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CHAPTER 8

EVALUATION OF THE EFFECTIVENESS OF A CHRONIC PAIN MANAGEMENT PROGRAMME.

Sarah Collins, Alan Carr & Declan O'Keeffe

INTRODUCTION

Up to a third of the adult population suffer from conditions which entail chronic pain (VonKoroff, Dworkin & Resche, 1990). Thus, at a national level chronic pain is a serious problem with major personal costs such as discomfort and disruption of relationships and major economic costs including work absence and health care resource usage. Since Melzack and Wall (1994) supplanted simplistic sensory theories of pain with the gate-control theory, increasingly sophisticated models of pain have been developed. Currently pain is conceptualized as a multidimensional phenomenon entailing physiological, sensory, cognitive-evaluative, emotional-affective and behavioural interpersonal features (Turk, Meichenbaum & Genest, 1983). As conceptualizations of pain have evolved in sophistication, so too have approaches to pain management. This is particularly true of the management of chronic pain where elaborate physical, educational, cognitive and behavioural approaches to the treatment of chronic pain have been developed (Malone & Strube, 1988). Increasingly, however, there has been a trend towards the integration of a variety of promising treatment approaches into holistic multimodal pain management programmes (Flor, Fydrich, & Turk, 1992). These are invariably delivered by multidisciplinary teams in designated chronic pain clinics .

In an international review of 32 multimodal inpatient and outpatient chronic pain treatment programmes, Linssen & Spinhoven (1992) concluded that most programmes include education, physiotherapy and relaxation training. Medication reduction, occupational therapy, cognitive and behavioural interventions, and individual and family counselling are less commonly included in these programmes. Meta-analyses of outcome studies examining the effectiveness of multimodal chronic pain management programmes based on scores of studies involving hundreds of patients have concluded that multimodal chronic pain management programmes are quite effective, with 50-60% of patients showing improvement across a range of outcome measures (Flor, Fydrich, & Turk, 1992). Patients treated within a multimodal programme are twice as likely to return to work as those receiving unimodal treatments (Flor, Fydrich, & Turk, 1992). Greatest improvements are shown in mood and activity level with lesser improvements being shown in subjective indices of pain experiences (Malone & Strube, 1988). Long term follow-up studies show that at 1-5 years after treatment 30-60% of patients continue to show the gains made during treatment. (Turk & Rudy, 1991).

The heterogeneity of chronic pain patients has led to the development of a number of classification systems (Wall & Melzack, 1994). Most recently Turk and Rudy's group at Yale have developed a system based on the New Haven-Yale Multidimensional Pain Inventory (MPI) (Kerns, Turk & Rudy, 1988; Turk & Rudy, 1988; Turk & Rudy, 1990). Responses of pain patients to this self-report inventory, which inquires about pain experiences and pain-related adjustment, were cluster-analysed and three distinct pain patient profiles were identified: dysfunctional cases, interpersonally distressed cases and adaptive copers. The latter showed the best adjustment of all three groups. The problems of interpersonally distressed cases were almost exclusively concerned with relationship difficulties within patients' social networks. However, the dysfunctional cases reported many problems in physical, psychological and social domains.

One aim of the development of the MPI classification system was to provide a framework for exploring the heterogeneity of responses that chronic pain patients show to treatment. In a recent treatment outcome study of patients with temporomandibular pain the Yale group found that patients classified as dysfunctional made the greatest treatment gains in a multimodal chronic pain treatment programme (Rudy, Turk, Kubinski & Zaki, 1995).

This aim of this study, was to assess the differential responsiveness of patients from the three MPI classification categories to the multimodal chronic pain treatment programme at St Vincent's Hospital, Dublin. Our main hypothesis was that patients classified as dysfunctional would show more improvement than those classified as interpersonally distressed or adaptive copers. A subsidiary aim of the study was to investigate patients subjective experiences of improvement during the programme and their views on factors within the programme that contributed to improvement.

METHOD

Participants

Thirty seven chronic pain sufferers from throughout the Republic of Ireland referred to the Chronic Pain Management Programme at St Vincent's Hospital, Elm Park Dublin were considered for inclusion in this study. All had a history of chronic pain of at least 6 months duration, were not abusing alcohol or street drugs and were available for a three week full-day outpatient programme. Potential participants were screened with the MPI (Kerns, Turk & Rudy, 1985) and those that were classifiable within this system (described below in the instruments section) were included in the study. 47% (15) were classified as dysfunctional; 28% (9) as interpersonally distressed; and 25% (8) as adaptive copers. 11% (4) were unclassifiable.

Table 8.1. Demographic characteristics of three types of pain patients.

Variable	Category	Dysfunctional (N=15)	Interpersonally distressed (N=9)	Adaptive copers (N=8)	F test or Chi Square
Gender	Male	53.4	11.1	37.5	$\chi^2=4.31$ NS
	Female	47.6	88.9	62.5	
Age	Mean	38.1	40.1	43.6	F = 0.65 NS
	SD	8.2	7.8	15.5	
Marital Status	Married	93.3	57.1	62.5	$\chi^2=4.72$ NS
	Single	6.7	42.9	37.5	
SES	Class 1	6.6	0.0	37.5	$\chi^2=8.60$ NS
	Class 2	6.6	33.3	12.5	
	Class 3	26.4	22.2	25.0	
	Class 4	6.6	22.2	25.0	
	Class 5	33.0	11.1	0.0	
	Class 6	19.8	11.1	0.0	
Employment status	U/E or Sick leave	33.0	33.3	37.5	$\chi^2=8.63$ NS
	Employed or Homemaker	66.0	66.6	62.5	
Chronicity of pain	6 months - 1 year	0.0	22.2	12.5	$\chi^2=7.79$ NS
	1 year-3 years	39.6	11.1	62.5	
	3 years-6 years	33.0	33.3	12.5	
	more than 6 years	26.4	33.3	12.5	

Note: Mean ages are given in years. All other values in the table are percentages.

From Table 8.1 it may be seen that the three groups of classifiable cases did not differ significantly in their demographic profiles. Cases referred to the programme but who were unclassifiable using the MPI classification system completed treatment along with study participants.

Instruments

The West Haven Multidimensional Pain Inventory (MPI) (Kerns, Turk & Rudy, 1985). This 61 item questionnaire yields scores on 13 subscales which measure pain severity; pain interference; life control; affective distress; social support; perceived punishing responses from others; perceived soliciting responses from others; perceived distracting responses from others; engaging in household chores; engaging in outdoor work; engaging in activities away from

home, engaging in social activities; engaging in general activities. For all items responses are given on six or seven point likert scales and subscale scores are obtained by summing responses to likert scales for all items in the subscale. A computer programme based on the results of cluster analytic studies which have repeatedly identified three distinct chronic pain patient profiles, allows patients who complete the MPI to be classified as dysfunctional, interpersonally distressed, adaptive copers or unclassifiable. The programme evaluates the goodness-of-fit of a patient's scores to each of the three profiles. The dysfunctional profile is characterized by high pain severity, high pain interference; high affective distress and low life control and general activity. The interpersonally distressed profile is characterized by low social support, high perceived punishing responses from others; low perceived soliciting responses from others and low distracting responses from others. The adaptive copers profile is characterized by low pain intensity, low pain interference, low affective distress, high life control and high general activity .

Beck Depression Inventory (BDI) (Beck, Steer & Garbin, 1988). This 21 item questionnaire assesses the cognitive, affective, behavioural and somatic aspects of depression and yields a single depression score. A four stem forced choice response format is used for each item, with item scores varying from 0 to 3 and the sum of scores from all responses gives the overall depression score. Overall BDI scores vary from 0-63. The reliability and validity of the BDI as an index of depressed mood has been established in numerous studies in the US and UK.

Functional Limitations Profile (FLP) (Charlton, Tyrer, Capon, & Peterson, 1989). This inventory contains 126 items and yields scores on physical and psychosocial limitations subscales. The physical limitations subscale includes items in categories which inquire about ambulation, mobility, household management and body care. Items from the psychosocial limitations subscale are fall into five categories: recreational activities, social interaction, emotional

regulation, alertness, and sleep patterns. Within each category an item is given a severity weight and the score for that category is obtained by summing the weights, dividing by the maximum possible weight and dividing by 100. Subscale scores are obtained by summing category scores and dividing by the number of categories. Thus physical and psychosocial limitation subscale scores vary from 1 to 100. The FLP has been well validated in the UK.

The McGill Pain Questionnaire (MPQ) (Melzack, 1975). This instrument contains a pain rating index which comprises 20 sets of words which describe pain experiences. Each set contains between 3 and 6 words which vary from low to high intensity. A score of 1 is given for the lowest intensity word, 2 for the word indicating the next level of intensity and so forth. Respondents circle the word in each set that most appropriately describes their pain experience. A pain rating index score is the sum of scores associated with all circled words and may vary from 0-78. A score may also be given for the number of words chosen which can vary from 1-20. The MPQ also includes a present pain intensity scale. Respondents rate their pain level from 1=mild to 5=excruciating. The MPQ is reliable and well validated.

Procedure

In the later months of 1994 and the early months of 1995, 37 referrals to the Chronic Pain Management Programme consented to participate in this study. These 37 referrals, constituted 5 consecutively treated groups of between 5 and 11 members. All participants were thoroughly evaluated by a multidisciplinary team which consisted of a consultant anaesthetist, physiotherapist, social worker, psychologist, occupational therapist, and senior registrar in psychiatry prior to admission to the programme. Each three-and-a half-week programme was conducted between 9.30 and 4.30 on week days and was run by the multidisciplinary team according to a structured time table. There were daily

physiotherapy, occupational therapy and relaxation therapy sessions. In addition there were daily lectures on various aspects of pain including personal pain management skills; gate-control theory; the multidimensional nature of pain experience, aetiology, maintenance and reduction; and the links between pain and depression. Regular life skills sessions on lifestyle restructuring; communication and assertiveness training; stress management and anger control; self-esteem and confidence building were conducted. There were also regular group discussions on aspects of pain and individual, vocational, marital and family counselling sessions were arranged where appropriate. Before the programme and two months after discharge, participants complete a package of questionnaires described in the previous section. At follow -up the MPI, screening and classifying instrument was omitted from the package.

The last five cases recruited into the study participated in a focus group (Denzin & Lincon, 1994) after they had completed the programme. The conversation within the group was facilitated in two main domains. The first, being the impact of the programme on participants and the second being those aspects of the programme that were experienced as particularly beneficial.

RESULTS

SPSS (Norusis, 1990) was used for quantitative data analyses. Mean scores for the three MPI groups (dysfunctional, interpersonally distressed, and adaptive copers) before and after treatment were analysed using split-plot ANOVAs.

Table 8.2. Status of three types of pain patients before and after treatment on the Beck Depression Inventory, the Functional Limitations Profile and the McGill Pain Questionnaire.

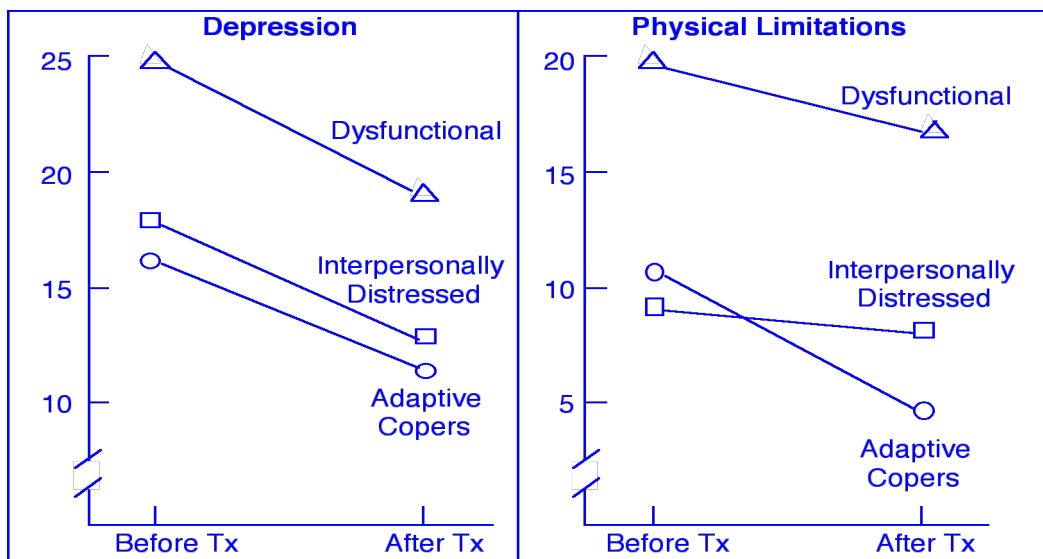
Dysfunctional (N=15)	Interpersonally Distressed (N=9)	Adaptive Copers (N=8)	ANOVA Results

Variable		T1	T2	T1	T2	T1	T2	Group by time effect	Time effect	Group effect
Depression (BDI)	M	24.7	18.9	18.3	12.4	16.0	11.4	0.07	13.50**	3.84*
	SD	6.5	7.8	10.2	5.3	7.6	8.5			
Physical limitations (FLP)	M	20.0	17.8	9.3	8.7	10.1	4.9	0.75	3.23†	5.78*
	SD	11.5	12.4	6.2	3.3	7.9	3.9			
Psychosocial limitations (FLP)	M	41.0	31.0	20.0	21.1	19.2	13.9	1.05	1.98	9.11*
	SD	12.3	12.6	12.3	14.6	10.8	13.2			
Pain rating index (MPQ)	M	26.9	32.8	25.3	27.4	29.0	29.7	0.48	1.60	0.20
	SD	16.2	15.2	10.7	14.3	12.1	14.1			
Present pain intensity (MPQ)	M	3.2	3.0	3.3	2.6	2.3	2.4	1.66	1.45	1.34
	SD	0.6	0.8	1.4	1.1	1.1	1.1			
Number of pain words chosen(MPQ)	M	10.6	12.9	9.9	10.1	9.1	9.0	0.70	1.28	1.29
	SD	5.9	5.9	4.2	4.4	5.2	5.7			

Note: M=mean. SD=standard deviation. BDI=Beck Depression Inventory. FLP= Functional Limitation Profile. MPQ=McGill Pain Questionnaire. † (trend) $p < .08$. * $p < .05$. ** $p < .01$.
T1=Before treatment. T2=After treatment

That is, one between (MPI group), one within (time) 3X2 mixed model ANOVAs were used. Separate ANOVAs were conducted for each of the five variables listed in Table 8.2. No significant, group by time interactions resulted from these analyses, indicating that improvement due to treatment or lack thereof, did not occur more in one group than in another. There was a significant ($p < .01$) time effect for depression as assessed by the BDI and a near significant ($p < .08$) time effect for the physical limitations subscale of the FLP. These results indicated that all three groups showed a significant reduction in mean depression scores and a near significant reduction in mean scores on the functional limitations subscale of the FLP over the course of treatment. These findings are graphically presented in Figures 8.1.

Figure 8.1. Scores of three groups of pain patients on the Beck Depression Inventory and the physical limitations subscale of the Functional Limitations Profile before and after treatment.



There were significant group effects for depression as assessed by the BDI and the physical and psychosocial subscales of the FLP. The overall means for the three groups on these variables differed significantly with the dysfunctional group showing significantly higher overall scores on all three variables in comparison with the other two groups.

In the light of this finding, a series of ANCOVAs were conducted for these three variables. In each of these ANCOVAs the three groups were compared with post-treatment scores as the dependent variable and the pretreatment scores as the covariate. No significant differences between groups on post-treatment scores were found in these analyses. The results of these analyses are not tabulated here, since they add nothing to the pattern which emerged from the ANOVAs and is presented in Table 8.2.

Table 8.3. Thematic content analysis of transcript from focus group conducted with five pain patients who had completed the programme

Domains	Themes	Examples
Effect of the programme	Lifting depression	I was very depressed when I came along. I didn't know how to handle pain or my life. I can handle it a lot better now. My depression lifted.

	Insight into reactions to pain	Another thing that also came very clear that when there is stress and the frustration sets in then if you let yourself go in you literally get sucked in as if something was pulling you in unless you stop it....If you were sucked in, you start thinking in a negative way and the whole depression sets in and then everything gets floated down.
	Acceptance of pain	I actually admit now that I am in pain. Now I am able to say I'm having a bad day. I've a pain but I'm not apologising for it which I always was before.
	Improved relationships	I used to be thinking of myself all the time.. I'd say I'd be easier to get on with now.
	Reduced medication usage	I was on tablets. My chemist bill was £500. The thing is I just stopped everything and paid off my bill.
Active ingredients in the treatment programme	Group support	Its great to have the other people there and you know they would understand. What really helped me was knowing that you were not on your own, that you are not the only person like that. ..And you can have the support afterwards (after the programme) as well...You hear the message from the group that you have the right to be in pain and you have the right to be treated properly.
	Personal commitment	You had to put a lot into it yourself as well. I think it (improvement) depends on how much you want to put into it yourself.
	Staff support	The staff we were dealing with too understood our problems so I found that a big help, mentally as well as physically...they never questioned the fact that you had pain. He just put his finger exactly where the trouble was just from the X-ray.
	Physiotherapy	I only realised the physio did help later. I found that when I wasn't doing it I was missing it.
	Education	Particularly i the lectures...when you were asking questions and taking the points and they were coming out as stress and how stress can be got over.
	The overall programme	The whole thing overall. I found it turned me around completely. ...I'd say I'd be in serious trouble only for it.

From Table 8.3 it may be seen that a thematic content analysis (Miles & Huberman, 1994) of the focus group transcript showed that patients experienced the programme as lifting depression, giving insight into their reactions to pain, helping them accept pain, improving their relationships and leading to a reduction in medication usage. Important factors within the programme experienced as contributing to these gains were group support, personal commitment, staff support, physiotherapy, education and the overall experience of completing the programme.

DISCUSSION

In this study, from a group of 37 potential cases, 47% (15) were classified as dysfunctional; 28% (9) as interpersonally distressed; and 25% (8) as adaptive copers. 11% (4) were unclassifiable. This distribution is comparable to that found by Turk and Rudy (Turk & Rudy, 1988,1990) who have found in a series of studies that approximately 40% of chronic pain patients referred for treatment typically are classified as dysfunctional ; 25 % as interpersonally distressed; and 30% as adaptive copers. Invariably between 5 & 10% of cases are unclassifiable.

In the present study the three groups, which were demographically similar, did not differ in their response to the programme. Thus our hypothesis, that dysfunctional cases would show greater gains than interpersonally distressed or adaptive copers was not supported. This is not consistent with the results of Rudy Turk, Kubinski & Zaki's (1995) study of temporomandibular pain patients in which patients classified as dysfunctional on the MPI showed significantly greater benefits from a treatment programme compared to interpersonally distressed cases or adaptive copers.

The significant reduction in depression and the near significant reduction in pain related physical limitations along with the lack of a reduction in the quality or intensity of pain experiences found in the present study are consistent with the results of Malone and Strube's (1988) meta-analysis of the results of 109 treatment outcome studies. They found that the treatment effects sizes were greatest for mood 9 ($ES=1.91$); less for physical activity level ($ES=1.48$); smaller still for pain rating index ($ES= 1.18$); and even lower for ratings of pain intensity ($ES=0.75$)

The results of a qualitative analysis of the focus group transcript complemented the quantitative results by explicating patients subjective experiences of programme-related improvements and factors contributing to these. Patients perceived the programme as improving their depression, enhancing their intrapsychic adjustment to pain and preventing pain from

jeopardising interpersonal relationships. Formal programme components such as education and physiotherapy and informal aspects of the programme such as group support and the fostering of personal commitment were identified as important features of the programme contributing to this improvement.

The promising results of this study point to the need for a series of three larger controlled outcome studies. Ideally these would evaluate treatment programmes tailored to the unique profiles of each of the three classification groups included in the present project. Dysfunctional cases probably require a more intensive treatment programme than that used in this study and one controlled outcome study should evaluate such a programme (Turk, Rudy, Kubinski et al, 1996). Adaptive copers probably require no more than an outpatient support group and a second outcome study should evaluate this less intensive treatment approach. Our suspicion is that the programme evaluated in the study reported in this paper is ideally suited to the interpersonally distressed group and a third controlled outcome study, using larger numbers of cases than employed in the present study would be a useful way of evaluating this hypothesis. Ideally, in all three studies, both observational and self-report measures should be included in the evaluation protocol and follow-up data collected both immediately after the programme and a year later. The results of these studies would provide clarification of the hypotheses raised by the results of the study reported in this paper.

SUMMARY

Thirty-two chronic pain patients classified as dysfunctional (N=15); interpersonally distressed (N=9); or adaptive copers (N=8) on the MPI were evaluated before and after a 3.5 week outpatient multimodal chronic pain management programme. Five patients also participated in a post-treatment focus group in which they gave accounts of their experiences of the programme. The

three groups, which were demographically similar, did not differ in their response to the programme. There was an overall significant reduction ($p < .01$) in mean depression scores on the Beck Depression Inventory and a near significant reduction ($p < .08$) in mean scores on the functional limitations subscale of the Functional Limitations Profile when pre- and post-treatment scores were compared. There was no significant reduction in McGill Pain Questionnaire scores. A thematic content analysis of the focus group transcript showed that patients experienced the programme as improving their mood, their capacity to cope with pain and their interpersonal adjustment. Both formal features of the programme such as education and physiotherapy and informal aspects of the programme such as social support from other participants were perceived as contributing to improvement.

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