes. Return to work results in the present study show, of the

maintainers 26.1% working, retraining or doing voluntary work at pre-treatment, with 59.3% unemployed due to pain. In the relapsers group (at pretreatment), 33.4% were working or retraining, and 66.7% were unemployed due to pain. At follow-up 62.1% of maintainers were working, retraining or doing voluntary work, with 21.9% unemployed due to pain. Of the relapsers at follow-up 33.4% were working, retraining or doing voluntary work, with 44.4% unemployed due to pain. Of note is the difference between maintainers and relapsers, where maintainers had increased by three times the number working full time, whereas the relapsers had increased from none to only one working full time.

Advocating refresher courses post treatment, as Lanes suggests, may be helpful but as only one third of patients return for the ADAPT programme six months and twelve months follow-ups, it may not be supported by patients or third party payers. It may also be unnecessary based on this study's results where time is a factor in integrating the strategies which enable return to work to be achieved. Linton et al. (1997) also found that follow-up support groups did not enhance long term outcomes in patients with chronic back pain.

Use of medical services was not a major focus of this study but results show they were greatly reduced, with relapsers using more services, especially rheumatologists and psychologists. There was reduced use of specialists, notably few pain management specialists, and low use of radiography. This would indicate that the majority was not seeking further investigations. Reports from responders indicated that they had learnt through the programme pain does not equal damage, that medications are not helpful for chronic pain and that doctors are unable to offer anything to help. These results indicate the majority had confidence in managing

pain themselves. Some reported occasionally going along to their GP to talk things over about the pain, but not expecting any treatment; others reported a need to keep the doctor up to date, while not expecting treatment. Overall, it seemed that the higher users of further medical and other health services in the period after ADAPT were a small group who went quite often. This group would seem to warrant further investigation and assistance. The result of this study would seem to suggest that this group especially need help in maintaining their self-management strategies as the data show that when they were doing them consistently in the programme they were functioning as well as those who became the maintainers. This may point to a need for further education of healthcare providers generally on the management of ongoing pain (eg Cohen et al., 2000).

### **8.7.1 Issues for the Future**

Medication use had increased at follow up but not to pre-treatment levels. Roughly 50% of those who had ceased at posttreatment had recommenced use, and approximately 40% were using two or more types of medication at follow-up (versus 9% at posttreatment). Opioids were still being used by 42% at follow-up, although the actual doses were not recorded. While this is a reflection of further improvement required by the patients in the use of strategies for managing pain, it may also be part of the process of generalizing strategies. At posttreatment, patients' reduction of medication had only just been achieved, and as this had previously been their main method of coping, it may take longer to consolidate confidence in using the strategies instead. The question of self-report must be raised in post treatment results, but as patients remain autonomous during the programme, there is no other way to ascertain accuracy. These results may reflect the immediate influence of

programme staff 's encouragement to cease medication, and the longer-term reality of managing in normal life. Further study of this topic would be valuable for future outcomes. The development of a standard measure of medication use would also be welcome.

In the future, further study of the use of aids and medication would be of interest.

There were a number of reports from subjects who were using less medication with use of aids as a substitute. However, it remains clear that these patients were not using strategies sufficiently for independent management.

It is of note that the use of stretches was statistically significant. Patients reported, as they have at earlier programme follow-ups, that stretching is invaluable, and if they cease stretching, pain increases. This may be a subject for further study in the physiotherapists' domain.

Working on goals reached the highest statistical significance in differentiating the maintainers from the relapsers. Future programmes may develop a more intense focus on this as it may be a crucial factor for implementing pain management strategies. Perhaps some patients require more focus on goal setting post programme to encourage further integration of the strategies.

Further attention may be given to the two items on the Pain Self-Management Checklist of the 'not recommended' strategies - ie. item 9 (having others do one's normal chores) and item 10 (doing an activity until it is completed regardless of pain). Reinforcement of unhelpful strategies in the home/work environment may

explain others' doing ones' chores, or it may be a compromise which allows the patient to function as normally as possible.

Other factors, not addressed in this study, such as litigation, may be an unhelpful influence to implementation of strategies. However, with the legal system as it is, there is little that can be done to change this. Despite this, some patients report deciding for themselves that they want to get on with life, and negotiate to have their claim settled as soon as possible. Information on those with a current claim and those who have settled post treatment has been gathered, and this would be another area to explore in the future.

Return to work and the role of the rehabilitation provider in encouraging use of strategies to return to retraining/work is another area for study at a later stage.

Overall, the results of this long-term follow-up of a CBT pain management programme should provide encouragement for the continued provision of this treatment in its current form and intensity.

## REFERENCES

- Aker PD, Gross AR, Goldsmith CH, Peloso P. Conservative management of chronic neck pain: systematic overview and meta-analysis. *Brit. Med J* 1996; 313: 1291-6.
- Altmann DG. (1996). *Practical statistics for medical research*. London: Chapman and Hall.
- Altmair EM, Lehmann TR, Russell DW, Weinstein JN, Kao CF. The effectiveness of psychological interventions for the rehabilitation of low back pain: a randomized controlled trial evaluation. *Pain* 1992; 49: 329-335.
- Andersson, H.I., Ejlertsson, G., Leden, I., Rosenberg, C., Chronic pain in a geographically defined general population: study of differences in age, gender, social class and pain localization. *Clin J. Pain*, 1993; 9 174-182.
- Bell JR, Australian trends in opioid prescribing for chronic non-cancer pain, 1986-1996. *Med J Aust* (1997); 167 (1): 9-10.
- Beck AT, Rush AJ, Shaw BF, Emery G. *Cognitive therapy of depression*. New York: Guilford Press, 1979.
- Benson H Greenwood M, Klemchuck H. The relaxation response: psychologic aspects and clinical applications. In Lipowski ZJ, Lipsitt DR, Whybrow PC, editors. *Psychosomatic Medicine: Current trends and clinical applications*. New York, Oxford University press, 1977.

Bergner M, Bobbitt RA, Carter WB, Gilson BS. The Sickness Impact Profile development and final revision of a health status measure. *Med Care* 1981; 19: 787-805.

Beurskens AJ, deVet HC, Koke AJ. Responsiveness of functional status in low back pain: a comparison of different instruments. *Pain* 1996; 65 (1): 71-76.

Beurskens AJ, deVet HC, Koke AJ, van der Heijden GJ, Knipschild PG. Measuring the functional status of patients with low back pain. Assessment of the quality of four disease-specific questionnaires. *Spine* 1995; 20 (9): 1017-28.

Blyth, F. M., March, L.M., Brnabic, A.J.M., Jorm, L.R., Williamson, M., Cousins, M.J. Chronic pain in Australia: a prevalence study, *Pain* 2001; 89: 127-134.

Bogduk, N., (Ed.), What's in a name? The labelling of back pain. *Med J Aust* 2000; 173.

Bonica J.J., *The management of chronic pain*, Lea and Febiger, Philadelphia, 1953

Bonica J.J., The need of a taxonomy ( Editorial ), *Pain*, 1979; 6: 247-252.

Bonica, J.J., Importance of the problem. In Andersson S, Bond M, Mehta M, Swerdlow M, Editors. *Chronic Non-cancer Pain*. Lancaster, MTP Press, 1987.

Bowsher D, Rigge M, Sopp, L. Prevalence of chronic pain in the British population: A telephone survey of 1037 households, *Pain Clinic* 1991; 4: 223-230.

Brattberg G, Thorslund M, Wikman A. The prevalence of pain in a general population. The results of a postal survey in a county of Sweden, *Pain* 1989; 37:215-222.

Chaplan SR, Sorking LS. Agonizing over pain terminology. *Pain Forum* 1997; 6: 81-87.

Cinciripini, P.M. and Floreen, A., An evaluation of a behavioural programme for chronic pain, *J. Behav. Med.*, 5 (1982) pp.375-389.

Coda, B.A. and Bonica, J.J., General considerations of Acute Pain. In J.D.Loser, (Ed.), S.H.Butler, C.R. Chapman., D.C.Turk (Assoc. Eds), *Bonica's Management of Pain*, Third Edition, Lippincott Williams and Wilkins, 2001, pp. 222

Cohen, M., Nicholas, M.K., and Bland, A., Medical assessment and management of work-related low back and neck/arm pain, *Occup. Health Safety Ast NZ* 2000;16 (4): 307-317.

CoreyDT, Etlin D, Miller PC. A home-based management and rehabilitation program: An evaluation. *Pain* 1987; 29: 2190230.

Coughlan GM, Ridout KL, Williams AcdeC, Richardson PH. Attrition from a painmanagement programme. *Br J Clin Psychol* 1995; 34 (3): 471-479.

Crombie, I.K., Davies H.T.O.and MacRae, W.A., The epidemiology of chronic pain: Time for new directions, *Pain* 1994; 57: 1-3

Crook, J., Rideout,E., & Browne, G., The prevalence of pain complaints in a general population, *Pain* 1984; 18:219-314.

DeyoRA, Battie M, Beurskens AJ, Bombardier C, Croft P, Koes B, MalmivaaraA, Roland M, von Korff M, Waddell g. Outcome measures for low back pain research. A proposal for standardized use. *Spine* 1998; 23 (18): 2003-13.

Feine, J.S. and Lund, J.P. An assessment of the efficacy of physical therapy and physical modalities for the control of chronic musculoskeletal pain. *Pain* 1997; 71: 5-23.

Flavell HA, Carrafa GP, Thomas CH, Disler P. Managing chronic neck pain: impact of an interdisciplinary team approach. *Med J Aust* 1996; 165: 253-255.

FlorH, Fydrich T, Turk DC. Efficacy of multidisciplinary pain treatment centers: a meta-analytic review. *Pain* 1992; 49: 221-230.

Fordyce WE. Editor. *Back pain in the Workplace: Management of Disability in Non-Specific Conditions*. Task Force on Pain in the Workplace. Seattle, IASP Press, 1995. Fordyce WE, Fowler, R.S DeLateur, B.J. An application of behaviour modification technique to a problem of chronic pain. *Behav Res Ther* 1968a; 6: 105-107.

Fordyce. W. E. *Behavioural methods for chronic pain and illness*. St Louis, C.V. Mosby, 1976.

Fordyce. W. E., Fowler, R.S., Lehmann, S.F., DeLateur, B.J. Some implications of learning in problems of chronic pain. *J Chron Dis* 1968b; 179-186.

Fordyce. W. E., Fowler, R.S., Lehmann, S.F., DeLateur, B.J. Sand, P.L., and Treischmann, R.B., Operant conditioning in the treatment of chronic pain, Arch. Phys. Med. Rehab 1973; 54: 399-408.

Frank, A., A regular review: low back pain, BMJ, 306, 1993

Frymoyer, J. and Cats-Baril, W., An overview of the incidences and costs of low back pain, Orthop. Clin. North Am. 1991; 22: 263-271

Gil KM, Ross SL, Keefe FJ. Behavioural treatment of chronic pain: four pain management protocols. In France RD, KrishnanKRR, editors. Chronic Pain. Washington. American Psychiatric Press Inc., 1988 pp. 376 –413.

Grellman , R.J., Inquiry into Workers' Compensation System in NSW, Final Report, Dept. of the Attorney-General, 1997.

Guides to the Evaluation of Permanent Impairment, Fourth Edition, American Medical Association

Hadler N.M. Knee pain is the malady – not osteoarthritis, Ann. Intern. Med 1992; 116: 598-599.

Hadler, N.M., Occupational Musculo-Skeletal Disorders, Raven Press, New York, 1993

Hadler, N.M., The injured worker and the internist, *Ann. Intern. Med* 1994;120: 163-164.

Haynes RB, Dantes R Patient compliance and the conduct and interpretation of therapeutic trials. *Con Clin Trials* 1987; 8: 12-19.

IASP Classification of Chronic Pain, Second Edition, (Eds.) Mersky, H. & Bogduk, N., IASP Press, 1994 p. *Ix-xv*

Jacobson, L.J. and Mariano, A.J., General Considerations of Chronic Pain: In J.D.Loser, (Ed.), S.H.Butler, C.R. Chapman., D.C.Turk (Assoc. Eds), *Bonica's Management of Pain*, Third Edition, Lippincott Williams and Wilkins, 200. pp 241-254.

Jensen, M.P., Storm, S.E., Turner, J.A., Romano, J.M., Validity of Sickness Impact Profile Roland scale as a measure of dysfunction in chronic pain patients. *Pain*, 1992; 50: 157-162.

Jensen, MP, Turner, JA, Lawler BK. Romano, J.M Relationship of pain-specific beliefs to chronic pain adjustment. *Pain* 1994; 57: 301-309.

Karoly, P. and Jensen, M.P., *Multimethod Assessment of Chronic Pain*, Pergamon, New York, 1987.

Kendall NAS, Thompson BE. A pilot programme for dealing with the comorbidity of chronic pain and long-term unemployment. *J Occ Rehab* 1998; 8 (1): 5-26.

Kerns RD, Haythornthwait JA, Depression among chronic pain patients: cognitive-behavioural analysis and effect on rehabilitation outcomes. *J Con Clin Psychol* 1988;56: 870-876.

Kerns, R.D. and Jacob, M.C. Assessment of the psychosocial context of the experience of chronic pain. In D.C.Turk and R.Melzack (Eds.), *Handbook of Pain Assessment* New York: Guildford Press, 1992. pp. 235-253.

Kerns, R.D., Turk, D.C. and Rudy, T.E., The West Haven – Yale Multidimensional Pain Inventory, (WHYMPI), *Pain* 1985; 23: 345-356.

Khatami M, Rush AJ. A one year follow up of the multimodal treatment for chronic pain. *Pain* 1982; 14:45-52.

Koes BW, Assendelft WJJ, van der Heijden GJMG, Bouter LM. Spinal manipulation for low back pain: an updated systematic review of randomized clinical trials. *Spine* 1996; 21 (24): 286-273.

Lacks, P., Behavioural Treatment for Persistent Insomnia, Pergamon, New York, 1987

Lemrow, N., Adams, D., Coffey, R., et al. The 50 most frequent diagnosis-related groups (DRG's), diagnoses and procedures: statistics by hospital size and location, DHS Publication no. (PHS) 90-3465, Hospital Studies Programme Research Note 13, Agency for Health Care Policy and Research,, Public Health Service, Rockville, Md. 1990.

Linton SJ, Hellsing AL, Larsson I. Bridging the Gap: Support groups do not enhance long-term outcome in chronic back pain. Clin J Pain 1997; 13 (3): 221-228.

Linton SJ, Ryberg M. A cognitive- behavioural group intervention as prevention for persistent neck and back pain in a non-patient population: a randomized controlled trial. Pain 2001; 90:83-90.

Loeser JD, Cousins MJ, Contemporary Pain Management. Med J Aust 1990; 153:208-216.

Lutz RW, Silbret M, Olshan N. Treatment outcome and compliance with therapeutic regimes: long-term follow up of a multidisciplinary pain unit treatment programme. Clin J Pain 1983; 17: 301-308.

Magni, G., Marchetti, M., Moreschi, C., Merskeu, H., Rigatti-Luchini, S., Chronic musculoskeletal pain and depressive symptoms in the National Health and Nutrition Examination. I. Epidemiologic follow-up study. *Pain* 1993, 53: 163-168.

Maniadakis, N. and Gray, A., The economic burden of back pain in the U.K., *Pain* 2000;84:95-103.

Mantyselka, P., Kumpusalo, E., Ahonen, R., Kumpusalo, A., Kauhanen, J., Viinamaki, Halonen, P., Takala, J., Pain as a reason to visit the doctor: a study in Finnish primary health care, *Pain* 2001; 89: 175-180.

Maruta T, Malinchoc M, Offord KP, Colligan RC. Status of patients with chronic pain 13 years after treatment in a pain management center. *Pain* 1998; 74: 199-204.

Maruta T, Vaterot MK, McHardy MJ. Pain management and an antidepressant: Long-term resolution of pain-associated depression. *Pain* 1989; 36: 335-8.

McQuay H.J., Moore, R.A, Eccleston, L., et al. Systematic review of outpatient services for chronic pain control. *Health Technology Assessment* 1997;1(6).

Mersky, H., and Bogduk, N., (Eds.), *Classification of Chronic Pain: Descriptions of Chronic Pain Syndromes and Definitions of Pain Terms*. 2nd. Ed.. IASP Press. Seattle. 1994

- Molloy A R, Blyth FM, and Nicholas MK. (Eds.) Disability and work-related injury: time for a change? *Med J Aust* 1999; 170: 150-151.
- Morin, CM, Kowatch R.A, Wade JB. Behavioural management of sleep disturbances secondary to chronic pain, *J. Behav. Ther. Exp. Psychiatry* 1989;20: 295-302.
- Morley S, Eccleston,, and Williams A. C de C. Systematic review and met-analysis of randomized controlled trials of cognitive-behaviour therapy and behaviour therapy for chronic pain in adults, excluding headache, *Pain* 1999; 80: 1-13.
- Nachemson, AL. Newest knowledge of low back pain, *Clinical Orthopaedics and Related Research* 1992; 279: 8-20.
- Nicholas MK. Self-efficacy and chronic pain. Paper presented at the annual conference of the British Psychological Society. St. Andrews, 1989
- Nicholas, MK. Chronic pain. In Wilson, PH. *Principles and Practice of Relapse Prevention*. New York, The Guildford Press,1992.
- Nicholas MK. Wilson PH, Goyen J. Operant-behavioural treatment for chronic low back pain. *Behav Res Ther* 1991; 29: 223-238.

Nicholas MK, Wilson PH, Goyen J. Comparison of cognitive-behavioural group treatment and an alternative non-psychological treatment for chronic low back pain. *Pain* 1992; 48: 339-347.

Nicholas, M.K. Theory and Practice of cognitive behavioural programmes. In Campbell JN. Editor. *Pain 1996 – An Updated Review*. Seattle, IASP Press, 1996. pp 297-304.

Nicholas, M.K., Compliance: A barrier to occupational rehabilitation? *Journal of Occup. Rehab* 1995 (4): 271-282.

Nicholas, M.K., Pain Self-Management Checklist - Self Rated, ( PSMC-SR1 ), 1999. In: *Practical and Positive Ways of Adapting to Chronic pain, Manage Your Pain*. Nicholas, MK, Molloy AR, Tonkin L, BeestonLR. ABC Books. (2000).

Peters JL, Large RG. A randomized control trial evaluating in- and outpatient pain management programmes, *Pain* 1990; 41: 283-293.

Phillips, H.C. The effects of behavioural treatment on chronic pain, *Behav. Res. Ther* 1987; 25 (4): 365-377.

Phillips, H.C *The psychological management of chronic pain: a treatment manual*. New York: Springer, 1988.

Pither, C.E., Nicholas, M.K. Identification of iatrogenic factors in the development of chronic pain syndromes: abnormal treatment behaviour? In Bond, M.R., Charlton, J.E. and Wood, C.J. (eds). Proceedings of the V1th. World Congress on Pain. Amsterdam. Elsevier, 1991. pp 429-434.

Pither, C.E., Nicholas, M.K. Psychological approaches in chronic pain management. Brit Med Bull 1991; 47 (3), 743-761.

Raspe, H., Back pain. In. A.J.Silman and M.C. Hochberg, (Eds) Epidemiology of the Rheumatic Diseases, Oxford University Press, Oxford, 1993

Roberts AH, Rheinhardt L. the behavioural management of chronic pain: Long-Term follow-up with comparison groups. Pain 1980; 8: 151-162.

Roland M, Morris R, A study of a natural history of the back pain, part 1: Development of a reliable and sensitive measure of disability in low back pain. Spine 1983; 8: 141-144.

Rudy TE, Turk DC, Brody MC. Quantification of biomedical findings in chronic pain: problems and solutions. In Turk DC, Melzack, editors. Handbook of pain Assessment. New York: Guildford Press. 1992. pp 447-469.

Schonstein E. Kenny DT. Diagnosis and treatment recommendations on workers compensation medical certificates. Med J Aust 2000; 173: 419-422.

Sharp L, Sensky T, Timberlake N, Ryan B, Brewin CR, Allard S. A blind, randomized controlled trial of cognitive-behavioural intervention for patients with recent onset rheumatoid arthritis: preventing psychological and physical morbidity. *Pain* 2001;89 (2,3): 275-284.

Sharp TJ, Nicholas MK. Assessing the significance of chronic pain patients: the psychometric properties of significant other questionnaires. *Pain* 2000;88: 135-144.

Spengler, D., Bigos, S., Martin, M.A., Zeh, J., Fisher, L., and Nachemson, A. Back injuries in industry: a retrospective study. I. Overview and cost analysis, *Spine* 1986; 11: 241-245.

Sternbach R. A., Pain and hassles in the United States: findings of the Nuprin Pain Report, *Pain* 1986: 27.

Tabachnick BG, Fidell LS. (1996) *Using multivariate statistics* (3<sup>rd</sup>.ed.). New York: Harper Collins.

Turk DC Biopsychosocial perspective in chronic pain. In Gatchel RJ, Turk DC, editors. *Psychological Approaches to Pain Management: A Practitioner's Handbook*. New York, Guildford Press, 1996. PP 3-36.

Turk, D.C., Meichenbaum, D. and Genest, M., *Pain and Behavioural Medicine: A Cognitive-Behavioural Perspective*, Guildford Press, New York, 1983

Turk, D.C. Okifuji., Pain Terms and Taxonomies of Pain. In Bonica's Management of Pain, J.D.Loser, (Ed.), S.H.Butler, C.R. Chapman., D.C.Turk (Assoc. Eds), Lippincott Williams and Wilkins, 2001.pp 17-25.

Turk, D.C., and Rudy, T.E., Neglected factors in chronic pain patients treatment outcome studies – referral patterns, failure to enter treatment, and attrition. Pain 1990; 43: 7-25.

Turk, D.C., Rudy, T.E., Neglected topics in the treatment of chronic pain patients - relapse, non-compliance, and adherence enhancement, Pain 1991; 44:5-28.

Turk DC, Rudy TE, Kubinski JA, Zaki HS Greco CM. J Consult Clin Psychol 1996; 64: 139-146.

Turner JA. Comparison of group progressive-relaxation training and cognitive-behavioural group therapy for chronic low back pain. J Consult Clin Psychol 1982; 50: 757-765.

Turner JA, Calsyn DA, Fordyce WE, Ready LB. Drug utilization patterns in chronic pain patients. Pain 1982; 12: 357- 363.

Vlaeyen JWS, Kole-Snidjers AMJ, Rotteveel AM, Ruesink R, Heuts PHTG. The role of fear of movement/ (re)injury in pain disability. J Occup Rehab 1995; 5:235-252.

Volinn, E., Theories of back pain and health care utilization, *Neurosurg.Clin. N. Am.*, 1991; 2: 739-748.

VonKorff M. Studying the natural history of back pain. *Spine* 1994; 19 (18 Suppl):2041S-2046S.

Von Korff M, Dworkin SF, le Resche L, Kruger A. An epidemiologic comparison of pain complaints, *Pain* 1988; 32(2):173-83.

Waddell G, Turk DC. Clinical assessment of low back pain. In Turk DC, Melzack R, editors. *Handbook of Pain Assessment*. New York Guildford Press 1992. pp. 15-36.

Wall, P.D., Introduction . In: P.D. Wall and R Melzack ( Eds. ) *Textbook of Pain*, 2<sup>nd</sup>. Ed., Edinburgh Churchill Livingstone, 1989. pp.9-16.

Wall, P.D. The John J. Bonica Distinguished Lecture: Stability and instability of central pain mechanisms. In: R. Dibner, G.F. Gebhart and M.R. Bond (Eds.), *Proceedings of The Vth. World Congress on Pain, Pain Research and Clinical Management, Vol.3, Amsterdam, Elsevier, 1998*

Williams A. C. de C. Nicholas M.K, Pither, CE, Justins D M, Chamberlain JH, Harding VR, Ralphs JA, Jones SC, Dieudonne I, Featherstone JD, Hodgson DR, Rideout KL., Shannon EM. Evaluation of a cognitive behaviour programme for

rehabilitating patients with chronic pain, *British Journal of General Practice* 1993; 43: 513-518.

Williams, A. C. de C. Richardson PH. What does the BDI measure in chronic pain? *Pain* 1993; 55:259-266.

Williams, A. C. de C, Richardson PH, Nicholas, M.K, Pither CE, Harding R, Ridout, KL, Ralphs, JA, Richardson IH, Justins DM Chamberlain JH. Inpatient vs. outpatient pain management: results of a randomized control trial. *Pain*; 66:13-22.

Williams, A. C. de C, Nicholas MK, Richardson PH, , Pither CE, Fernandes J. generalizing from a controlled trial: the effects of patient preference versus randomization on the outcome of inpatient versus outpatient chronic pain management. *Pain* 1999; 83: 57-65.

World Health Organization, *International Classification of Impairments, Disabilities and Handicaps*, World Health Organization, Geneva 1980

## LETTER TO ACCOMPANY QUESTIONNAIRE

Dear

Thank you for agreeing to participate in our survey of former ADAPT patients. We are very interested in your progress since you attended the ADAPT programme.

As mentioned on the telephone we would like you to complete the enclosed questionnaires and post them back as soon as possible. A stamped, addressed envelope is included.

These are the same questionnaires you have done previously at the clinic. Your co-operation in completing these questionnaires will allow us to look at how you are managing life with pain compared with a couple of years ago

Along with the responses from the other patients, your feedback will help us to improve our understanding of the ways in which people with chronic pain manage their pain over the long-term. This information will be helpful in improving our ability to help people with chronic pain.

It also allows us to compare your progress with others who have done ADAPT more than two years ago.

Results of this survey will be posted to you in early 2001.

Would you please complete all questions in the questionnaire? I suggest you do them today if possible. May I also suggest you answer each question quickly without, dwelling on which is the best answer. Remember, there are no right or wrong answers. We simply want your views.

**Please check carefully that you have answered all questions on both sides of the page.**

Place the questionnaire in the stamped addressed envelope provided and post immediately.

Your early response is greatly appreciated.

Thank you very much for your co-operation in being involved in this important survey. Please feel free to call us if you have any further questions.

Yours sincerely,

Lee Beeston

Dr Michael Nicholas  
PhD Mpsychol MSc(Hons) Bsc  
Director of ADAPT Programme

Dr Allan Molloy  
FFARCS  
Director of Chronic and Cancer Pain Program  
Pain Management and Research Centre

## **Patient Telephone Questionnaire**

### **Method**

Contact by telephone with all patients in the selection will be attempted in the first instance by the author.

**Hours of telephoning** . 5.30pm – 8.00pm Monday to Friday  
9.00am – 6.00pm Saturday and Sunday

**Call attempts.** Maximum of 5

### **Phone number clarification.**

If the phone appears to have been disconnected, check with Telecom Directory Assistance and general practitioner.

### **Encouraging high response rate.**

When contact is made with the patient, if at all possible the interview will be conducted at the time.

If this is inconvenient, an appointment will be arranged for as soon as possible afterwards.

If an answer machine responds, a message will be left on the answer machine with the approximate time of the author repeating the call or giving the patient the option of returning the call within given times.

If the patient returns the call, the author will immediately use her telephone to ring the patient so that the patient will not incur cost of calling from an STD area.

**Recording contact with patients.( see Spreadsheet)**

QUESTIONNAIRE  
INTRODUCTION

NAME  
ID NO.

**Record results of phone calls on contact sheet**

Hullo..... This is Lee Beeston from the ADAPT Pain Management Programme, at the Royal North Shore Hospital. I am undertaking a follow up of people who have completed the ADAPT programme more than two years ago. We are very interested to know how people are managing life with pain following attendance of ADAPT. Would you be willing to answer some questions for me, please? This should take approximately 20 minutes of your time. If now is not a convenient time to talk, I could call again at a time that would be more suitable.

First I'd like to ask you about your pain and I'm talking about the chronic pain you had at the time of attending ADAPT.

**PAIN**

**Question 1:** Have you developed any other painful conditions since attending ADAPT?

Yes

No

Are you still experiencing those pains?

Yes

No

**Question 2:** Do you still have the same chronic pain condition you had when you came to the programme over 2 years ago?

Yes.

No.

If yes... Is it present      all the time  
   comes and goes

**Question 3:** Could you rate how severe your pain has been on average over the last week on a scale of 0 to 10, where

0 = no pain

10 = worst pain imaginable

Score =

**Question 4:** In general, has your pain changed at all since you attended ADAPT?

For example,

Has it stayed much the same as before ADAPT?

Has it got any worse?

Has it got any better?

**Question 5:** In general, over the last 6 months, how much has your pain interfered with your day-to-day activities?

On a 0 to 6 scale, where 0 = no interference  
and 6 = extreme interference

Score =

**Question 6:** In general, over the last six months, how distressing has your pain been?

On a 0 –10 scale, where 0 = not at all distressing  
and 10 = extremely distressing

Score =

### **FUNCTION**

Now I'd like to ask you about your daily activities.

**Question 7:** In the past 6 months **because of your pain**, have you needed help from family/friends or paid help around the home or with personal tasks?

Yes

No

**If no, go to question 10.**

**Question 8:** What sort of help did you need? Answer yes or no to these as I read each one out to you. Was it (tick if applicable)

Help with housekeeping

Help with shopping

Help with transport

Help with caring for children

Help with gardening

Help with heavy outdoor tasks

**Question 9:** How often did you need help? Say yes or no to these as I read each one out to you.

**Help with housekeeping**

Every day

On 2-3 days in a week

1-4 days in a month

Hardly ever

**Help with shopping**

Every day

On 2-3 days in a week

1-4 days in a month

Hardly ever

**Help with transport**

Every day

On 2-3 days in a week

1-4 days in a month

Hardly ever

**Help with caring for children**

Every day

On 2-3 days in a week

1-4 days in a month

Hardly ever

**Help with gardening**

Every day

On 2-3 days in a week

1-4 days in a month

Hardly ever

**Help with heavy outdoor tasks**

Every day

On 2-3 days in a week

1-4 days in a month

Hardly ever/never

Now I would like to ask you about work

**Question 10:** How would you describe your current employment status? Are you

Employed full-time(include self-employed)

Employed part-time(include self-employed)

Casual employment

Unemployed

**If working, go to question 12.**

**Question 11:** Say yes or no to each of these as I read them out to you. If not working, are you

Retraining

Involved in rehabilitation (activities with rehab provider)

Job-seeking

Certified unfit for work

Occupied with home duties

Student

Retired

Voluntary worker

**If one of these answers is ticked, go to question 17.**

**Question 12:** Do you have the same employer as before attending ADAPT?

Yes

No

**Question 13:** Is it the same type of work you did before the onset of your chronic pain condition?

Same

Different

What type of work is it?

**If different, go to question 15.**

**Question 14:** Have the duties been modified since the onset of your chronic pain condition?

Yes

No

**Question 15:** How long have you been employed in this position?

Years \_\_\_\_\_

Months \_\_\_\_\_

Weeks \_\_\_\_\_

**Question 16:** How many hours per day and days per week do you work?

Hours per day \_\_\_\_\_

Days per week \_\_\_\_\_

**Question 17:** If you had a workers' compensation claim in relation to your pain, has that been settled?

Yes

No

Was the settlement satisfactory?

Yes

No

**Question 18:** In the past month, have you participated in any of the following leisure pursuits? Say yes or no to each of these as I read them out to you. Tick if applicable.

Walking

Running or jogging

Swimming

Golf

Tennis/squash

Dancing

Bowls

Camping

Fishing

Movies

Dinner with family, friends

Picnics,

Barbecues

Holidays

Participating in an interest group

Doing a course

Doing a hobby

Other \_\_\_\_\_

### **MOOD**

Now, I would like to ask you how you've been feeling lately.

**Question 19:** How would you rate your overall mood during the past month

On a scale of 0 –6,

where 0 = extremely low mood (very depressed)

and 6 = extremely high mood (very happy)

Score =

**SLEEP**

Now, I'd like to ask you about your sleep.

**Question 20:** How satisfied have you been with your sleep in the past month?

On a scale of 0 to 6 where

0=not at all satisfied

6=completely satisfied

Score =

**STRATEGIES**

Now, I'd like to ask you about your use of the pain management strategies you learnt in ADAPT.

**Question 21:** In the past month, how often have you used these strategies?

**Pacing activities**

Hardly ever

Once per day

More than once per day

**Relaxation**

Hardly ever

Once per day

More than once per day

**Challenging unhelpful thoughts**

Hardly ever

Once per day

More than once per day

**Stretches**

Hardly ever

Once per day

More than once per day

**Exercises**

Hardly ever

Once per day

More than once per day

( Have you incorporated exercise into your daily activities?

(

(Yes

No

**Walking for exercise**

Hardly ever

Once per day

More than once per day

**Working on achieving goals you have set**

Hardly ever

Once per day

More than once per day

**TREATMENT**

Now, I'd like to ask you about any treatment you might have had for your chronic pain condition since ADAPT.

**Question 22:** In the past six months, about how many times have you seen your general practitioner?

0 – 5 times

5 – 10 times

More than 10 times

**Question 23:** Were any of these visits related to your chronic pain condition?

Yes      How many?

No                      **If no, go to question 25.**

**Question 24:** What was the reason for the consultation? (Tick applicable)

To get a prescription for medication for your chronic pain condition

To get help for a flare up of your chronic pain condition

To find out the cause of the chronic pain condition

To get an injection for the chronic pain condition

To get a referral for more investigations

To get a referral for more treatment

Other reason

**Question 25:** In the past six months, have you had any of the following tests or treatments for your chronic pain? (Tick applicable)

X-ray

Cat scan

MRI scan

Hospital admission

Surgery

Other

**Question 26:** In the past six months, have you seen any of the following doctors about chronic pain?

Pain management specialist

Rehabilitation Physician

Anaesthetist

Orthopaedic surgeon

Neurologist

Neurosurgeon

Rheumatologist

Psychiatrist

**Question 27:** How many times have you seen this doctor in the past six months about your chronic pain condition?

Number of times:

Pain management specialist \_\_\_\_\_

Anaesthetist \_\_\_\_\_

Orthopaedic surgeon \_\_\_\_\_

Neurologist \_\_\_\_\_

Neurosurgeon \_\_\_\_\_  
 Rheumatologist \_\_\_\_\_  
 Psychiatrist \_\_\_\_\_  
 Rehabilitation Physician \_\_\_\_\_

**Question 28:** Which one of these health professionals have you seen in the past six months about pain? (Tick applicable)

Physiotherapist  
 Psychologist  
 Hydrotherapist  
 Chiropractor  
 Hypnotherapist  
 Occupational therapist  
 Acupuncturist  
 Pharmacist

**Question 29:** About how many times have you seen this practitioner in the last six months about your chronic pain condition?

Number of times:

Physiotherapist \_\_\_\_\_  
 Psychologist \_\_\_\_\_  
 Hydro therapist \_\_\_\_\_  
 Chiropractor \_\_\_\_\_  
 Hypnotherapies \_\_\_\_\_  
 Occupational therapist \_\_\_\_\_  
 Acupuncturist \_\_\_\_\_  
 Pharmacist \_\_\_\_\_

**Question 30:** In the last six months, have you sought help from any of the following practitioners to do with your chronic pain condition ? (Tick applicable)

Herbalist  
 Naturopath  
 Homeopath  
 Osteopath  
 Masseur  
 Other

**If none, go to question 32.**

**Question 31:** How many times have you seen this practitioner in the past six months?

Number of times:

Herbalist \_\_\_\_\_  
 Naturopath \_\_\_\_\_  
 Homeopath \_\_\_\_\_  
 Osteopath \_\_\_\_\_  
 Masseur \_\_\_\_\_  
 Other \_\_\_\_\_

**Question 32:** In the past six months, have you used any prescription, over the counter medication or herbal preparation for your chronic pain condition ?

Yes

No

Refused

**If no, go to question 36.**

**Question 33:** What medications have you used for your chronic pain condition in the past six months?

(Read from list to prompt if the patient is unable to recall the name of the drug. Also prompt with naming categories of drugs.) **Over page.**

**Question 34:** How do you take this medication?(Note quantity, number of tablets or injection and times per day/days per week) **Use record sheet over.**

**Question 35:** How long have you been using this?

Number of days

weeks

months

**Record on record sheet.**

**Question 36:** In the past six months, have you been using any of the following for pain?

Hot packs

Cold packs

TENS

Brace (type)

Hot bath

Hot shower

Cushion/pillow

Walking stick

Crutches

Other aid **Use record sheet next page.**

**Question 37:** For how long at a time and times per day have you been using this?

Hot packs

Cold packs

TENS

Brace (type)

Hot bath

Hot shower

Cushion/pillow

Walking stick

Crutch

Other aid **Use record sheet.**

**Question 38:** In the past month have you been using any of the following to cope with pain and associated problems like tension, and sleep problems?

Alcohol

Yes

No

**If yes, go to question 39.**

Recreational drugs

Yes

No

**If yes, go to question 40. If no to both, go to Self-management Questionnaire.**

**Question 39:** Could I ask about which type of alcohol and how you've been using it?

Beer

Wine

Spirits

Other

**List beside substance on Alcohol and Recreational Drug Record**

**Question 40:** If you have been using recreational drugs, could I ask which substance/s you use and how you have been using it. **Use record sheet.**

Marijuana

Ecstasy

Heroin

Cocaine

Other

Now, I'd like to read out some questions... (self-management checklist)

MEDICATION	STRENGTH	TIMES/day	No. TABS/IM	TIME CONTINGENT	PRN	DAYS/WEEK	TIME USED	PRESC.BY	SIDE-EFF.	BENEFIT
							D,W,M			
NICOTINE										
CAFFEINE										

No. Tabs = number of tablets

Doses = doses per day

Time contingent =use

PRN = when needed, pain contingent

Time used =length of time pt has been taking

D.W.M. = daily, weekly, monthly

ALCOHOL TYPE	NO. DRINKS	TIMES/DAY	DAYS/WEEK	
Beer				
Wine				
Scotch				
RECREATIONAL DRUG	FORM	NO.	TIMES/DAY	DAYS/WEEK
Marijuana	Bong			
	Joint			
	Cone			
Ecstasy				
Heroin				
Cocaine				
Other				

No. drinks = number of drinks/ drugs  
 Times/day = how many times in a day do you c drink/use drug  
 Days/week = how many days in a week do you ou drink/ use drug  
 Time use = how long have you been using alcohol for your chronic pain condition

## Pain Self-Management Checklist - Self Rated (PSMC-SR1)

M.K. Nicholas; University of Sydney Pain Management & Research Centre  
Royal North Shore Hospital, 1999 ©

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

**How often** have you used these pain self-management strategies (**over the last month**). Indicate your answer by circling one of the numbers (0-4) beside each item.

**Thinking back over the last month,  
how often have you done these?**

	Never		sometimes		very often
	0	1	2	3	4
1. If pain stops you doing something, do you ever work out other ways to do it. (Like, if you normally sit to do a task, but find sitting is difficult due to pain, have you worked out other ways to do it? Think of an example).	0	1	2	3	4
2. Taking <u>regular</u> short breaks when engaging in activities, including sitting or standing, which stir-up your pain (such as, stand up for 5 minutes every 20 minutes) .	0	1	2	3	4
3. Thinking that your doctors will find a cure for your pain?	0	1	2	3	4
4. Using pain killers to allow you to do something you know will stir up your pain (like driving or standing too long, or carrying too much).	0	1	2	3	4
5. Taking more than the recommended dose of any drug related to your pain; or using alcohol for pain relief.	0	1	2	3	4
6. Taking a drug which only "takes the edge off" your pain.	0	1	2	3	4
7. Having <u>one</u> or more long rest periods (more than 45 minutes) (lying or sitting) through the day (8.00 am to 8.00 pm).	0	1	2	3	4
8. Lying in bed at night worrying or getting stressed.	0	1	2	3	4
9. Due to pain, having others perform your normal household duties (like washing-up, cooking, vacuuming).	0	1	2	3	4
10. Doing an activity or task until it is completed <u>regardless</u> of pain and then resting.	0	1	2	3	4
11. Due to pain, using aids (like sticks, braces, or collars).	0	1	2	3	4
12. Seeing a physiotherapist or doctor or chiropractor or other health care provider about your pain (in the last month).	0	1	2	3	4
13. Thinking that increased pain means you might have injured yourself (or made your injury worse).	0	1	2	3	4
14. Thinking that doctors have missed something, or that you need more investigations to explain your pain.	0	1	2	3	4
15. Thinking that pain relief is necessary before you can become more active generally.	0	1	2	3	4
16. When your pain gets worse, do you ever have upsetting thoughts (like, "I can't go on; not again; why me?")	0	1	2	3	4
17. When your pain gets worse, do you ever take a tablet or have an injection?	0	1	2	3	4
18. Do you ever make comparisons between what you are like now and how you were before the onset of pain?	0	1	2	3	4

Finally,

**POST OUT QUESTIONNAIRE**

Would you be prepared to complete a set of questionnaires which you have done previously? This would allow us to compare your progress in managing life with pain compared with a couple of years ago.

Results of this survey will be posted to you in early 2001.

If you agree to complete the questionnaire, it would be important to fill them out quickly and post back immediately in the stamped, addressed envelope provided.

May I send you the questionnaires?

Yes

**Check correct address**

No

Do you have any feedback for us?

Would you be interested in receiving occasional news letters from the ADAPT team about the programme and patients, events such as television programmes covering ADAPT?

Yes

No

Thank you for all your time today in answering these questions. The information you have provided is invaluable to the staff at the Pain Management and Research Centre.

## PATIENT QUESTIONNAIRE

We would like to know how you are managing with your pain now. Please answer the following questions and the attached questionnaire.

Date: \_\_\_\_\_ Name: \_\_\_\_\_

### 1. Please rate the intensity of your pain by circling a number on the following scales.

For every question 0 = "no pain at all" and 10 = "worst pain imaginable"

#### (a) How intense is your Pain at this moment?

0 1 2 3 4 5 6 7 8 9 10  
no pain worst pain  
imaginable

#### (b) What were the highest and lowest levels of your pain in the last week? (make 2 circles)

0 1 2 3 4 5 6 7 8 9 10  
no pain worst pain  
imaginable

#### (c) What was the usual level of your pain in the last week?

0 1 2 3 4 5 6 7 8 9 10  
no pain worst pain  
imaginable

### 2. Please list all the medications you are taking as present:

Medication                      Dose                      How Often?                      Any side effects?                      Date started

.....  
.....  
.....  
.....  
.....  
.....

### 3. What is your current work status? (Please tick ONE)

- 1 [ ] Full-time work                      2 [ ] Part-time work
- 3 [ ] Voluntary work                      4 [ ] Home duties
- 5 [ ] Retired                      6 [ ] Student
- 7 [ ] Unemployed due to pain                      8 [ ] Retraining
- 9 [ ] Unemployed due to other reasons

## Disability Questionnaire

When your pain hurts, you may find it difficult to do some of the things you normally do. This list contains some sentences that people have used to describe themselves when they have pain. When you read them, you may find that some stand out because they describe you today. As you read the list, think of yourself today. When you read a sentence that describes you today, put a (✓) against it. If the sentence does not describe you, then leave the box blank and go on to the next one. Remember, only tick the sentence if you are sure that it describes YOU today.

---

1. I stay at home most of the time because of my pain. ”
2. I change position frequently to try and get my pain comfortable. ”
3. I walk more slowly than usual because of my pain. ”
4. Because of my pain I am not doing any of the jobs that I usually do around the house. ”
5. Because of my pain, I use a handrail to get up stairs. ”
6. Because of my pain, I lie down to rest more often. ”
7. Because of my pain, I have to hold on to something to get out of an easy chair. ”
8. Because of my pain, I try to get other people to do things for me. ”
9. I get dressed more slowly than usual because of my pain. ”
10. I only stand up for short periods of time because of my pain. ”
11. Because of my pain, I try not to bend or kneel down. ”
12. I find it difficult to get out of a chair because of my pain. ”
13. I am in pain almost all the time. ”
14. I find it difficult to turn over in bed because of my pain. ”
15. My appetite is not very good because of my pain. ”
16. I have trouble putting on my socks (or stockings) because of my pain. ”
17. I only walk short distances because of my pain. ”
18. I sleep less well because of my pain. ”
19. Because of my pain, I get dressed with help from someone else. ”
20. I sit down for most of the day because of my pain. ”
21. I avoid heavy jobs around the house because of my pain. ”
22. Because of my pain, I am more irritable and bad tempered with people than usual. ”
23. Because of my pain, I go up stairs more slowly than usual. ”
24. I stay in bed most of the time because of my pain. ”

Center for Pain Evaluation and Treatment  
University of Pittsburgh School of Medicine

MULTIDIMENSIONAL  
PAIN INVENTORY

Today' Date: \_\_\_\_\_

Name: \_\_\_\_\_  
Last First (initial)

Address: \_\_\_\_\_  
No. Street  
\_\_\_\_\_  
City State Postcode

Work phone: (\_\_\_\_\_) \_\_\_\_\_ Home phone: (\_\_\_\_\_) \_\_\_\_\_  
area code number area code number

Age: (in years): \_\_\_\_\_

Date of Birth: Month: \_\_\_\_\_ Day: \_\_\_\_\_ Year: \_\_\_\_\_

When did your pain first start? Month: \_\_\_\_\_ Year: \_\_\_\_\_

**Instruction** An important part of our evaluation includes examination of pain from your perspective because you know your pain better than anyone else. The following questions are designed to help us learn more about your pain and how it affects your life. Under each question is a scale to mark your answer. Read each question carefully and then **circle a number** on the scale under that question to indicate how that specific question applies to you. An example may help you to better understand how you should answer these questions.

**Example**

How nervous are you when you ride in a car when the traffic is heavy?

0 1 2 3 4 5 6  
Not at all Extremely  
Nervous Nervous

If you are not at all nervous when riding in a car in heavy traffic, you would want to circle the number 0. If you are very nervous when riding in a car in heavy traffic, you would then circle the number 6. Lower numbers would be used for less nervousness, and higher numbers for more nervousness.



9. How able are you to predict when your pain will start, get better, or get worse?

0	1	2	3	4	5	6
Not at all able to predict						Very able to predict

10. How much has your pain changed your ability to take part in recreational and other social activities?

0	1	2	3	4	5	6
No change						Extreme change

11. How much do you limit your activities in order to keep your pain from getting worse?

0	1	2	3	4	5	6
Not at all						Very much

12. How much has your pain changed the amount of satisfaction or enjoyment you get from family-related activities?

0	1	2	3	4	5	6
No change						Extreme change

13. How worried is your spouse (significant other) about you because of your pain?

0	1	2	3	4	5	6
Not at all worried						Extremely worried

14. During the past week how much control do you feel that you have had over your life?

0	1	2	3	4	5	6
No control						Extreme control

15. On an average day, how much does your pain vary (increase or decrease)?

0	1	2	3	4	5	6
Remains the same						Changes a lot

16. How much suffering do you experience because of your pain?

0	1	2	3	4	5	6
No suffering						Extreme suffering

17. How often are you able to do something that helps to reduce your pain?

0 1 2 3 4 5 6  
Never Very often

18. How much has your pain changed your relationship with your spouse, family, or significant other?

0 1 2 3 4 5 6  
No change Extreme change

19. How much has your pain changed the amount of satisfaction or enjoyment you get from work?  
( \_\_\_ Check here, if you are not presently working).

0 1 2 3 4 5 6  
No change Extreme change

20. How attentive is your spouse (significant other) to you because of your pain?

0 1 2 3 4 5 6  
Not at all attentive Extremely attentive

21. During the past week how much do you feel that you've been able to deal with your problems?

0 1 2 3 4 5 6  
Not at all Extremely well

22. How much control do you feel that you have over your pain?

0 1 2 3 4 5 6  
No control at all A great deal of control

23. How much has your pain changed your ability to do household chores?

0 1 2 3 4 5 6  
No change Extreme change

24. During the past week, how successful were you in coping with stressful situations in your life?

0 1 2 3 4 5 6  
Not at all successful Extremely successful

25. How much has your pain interfered with your ability to plan activities?

0	1	2	3	4	5	6
No change						Extreme change

26. During the past week how irritable have you been?

0	1	2	3	4	5	6
No at all irritable						Extremely irritable

27. How much has your pain changed or interfered with your friendships with people other than your family?

0	1	2	3	4	5	6
No change						Extreme change

28. During the past week how tense or anxious have you been?

0	1	2	3	4	5	6
Not at all tense or anxious						Extremely tense and anxious

**Section II**

In this section , we are interested in knowing how your spouse (or significant other) responds to you when he or she knows that your are in pain. On the scale listed below each question, circle a number to indicate how often your spouse (or significant other) responds to you in that particular way when you are in pain. Please answer all of the 14 questions.

1. Ignores me.

0	1	2	3	4	5	6
Never						Very often

2. Asks me what he/she can do to help.

0	1	2	3	4	5	6
Never						Very often

3. Reads to me

0	1	2	3	4	5	6
Never						Very often

4. Gets irritated with me.

0	1	2	3	4	5	6
Never						Very often

5. Takes over my jobs or duties.

0	1	2	3	4	5	6
Never						Very often

6. Talks to me about something else to take my mind off the pain.

0	1	2	3	4	5	6
Never						Very often

7. Gets frustrated with me.

0	1	2	3	4	5	6
Never						Very often

8. Tries to get me to rest.

0	1	2	3	4	5	6
Never						Very often

9. Tries to involve me in some activity.

0	1	2	3	4	5	6
Never						Very often

10. Gets angry with me.

0	1	2	3	4	5	6
Never						Very often

11. Gets me pain medication.

0	1	2	3	4	5	6
Never						Very often

12. Encourages me to work on a hobby.

0	1	2	3	4	5	6
Never						Very often

13. Gets me something to eat or drink.

0	1	2	3	4	5	6
Never						Very often

14. Turns on the T.V. to take my mind off my pain.

0	1	2	3	4	5	6
Never						Very often

## PAIN S-E QUESTIONNAIRE (PSEQ)

M.K.Nicholas, 1988  
Pain Management Centre  
St. Thomas Hospital, London

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

Please rate how confident you are that you can do the following things at present, despite the pain. To indicate your answer circle one of the numbers on the scale under each item, where 0 = not at all confident and 6 = completely confident.

For example:

0	1	2	3	4	5	6
Not at all confident						Completely confident

Remember, this questionnaire is not asking whether or not you have been doing these things, but rather how confident you are that you can do them at present, despite the pain.

1. I can enjoy things, despite the pain

0	1	2	3	4	5	6
Not at all confident						Completely confident

2. I can do most of the household chores (e.g. tidying -up, washing dishes, etc.), despite the pain

0	1	2	3	4	5	6
Not at all confident						Completely confident

3. I can socialise with my friends or family members as often as I used to do, despite the pain.

0	1	2	3	4	5	6
Not at all confident						Completely confident

4. I can cope with my pain in most situations

0	1	2	3	4	5	6
Not at all confident						Completely confident

5. I can do some form of work, despite the pain. ("work" includes housework, paid and unpaid work)

0	1	2	3	4	5	6
Not at all confident						Completely confident

6. I can still do many of the things I enjoy doing, such as hobbies or leisure activities, despite the pain.
- 0 \_\_\_\_\_ 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6  
 Not at all \_\_\_\_\_ Completely  
 confident \_\_\_\_\_ confident
7. I can cope with my pain without medication.
- 0 \_\_\_\_\_ 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6  
 Not at all \_\_\_\_\_ Completely  
 confident \_\_\_\_\_ confident
8. I can still accomplish most of my goals in life, despite the pain
- 0 \_\_\_\_\_ 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6  
 Not at all \_\_\_\_\_ Completely  
 confident \_\_\_\_\_ confident
9. I can live a normal lifestyle, despite the pain
- 0 \_\_\_\_\_ 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6  
 Not at all \_\_\_\_\_ Completely  
 confident \_\_\_\_\_ confident
10. I can gradually become more active, despite the pain
- 0 \_\_\_\_\_ 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6  
 Not at all \_\_\_\_\_ Completely  
 confident \_\_\_\_\_ confident

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

### **BECK INVENTORY**

On this questionnaire are groups of statements. Please read each group of statements carefully, then pick out the one statement in each group with best describe the way you have been feeling in the PAST WEEK, INCLUDING TODAY. Circle the number beside the statement you picked. If several statements in the group seem to apply equally well, circle each one.

Be sure to read all the statements in each group before making your choice.

1.    0    I do not feel sad.  
      1    I feel sad.  
      2    I am sad all the time and I can't snap our of it.  
      3    I am so sad or unhappy that I can't stand it.
  
2.    0    I am not particularly discouraged about the future.  
      1    I feel discouraged about the future.  
      2    I feel I have nothing to look forward to.  
      3    I feel that the future is hopeless and that things cannot improve.
  
3.    0    I do not feel like a failure.  
      1    I feel I have failed more than the average person.  
      2    As I look back on my life, all I can see is a lot of failure.  
      3    I feel I am a complete failure as a person.
  
4.    0    I get as much satisfaction out of things as I used to.  
      1    I don't enjoy things the way I used to.  
      2    I don't get real satisfaction out of anything anymore.  
      3    I am dissatisfied or bored with everything.
  
5.    0    I don't feel particularly guilty  
      1    I feel guilty a good part of the time.  
      2    I feel quite guilty most of the time.  
      3    I feel guilty all the time.
  
6.    0    I don't feel I am being punished.  
      1    I feel I may be punished.  
      2    I expect to be punished.  
      3    I feel I am being punished.
  
7.    0    I don't feel disappointed in myself.  
      1    I am disappointed in myself  
      2    I am disgusted with myself  
      3    I hate myself.
  
8.    0    I don't feel I am any worse than anybody else.  
      1    I am critical of myself for my weaknesses or mistakes.  
      2    I blame myself all the time for my faults.  
      3    I blame myself for everything bad that happens.
  
9.    0    I don't have any thoughts of killing myself.  
      1    I have thoughts of killing myself, but I would not carry them out.  
      2    I would like to kill myself.  
      3    I would kill myself if I had the chance.
  
10.   0    I don't cry anymore than usual  
      1    I cry more now than I used to.  
      2    I cry all the time now.  
      3    I used to be able to cry, but now I can't cry even though I want to.

11. 0 I am no more irritated than I ever am.  
 1 I get annoyed or irritated more easily than I used to.  
 2 I feel irritated all the time now.  
 3 I don't get irritated at all by the things that used to irritate me.
12. 0 I have not lost interest in other people.  
 1 I am less interested in other people than I used to be.  
 2. I have lost most of my interest in other people.  
 3. I have lost all of my interest in other people.
13. 0 I make decisions about as well as I ever could.  
 1 I put off making decisions more than I used to.  
 2 I have greater difficulty in making decisions than before.  
 3 I can't make decisions at all anymore.
14. 0 I don't feel I look any worse than I used to.  
 1 I am worried that I am looking old or unattractive.  
 2 I feel that there are permanent changes in my appearance that make me look unattractive.  
 3 I believe that I look ugly.
15. 0 I can work about as well as before.  
 1 It takes an extra effort to get started at doing something.  
 2 I have to push myself very hard to do anything.  
 3 I can't do any work at all.
16. 0 I can sleep as well as usual.  
 1 I don't sleep as well as I used to.  
 2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.  
 3 I wake up several hours earlier than I used to and cannot get back to sleep.
17. 0 I don't get more tired than usual.  
 1 I get tired more easily than I used to.  
 2 I get tired from doing almost anything.  
 3 I am too tired to do anything.
18. 0 My appetite is no worse than usual.  
 1 My appetite is not as good as it used to be.  
 2 My appetite is much worse now.  
 3 I have no appetite at all anymore.
19. 0 I haven't lost much weight, if any lately.  
 1 I have lost more than 5 pounds.  
 2 I have lost more than 10 pounds.  
 3 I have lost more than 15 pounds.
- I am purposely trying to lose weight by eating less.  
 Yes \_\_\_\_\_ No \_\_\_\_\_
20. 0 I am no more worried about my health than usual.  
 1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.  
 2 I am very worried about physical problems and it's hard to think of much else.  
 3 I am so worried about my physical problems that I cannot think about anything else.
21. 0 I have not noticed any recent change in my interest in sex.  
 1 I am less interested in sex than I used to be.  
 2 I am much less interested in sex now.  
 3 I have lost interest in sex completely.

# PRSS

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Most of the time, we have an internal conversation with ourselves. We encourage ourselves, for example, to do certain things, we blame ourselves if we have made a mistake, and we reward ourselves for our accomplishments. When we are in pain, we also say certain things to ourselves that are different from what we say when we are feeling good. Below, are listed typical thoughts of people in pain. Please read each of the statements and then mark how often you have this thought when your pain is severe. Please circle the appropriate number on the scale ranging from:

**0 = almost never to 5 = almost always.**

		<b>Almost Never</b>					<b>Almost Always</b>
1. If I stay calm and relaxed things will be better.....	0	1	2	3	4	5	
2. I cannot stand this pain any longer.....	0	1	2	3	4	5	
3. I can do something about my pain.....	0	1	2	3	4	5	
4. No matter what I do my pain doesn't change.....	0	1	2	3	4	5	
5. I need to relax.....	0	1	2	3	4	5	
6. I'll manage.....	0	1	2	3	4	5	
7. I need to take some pain medication.....	0	1	2	3	4	5	
8. I will soon be better again.....	0	1	2	3	4	5	
9. This will never end.....	0	1	2	3	4	5	
10. I am a hopeless case.....	0	1	2	3	4	5	
11. There are worse things than my pain.....	0	1	2	3	4	5	
12. I'll cope with it.....	0	1	2	3	4	5	
13. When will it get worse again?.....	0	1	2	3	4	5	
14. This pain is killing me.....	0	1	2	3	4	5	
15. I can't go on any more.....	0	1	2	3	4	5	
16. This pain is driving me crazy.....	0	1	2	3	4	5	
17. Distraction helps best.....	0	1	2	3	4	5	
18. I can help myself.....	0	1	2	3	4	5	

UNIVERSITY OF SYDNEY LIBRARY



000000608341389

RARE BOOKS LIB

ALLBOOK BINDERY

91 RYEDALE ROAD  
WEST RYDE 2114

PHONE: 9807 6026