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EVALUATION OF CHANGES IN OCCUPATIONAL PERFORMANCE AMONG PATIENTS IN A PAIN MANAGEMENT PROGRAM

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***Objectives*: The aims of this study were to evaluate changes in occupational performance among chronic pain patients after a pain management program and to explore relationships between these changes and demographic and clinical factors, psychosocial functioning and psychological well-being.**
***Subjects:* 188 consecutive patients were included.**
***Methods*: Changes were registered by using Canadian Occupational Performance Measure, Multidimensional Pain Inventory and Psychological General Well-Being Index.**
***Results*: There were statistically significant positive changes in occupational performance. Patients with sickness compensation had significantly higher changes in occupational performance than those without sickness compensation. The patients with a profile group as interpersonally distressed had statistically significant higher change scores on occupational performance than the adaptive coper group. Furthermore, increases in changes on general activity level, general health, and vitality and decreases in pain severity were associated with positive changes on perceived occupational performance and performance satisfaction.**
***Conclusion*: Changes in occupational performance, psychological well-being and psychosocial functioning seem all to be of relevance in the evaluation of pain management programs. Psychosocial profiles and sickness compensation has relevance for directions on changes in occupational performance, whereas other demographic and clinical factors do not.**

Key words: pain management, occupational therapy, occupational performance, outcomes.

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INTRODUCTION

Prevalence studies of chronic pain in Sweden indicate that about 50% of the population experience pain of more than 6 months' duration (1). Chronic pain can erode people's quality of life. Research has shown that it diminishes the ability to maintain employment, interferes with relationships, increases financial stress and disrupts family function (2). Therefore, chronic pain patients are often targeted for pain rehabilitation in order to minimize the negative personal and societal consequences to which a chronic pain syndrome can lead.

Multidisciplinary pain rehabilitation is generally considered to be the most effective strategy to deal with chronic pain, and is extensively investigated according to outcomes. "Multidisciplinary pain treatment (MPT) is generally considered to be the most effective treatment of chronic pain." (3, p. 203). Johansson et al. (4) confirm this opinion in their study on effects of a cognitive-behavioral pain-management program by saying: "Cognitive behavioral pain management programs are often multidisciplinary and have received empirical support in the literature (4, p. 915). Among other findings it has been shown that sick leave, life control, affective distress, and activity level during leisure are improved over time as a result of a pain management program (4).

The necessity to focus on what chronic pain patients report as desirable in their activity performance and temporal imbalance has been suggested by Müllersdorf (5). Several outcome measures are used when evaluating pain management programs. Aspects of occupational performance are important as they focus on the patients' engagement in their life, participation, and control over health (6, 7).

According to Tan et al. (8) it seems essential to involve the patients in setting the goals for their own rehabilitation. The potential for active participation is then enhanced. A reassessment after rehabilitation gives information and feedback to the team and to the patient, who becomes aware of problems in concrete daily life situations (9).

The aims of rehabilitation are manifold. Important issues are to increase a person's independence and quality of life. Quality of life can be defined with reference to people having opportunity for choices and control in their lives, and having goals that they define as meaningful (10). Health-related quality of life instruments can be selected to cover the main dimensions of physical function (disability), psychological well-being, and social well-being (11). Thus, some dimensions of quality of life can be operationalized as psychological well-being. It has been shown that changes in psychosocial functioning and psychological well-being are likely to occur during multidisciplinary pain rehabilitation (3, 4). Similar conclusions cannot be made regarding occupational performance, since there are very few studies targeting occupational performance and multidisciplinary pain rehabilitation. To further understand the pattern of changes that patients go through and to identify predictors of the

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outcome of pain rehabilitation are urgent tasks. If changes in occupational performance are associated with factors or changes in psychosocial functioning and/or psychological well-being, the nature of these connections may indicate strategies for how to design effective rehabilitation programs. Furthermore, a focus on such relationships during the period of intervention would offer a multifaceted evaluation of rehabilitation. When evaluating pain rehabilitation, demographic and clinical factors should be considered as well, since earlier research has shown that they are of relevance for understanding the course of chronic pain problems (12, 13).

The aims of this investigation were: firstly, to evaluate changes in self-perceived occupational performance in the individually most important activities in chronic pain patients going through a multidisciplinary pain management program; and, secondly, to analyse relationships between self-perceived changes in occupational performance on the one hand and psychosocial functioning, psychological well-being, and demographic and clinical factors on the other.

METHODS

Intervention

The investigation was completed at a Swedish rehabilitation unit for the treatment of chronic pain. It comprised 2 multidisciplinary teams, each formed by an occupational therapist, a psychologist, a physician, a physiotherapist and a social worker. The pain management program was designed to emphasize increased knowledge among the patients about pain and their own reactions as well as training in alternative ways for self-help.

A 5-week rehabilitation program was structured around a weekly timetable. Each daily session lasted from 5 to 7 hours. The program was group-oriented, but with individually tailored treatment for each patient according to individual goals. Each group comprised 8–9 patients. Significant others were invited to fact-finding meetings and discussions. The program included physical, psychological, activity-based and social-interaction-based training and education.

Proper documentation during the program, as well as at follow-ups, was considered essential.

Systematic collection of data was made concerning psychosocial functioning, psychological well-being, and perceived performance and performance satisfaction in personally meaningful daily occupations. Gender, age, pain duration, ethnic background, civil status and if the patients were supported by work or by sickness benefit, or sickness compensation were also collected. These data were gathered in a database, used in the present study. Gathering of data used in this study is described below.

Subjects

This investigation comprised 194 consecutive patients undergoing the pain management program from January 1999 until July 2000. Three patients did not fulfil their rehabilitation period. Of the remaining 191 patients, 3 did not complete the measures used. Consequently, the study was based on 188 patients.

The main characteristics of the respondents are shown in Table I. Of 31 patients not born in Scandinavia, 18 came from Europe, 10 from Asia and 3 from North or South America.

The patients' mean age was 41 years (SD 9.2), and there was no statistically significant gender difference in age. The pain duration was on average 7.2 years (SD 6.4), with females having a mean pain duration of 7.6 years and males of 5.8 years. This difference was not statistically significant. Each patient entering the pain rehabilitation unit had at least one pain diagnosis. The physician in charge set the diagnoses for all patients. If patients had several pain diagnoses, these were ordered with regard to their significance for the pain problems. The first diagnosis was considered to be the main pain diagnosis. Supplementary diagnoses were given if necessary in addition to the main diagnosis. The most common main pain diagnoses, according to the ICD 10 classification system, were fibromyalgia (M79.0), whiplash disorders (S13.4), low back pain disorders (M54.4, M54.5) and myalgia (M79.1). The most common supplementary diagnosis was chronic pain disorder (F45.4); our definition of chronic pain disorder followed DSM-IV. Chronic pain disorder was here considered to be a supplementary diagnosis per definition. The first diagnosis pinpointed the source, cause or location that was likely to be most important concerning the pain problem. Chronic pain disorder is often a description of phsychological factors influencing the consequences of the pain problem and therefore supplementary diagnosis. There was missing data on diagnoses for 2 patients and on pain duration for 1 patient (c.f. Table I).

In all 144 (77%) patients were on sick benefit, ranging from 25% to 100% (c.f. Table I). Among these persons there were 36 patients with a temporary sickness compensation or sickness compensation (7 males and 29 females). 18, 1, 13, and 4 of the 36 patients were found in the 100, 75, 50, and 25% sickness compensation groups, respectively. Sickness benefit is a monetary compensation for persons unable to work during less than 1 year. If a person is not able to work during a period of time longer than 1 year, but return to work is expected, temporary sickness compensation is paid. Sickness compensation is the compensation a person gets if not expected to be able to go back to work at all.

A comparison with 143 patients admitted to the unit during 1998 indicated that the present sample was representative of the unit's patients. There were no statistically significant differences between the patients in 1998 and the patients in the sample in this investigation with regard to age, pain duration, diagnoses, ethnic background or gender.

Table I. *Characteristic data of the subjects (n = 188)*

	Participants Total *n* (%)	Male *n* (%)	Female *n* (%)
Gender	188	42 (22)	146 (78)
Age (*n* = 188)			
<30 years	23 (12)	5 (12)	18 (12)
30–39 years	62 (33)	12 (29)	50 (34)
40–49 years	55 (29)	13 (31)	42 (29)
>49 years	48 (26)	12 (29)	36 (25)
Pain diagnosis 1 (first diagnosis) (*n* = 186)			
Low back pain	27 (14)	10 (24)	17 (12)
Fibromyalgia	43 (23)	0	43 (30)
Whiplash	41 (22)	15 (36)	26 (18)
Myalgia	15 (8)	1 (2)	14 (10)
Other	60 (32)	16 (38)	44 (31)
Pain diagnosis 2 (second diagnosis) (*n* = 102)			
Chronic pain disorder	28 (27)	6 (27)	22 (28)
Other	74 (73)	16 (73)	58 (72)
Duration (years) (*n* = 187)			
<2	12 (6)	3 (7)	9 (6)
2–5	90 (48)	26 (62)	64 (44)
6–10	39 (21)	9 (21)	30 (21)
>10	46 (24)	4 (10)	42 (29)
Ethnic background (*n* = 188)			
Scandinavian	157 (83)	37 (88)	120 (82)
Non-Scandinavian	31 (17)	5 (12)	26 (18)
Civil status (*n* = 188)			
Married/cohabiting	133 (71)	32 (76)	101 (69)
Not married/single	55 (29)	10 (14)	45 (31)
Support (*n* = 188)			
Not on sickness benefit	44 (23)	10 (24)	34 (23)
Sickness benefit 25%	7 (4)	2 (5)	5 (3)
Sickness benefit 50%	23 (12)	5 (12)	18 (12)
Sickness benefit 75%	5 (3)	1 (2)	4 (3)
Sickness benefit 100%	109 (58)	24 (57)	85 (58)

Measures

Occupational performance. The Canadian Occupational Performance Measure (COPM) (14) was used in assessing the patients' experiences of occupational performance and performance satisfaction at admission and discharge.

The COPM is administered as a semi-structured interview and requires up to 5 important occupations to be identified by the patients. Judgements about the importance of the occupations to the patients, as well as self-perceived performance and performance satisfaction, are rated on a scale from 1 to 10, where 10 indicates the most positive rating. The problems are classified under the subgroups self-care, productivity and leisure. It has been shown that the COPM provides information relevant to the assessment and intervention process (15). The instrument has acceptable test-retest reliability (14). The Swedish version was used in the present study. It has been validated as an outcome measure and shown to be responsive to change over time (7).

Psychosocial functioning. Psychosocial functioning was assessed by means of the Multidimensional Pain Inventory (MPI) (16). It consists of 52 items, with a 7-point scale (0–6). The instrument covers the psychological aspects of the pain experience (5 subscales), the frequency of behaviours exhibited by spouses or significant others in response to pain (3 subscales), and frequency of participation in daily activities (4 subscales) which can be combined to yield a general activity level subscale (17, 18). The scale structure of the MPI was originally evaluated using factor analyses techniques (16). The MPI has been found useful in predicting post-treatment changes in psychosocial functioning, affective distress and reported pain (19). The reliability and stability of the MPI have been investigated and found satisfactory (16). A test of the reliability and the factor structure of the Swedish translation of the MPI, used in this study, was performed by Bergström et al. (20). Cluster analyses were conducted on the MPI scales to determine whether there were different response patterns that classified subjects into unique groups. Three distinct profile groups were identified and labelled dysfunctional, interpersonally distressed and adaptive copers (18, 21, 22). These subgroups were identified in the present study as well.

Part 2 of the MPI is sometimes not filled in due to misinterpretation of the instruction regarding the existents of significant others. This problem has later been corrected. The second part of the MPI was not used in the evaluations, because 30% of the sample had not filled in due to misinterpretation.

Psychological general well-being. The Psychological General Well-Being Index (PGWB), measuring one's perception of life quality with an emphasis on psychological well-being, was used for the present study. PGWB is a 22-item inventory with 6 subscales, providing evaluations on anxiety, depression, positive well-being, self-control, general health and vitality. An overall score may be calculated. Each subscale has 3–5 items, which are rated on a scale from 0 to 5. The overall score ranges from 0 to 110, the higher the better well-being, and the range for the subscales is from 0 to 15, or 20, or 25. Test-retest reliability is satisfactory (23). Wiklund & Karlberg (24) reported that the Swedish version of the PGWB had satisfactory internal consistency, responsiveness, and discriminant validity.

Procedures

An occupational therapist administrated the COPM at admission and discharge and conducted the interviews on both occasions. A psychologist or a social worker administrated the MPI and the PGWB at admission and at discharge. These professionals were all team members in the rehabilitation program. One of these therapists also was involved in this study.

Between 7% and 8% of the sample did not complete MPI/PGWB and the analyses regarding these instruments were performed on 175–177 patients. Missing data occurred because of failures in routines and incorrectly filled-in forms.

Statistical analyses

In the COPM manual it is proposed that the scales should be analysed with parametric statistics. To measure outcomes the mean score at discharge should be calculated by subtracting the mean score at admission. The raw score for each MPI scale is obtained by using parametric statistics. A computerized version for analysing the MPI results was used. The standardized values printed by the program were computed by transforming the raw scores to T-scores by using MPI scale means and standard deviations from over 700 heterogeneous chronic pain patients (18). In this way the 3 distinct MPI profile groups were identified. In further analyses both the profile groups and the subscales on the MPI were used (except part 2 as earlier explained).

From the 22 PGWB items 6 subscale scores without overlapping items and 1 overall PGWB index score can be derived, and they were all used in the present study.

One-sample *t*-test was used to test for differences between assessments at admission and at discharge regarding occupational performance and performance satisfaction (COPM). Pearson's correlation was used to investigate associations between changes of the COPM performance and performance satisfaction scores.

The diagnostic groups used were fibromyalgia, whiplash, low back pain, myalgia and chronic pain disorder. The pain duration intervals used were pain duration for less than 2 years, 2–5 years, 6–10 years and more than 10 years'.

To compare 3 or more groups one-way ANOVA with Scheffe's method was used. The independent sample *t*-test was employed to make comparisons between dichotomized groups.

Gender, ethnic background and civil status were treated as dichotomous variables to create subgroups of the sample, namely, male vs female, Scandinavian-born vs non-Scandinavian-born, and married or cohabiting vs single. Regarding the variables on sickness benefit and sickness compensation, the patients were set to form 2 groups on each variable, based on whether or not they fulfilled the criteria of being on sickness benefit and having a sickness compensation.

Linear regression analyses (forward stepwise method) were performed with change scores of the COPM as the dependent variables, and change scores of the MPI and of the PGWB subscales as independent variables in a separate analysis. Linear regression analyses (enther method) were performed to describe eventual inter correlations between the independent variables.

When $p < 0.05$ the results are considered significant.

The software used was the Statistical Package for the Social Sciences (SPSS), version 10.

Ethics. All the material was taken from a database, and no single patient could be identified. Based on the principle of informed consent, the patients agreed that information that could not be connected to any specific person could be entered in the database. The database was used for evaluation of care and was approved by the Administration Department of Lund University Hospital (Registration number 492).

RESULTS

Changes in occupational performance and performance satisfaction

The mean change scores in occupational performance and performance satisfaction, for the group as a whole, are shown in Table II. A test for differences between pre- and post-treatment scores indicated that all changes were statistically significant.

Of the 188 patients who completed the COPM interview, all patients identified and rated at least 2 important occupations of importance. In total 864 occupational problems were mentioned by the patients. The subjectively perceived changes in the 5 important occupations, illustrated as number of patients with a certain change score, are shown in Table III. Grouping the patients with a change score of 1 scale step or more in a positive or negative direction resulted in the following proportional distribution. Occupational performance increased by 1 scale step or more for 44–50% of the patients. Performance satisfaction increased by 1 scale step or more for 46–56%, depending on which occupational problem was in focus. Occupational performance ratings decreased by 1 scale step or more for 23–26%

Table II. *Self-perceived occupational performance and performance satisfaction scores at admission and at discharge, in the 5 reported occupational problems*

		Performance		Satisfaction	
Occupational[a] problems	*n*	Admission Mean (SD)	Discharge Mean (SD)	Admission Mean (SD)	Discharge Mean (SD)
I	188	3.8 (1.9)	4.6* (2.2)	2.8 (2.3)	4.1* (2.7)
II	188	3.4 (1.9)	4.2* (2.2)	2.7 (2.1)	4.0* (2.7)
III	187	3.3 (1.8)	4.2* (2.3)	2.6 (1.9)	4.1* (2.7)
IV	171	3.6 (2.0)	4.2* (2.2)	2.9 (2.0)	4.1* (2.8)
V	130	3.2 (1.8)	3.8* (2.1)	2.6 (2.0)	3.9* (2.7)

[a]I–V are individually chosen occupational problems not necessarily ranked in order of importance.
*$p < 0.001$.

of the patients. Regarding performance satisfaction there was a decrease for 16–22% of the patients.

There were statistically significant correlations between COPM performance and performance satisfaction at admission ($r = 0.73$, $p < 0.001$), as well as at discharge ($r = 0.75$, $p < 0.001$). Similarly, there was a statistically significant correlation between changes during treatment of COPM performance and of COPM performance satisfaction ($r = 0.63$, $p < 0.001$). Thus, about 50% of the variation in COPM variables was shared and about 50% was specific, justifying their treatment as separate phenomena.

Differences in COPM change scores between different demographic and clinical subgroups

There were significant differences between all the pain duration groups according to occupational performance change scores ($p = 0.033$). The multiple comparisons, however, revealed no significant differences between the particular duration groups.

There were significant differences between the group having sickness compensation and the group that did not have sickness compensation regarding the occupational performance change scores ($p = 0.032$). The mean change score on occupational performance for patients with sickness compensation was 1.2 (SD 1.3) and 0.6 (SD 1.3) for those without sickness compensation. No significant difference was found between the change score in occupational performance and performance satisfaction and gender, age, pain diagnosis, ethnic back ground and civil status.

Changes in occupational performance in relation to psychological functioning and psychosocial well-being

At admission there was a significant difference between the mean scores in occupational performance ($p = 0.009$) and the MPI profile groups (Table IV). The multiple comparisons showed significant differences between the dysfunctional and the adaptive coper groups ($p = 0.009$). The analyses on performance satisfaction mean score related to the 3 MPI profile groups at admission also showed significant differences ($p = 0.007$). Here the multiple comparisons showed a significant difference between the dysfunctional and the adaptive coper

Table III. *Distribution of raw change scores in the 5 important occupations regarding Canadian Occupational Performance Measure. (The figures denote number of patients)*

	Occupation 1 *n* = 188		Occupation 2 *n* = 188		Occupation 3 *n* = 187		Occupation 4 *n* = 171		Occupation 5 *n* = 130	
Change scores	Performance	Satisfaction	Performance	Satisfaction	Performance	Satisfaction	Performance	Satisfaction	Performance	Satisfaction
9	–	1	1	5	–	2	–	2	–	1
8	1	1	–	1	1	3	–	1	–	5
7	1	7	1	4	1	1	1	5	1	3
6	4	9	2	6	4	6	3	6	2	2
5	5	10	8	9	6	11	3	8	3	8
4	9	8	15	9	17	18	13	8	5	6
3	24	18	11	16	11	16	8	16	11	5
2	23	17	23	14	18	23	17	14	14	17
1	28	35	24	22	27	19	30	26	21	19
0	44	50	57	61	58	57	55	48	41	41
−1	25	18	23	25	26	23	20	17	19	12
−2	12	6	15	10	10	2	12	12	9	7
−3	8	1	6	3	7	5	5	3	2	2
−4	2	2	1	2	1	–	2	3	1	1
−5	1	3	–	1	–	1	1	1	1	1
−6	–	2	–	–	–	–	–	1	–	–
−7	1	–	1	–	–	–	1	–	–	–
−8	–	–	–	–	–	–	–	–	–	–
−9	–	–	–	–	–	–	–	–	–	–

Table IV. *Mean scores on Canadian Occupational Performance Measure (COPM) at admission and at discharge in the different Multidimensional Pain Inventory (MPI) profiles at admission*

		Performance		Satisfaction	
MPI at admission profiles	*n*	Admission mean (SD)	Discharge mean (SD)	Admission mean (SD)	Discharge mean (SD)
Dysfunctional	52	3.1 (1.0)	3.9 (1.4)	2.2 (1.1)	3.5 (1.9)
Interpersonal Distressed	52	3.3 (1.4)	4.5 (1.4)	2.8 (1.4)	4.4 (1.8)
Adaptive Coper	23	4.1 (1.6)	4.4 (1.7)	3.2 (1.9)	4.3 (2.0)

profile groups ($p = 0.016$). The mean score in occupational performance at discharge revealed no significance in relation to the MPI profile at admission. Performance satisfaction mean score at discharge though showed significant differences ($p = 0.032$) between the MPI groups. *Post hoc* analyses revealed significant difference between the dysfunctional and interpersonally distressed groups at admission ($p = 0.041$) according the performance satisfaction mean score at discharge Table IV.

A comparison of the MPI profile groups at admission indicated a significant statistical difference on occupational performance change scores between the groups ($p = 0.041$). *Post hoc* analysis revealed that differences were significant between the interpersonally distressed and the adaptive coper profile groups ($p = 0.046$). The mean change scores on occupational performance were 1.2 (SD 1.4) for the interpersonally distressed ($n = 52$) and 0.3 (SD 1.8) for the adaptive coper ($n = 23$). The dysfunctional group ($n = 52$) revealed a change score on occupational performance of 0.8 (SD 1.2). No significant differences were found between change scores in performance satisfaction and the MPI profile groups.

The regression analyses (stepwise method) resulted in significant models with change scores of the MPI as the independent variable and both change scores on COPM performance as the dependent variable (F 8.768, $p < 0.001$ and adjusted R square 0.084) and change scores on COPM performance satisfaction as the dependent variable (F 9.361, $p < 0.001$ and adjusted R square 0.090). Significant regression models were found in the analyses of associations between change scores of the PGWB (independent) and both the COPM performance (dependent) change scores (F 17.212, $p < 0.001$ and adjusted R square 0.089) and on COPM performance satisfaction (dependent) change scores (F 15.367, $p < 0.001$ and adjusted R square 0.148). Significant variables are shown in Table V.

In Table VI the regression coefficient, R square value and *p* value in the subscales of the MPI and PGWB are described.

DISCUSSION

The results indicated improvements in occupational performance and performance satisfaction after the pain management program. It is not possible to conclude that the improvements were due to the program as we did not have a control group. However, since most of the patients had had their pain condition for several years, and no spontaneous recovery was probable during the 5-week program, it is likely that the program brought about the changes. Improvements in performance satisfaction seemed larger than in occupational performance, perhaps indicating that a re-evaluation process about occupational performance took place. Increased performance satisfaction might reflect the process of adopting new or better skills and coping strategies and more adequate acceptance of an altered life situation. Using the COPM as an outcome measure of a pain management program, Carpenter et al. (6) revealed significant increases in both performance and performance satisfaction when comparing baseline and end of program scores; a result repeated in the present study. Between 44% and 56% of the patients increased more than 1 scale step on the 10 graded scale in occupational performance and performance satisfaction. How many scale steps are necessary to define a clinical significant improvement yet to be established. Thirty to 37% of the patients increased 2 or more scale steps.

Goal setting, as reflected in the COPM, combined with

Table V. *Significant independent variables related to change scores of Canadian Occupational Performance Measure (COPM) performance and performance satisfaction*

	COPM					
	Performance changes			Satisfaction changes		
Predictor variable	Beta	B[a]	*p*	Beta	B[a]	*p*
MPI change score						
General activity level	0.222	0.531	0.003	0.166	0.478	0.027
Pain severity	−0.182	−0.302	0.016	−0.246	−0.490	0.001
PGWB change score						
General health	0.307	0.163	<0.001	0.182	0.115	0.033
Vitality	0. 091	0.091	0.302	0.269	0.101	0.002

MPI: Multidimensional Pain Inventory; PGWB: Psychological General Well-Being Index.
B[a] = Regression coefficient.

Table VI. *Independent variables related to change scores of Canadian Occupational Performance Measure (COPM) performance and satisfaction, in a univariate model*

	COPM Univariate model					
Predictor Variable *MPI*	Performance changes			Satisfaction changes		
Change score	Regression coefficient	R square	*p*	Regression coefficient	R square	*p*
Pain Severity	−0.392	0.056	0.002	−0.547	0.077	<0.001
Life Interference	−0.299	0.021	0.057	−0.337	0.019	0.072
Life Control	0.221	0.035	0.014	0.364	0.067	0.001
Affective Distress	−0.177	0.033	0.018	−0.258	0.049	0.004
Social Support	0.213	0.018	0.077	0.182	0.009	0.206
General Activity Level	0.599	0.063	0.001	0.590	0.042	0.007
PGWB change scores						
Anxiety	0.033	0.018	0.079	0.061	0.046	0.005
Depression	0.054	0.017	0.090	0.070	0.019	0.069
Positive well-being	0.068	0.037	0.012	0.077	0.033	0.018
Self control	0.070	0.029	0.027	0.094	0.036	0.012
General health	0.167	0.095	<0.001	0.210	0.107	<0.001
Vitality	0.073	0.052	0.003	0.140	0.137	<0.001
Total index	0.018	0.054	0.002	0.028	0.090	<0.001

repeated measurement, is a feedback to the patients and possibly enhances their ability to master their goals. Patients who are actively involved in the assessment procedure are more likely to take more responsibility for their own rehabilitation process. In COPM problems are identified and directly formulated as goals, and goals are identified within a broad area that corresponds to the component activity and participation according to the International Classification of Functioning, Disability and Health, ICF (25). The COPM interview itself initiates the problem-solving process, and this may influence the evaluation scores (9). When discussing and evaluating importance of occupational problems with the patients, one notes that they become more able to specify their problems and clearer as to what their essential problems are as the interviews progress. Sometimes they "overestimate" the problem and sometimes they "underestimate" it. Therefore, the direction on the scale can take different ways depending on the patient's way of thinking and estimating their occupational problems. There are studies showing that therapists rate the recovery of chronic pain patients as more positive than the patients do (26). This problem is avoided here, as the patients rather than the therapist make the ratings in COPM.

Several circumstances may explain why some patients viewed their occupational problems as having increased. The mean score 4.2 in occupational performance and 4.0 in performance satisfaction at discharge can be considered low. In other COPM studies there were mean scores of 5.2–5.5 in occupational performance and 5.3–6.5 in performance satisfaction at discharge (6, 9, 27). However, it is not adequate to establish a norm for the scores, since COPM is not a norm-referenced measure (14). A low score can be influenced by the patients' degree of pain problems, by effectiveness in test administration, and by the pain rehabilitation program under investigation. Carpenter et al. (6) discussed how domestic problems, financial problems, the degree of camaraderie and support during the training period, and/or medical problems can influence the patients' ability to make progress through self-help coping strategies. The long pain duration (mean 7.2 years) in this study indicates that the patients might have had several problems to deal with, which may possibly affect the change score level. Furthermore, some patients might rate their performance at a lower level at discharge than at admission, because the rehabilitation process has made them face problems they neglected before. Law et al. (15) argued that there can be times when the goals of therapy will be to decrease performance or performance satisfaction scores over time, e.g. an increased level of insight may cause the client to rate themselves lower on an activity at reassessment.

Our study showed that patients receiving sickness compensation reported higher change scores in occupational performance than patients not on sickness compensation. The associations between pain duration and change scores in occupational performance were only seen in the analyses on all pain duration groups. No particular pain duration group seemed to be of significant relevance to outcome in occupational performance more than any other. Relationships between changes in occupational performance and demographic and clinical factors were weak overall. In a previous study (12) it has been shown that educational level, gender, and civil status had no significance for treatment outcome among chronic pain patients at a Danish multidisciplinary pain centre. Similarly, McColl et al. (28) found that age, gender and severity of disability were not predictive for COPM scores. The findings in this study confirm these previous results.

Analyses regarding the profile groups according to the MPI showed that patients with interpersonally distressed profiles at admission increased their self-perceived occupational performance more than patients with the adaptive coper profile. The interpersonally distressed profile is characterized by reports of lower than average levels of social support, distractive responses, and social support, and higher levels than average of pain severity. The adaptive copers tend to report lower levels of pain, life interference, and affective distress, but a higher sense

of life control and general activity level than average (21). The results of the present study regarding differences among the interpersonally distressed and the adaptive coper profiles might indicate that patients with different MPI profiles profit differently from a pain management program regarding outcomes in occupational performance. This indicates that MPI profiles could be a predictor for outcomes and used to select those patients that benefit most from the program, especially since the differences in change scores were large. The fact that those who had already adapted (adaptive copers) to their situation at baseline had a lower change score, is not surprising, since they had probably mobilized their resources to a larger extent before entering the program.

The experience of performance and performance satisfaction seems to relate to some features of quality of life, such as vitality and general health. Eklund et al. (29) recently showed that performance satisfaction with daily occupations in a broad sense was closely related to quality of life and other measures of health and well-being.

Pain intensity and health-related quality of life at referral have been shown in an earlier study to predict treatment outcome (12). Similarly results in this study showed that positive changes on the MPI subscales; pain severity and general activity level, were associated with positive changes on COPM. Several other factors might be operating as the adjusted R squares in the models only explained 8–15% of the variations. The association of the general activity level scale in the MPI to the COPM performance scores, might be regarded as an indicator of criterion validity of the COPM. McColl et al. (28) showed construct and criterion validity of the COPM, and these findings are supported in the present study.

It seems that occupational performance on the one hand and psychological well-being and psychosocial functioning on the other were basically independent phenomena, since few associations were found. This indicates that all these aspects need to be addressed in the design as well as in the evaluation of programs. Successful outcome in one respect does not necessarily lead to a positive development in the other. In conclusion, the use of the COPM as an outcome measure is suitable for use in pain management program evaluations.

REFERENCES

1. Andersson I. Chronic pain. Epidemiological studies in a general population. Lund: Medical Dissertation. Department of Community Health Sciences, Lund University; 1998.
2. Barkin R, Lubenouw T, Bruehl S, Husfeldt B, Ivankovich O, Barkin S. Management of chronic pain: Part II. Disease of the Month 1996; 42: 457–507.
3. Becker N, Sjøgren P, Bech P, Olsen AK, Eriksen J. Treatment outcome of chronic non-malignant pain patients managed in a Danish multidisciplinary pain center compared to general practice: a randomized controlled trial. Pain 2000; 84: 203–211.
4. Johansson C, Dahl JA, Jannert M, Melin L, Andersson G. Effects of a cognitive behavioral pain management program. Behav Res Ther 1998; 36: 915–930.
5. Müllersdorf M. Needs assessment in occupational therapy. Studies of persons with long-term/recurrent pain. Doctor's thesis. Uppsala: Department of Public Health and Caring Sciences, Section of Caring Sciences No 1065, Uppsala University; 2001.
6. Carpenter L, Baker G, Tyldesley B. The use of Canadian Occupational Performance Measure as an outcome measure of a Pain Management Program. Can J Occup Ther 2001; 68: 16–22.
7. Wressle E, Samuelsson K, Henriksson C. Responsiveness of the Swedish version of the Canadian Occupational Performance Measure. Scand J Occup Ther 1999; 6: 84–89.
8. Tan V, Cheatle MD, Mackin S, Moberg PJ, Esterhai JL. Goal setting as a predictor of return to work in a population of chronic musculoskeletal pain patients. Int J Neurosci 1997; 92: 161–170.
9. Wressle E. Client participation in the rehabilitation process. Linköping: Medical dissertation No 722, Linköping University; 2002.
10. Law M, Polatajko H, Baptiste S, Townsend E. Core concepts of occupational therapy. In: Townsend E, ed. Enabling occupation an occupational therapy perspective. Ontario: Canadian Association of Occupational Therapists; 1997.
11. Bech P. Rating scales for psychopathology, health status and quality of life. In: Bech P. (ed.) Berlin: Springer; 1993, p. 395–424.
12. Becker N, Højsted J, Sjøgren P, Eriksen J. Sociodemographic predictors of treatment outcome in chronic non-malignant pain patients. Do patients receiving or applying for Disability Pension benefit from multidisciplinary pain treatment? Pain 1998; 77: 279–287.
13. Unruh A, Ritchie J, Merskey H. Does gender affect appraisal of pain and pain coping strategies? Clin J Pain 1999; 15: 31–40.
14. Law M, Baptiste S, Carswell A, McColl M, Polatajko H, Pollock N. Canadian Occupational Performance Measure. Third edition. Canada: Canadian Association of Occupational Therapists; 1998.
15. Law M, Baptiste S, Carswell A, McColl A, Polatajko H, Pollock N. Canadian Occupational Performance Measure. Second edition. Canada: Canadian Association of Occupational Therapists; 1994.
16. Kerns R, Turk D, Rudy T. The West Haven-Yale Multidemensional Pain Inventory (WHYMPI). Pain 1985; 23: 345–356.
17. Turk D, Rudy T. The robustness of an empirically derived taxonomy of pain patients. Pain 1990; 43: 27–36.
18. Rudy T. Multiaxial Assessment of Pain Multidimensional Pain Inventory. User's manual. USA: Department of Anaesthesiology and Psychiatry and Pain Evaluation and Treatment. Institute University of Pittsburgh School of Medicine; 1989.
19. Stroud M, Thorn B, Jensen M, Boothby J. The relation between pain beliefs, negative thoughts, and psychosocial functioning in chronic pain patients. Pain 2000; 84: 347–352.
20. Bergström G, Jensen I, Bodin L, Linton S, Nygren A, Carlsson S. Reliability and factor structure of the Multidimensional Pain Inventory – Swedish Language Version. Pain 1998; 7: 101–110.
21. Turk D, Rudy T. Toward an empirically derived taxonomy of chronic pain patients: Integration of psychological assessment data. J Consult Clin Psychol 1988; 56: 233–238.
22. Jamison R, Rudy T, Penzien D, Mosley Jr. T. Cognitive-behavioral classifications of chronic pain: replication and extension of empirically derived patient profiles. Pain 1994; 57: 277–292.
23. Dupuy H. The psychological general well-being (PGWB) index. In: Wenger NK, Mattson ME, Furberg JF, Elinson JA, eds. Assessment of quality of life in clinical trials of cardiovascular therapies. New York: LeJacq.; 1984, p. 170–183.
24. Wiklund I, Karlberg J. Evaluation of quality of life in clinical trials: selecting selecting quality of quality of life measures. Contr Clin Trails 1991; 12: 204–216.
25. WHO. International classification of functioning, disability and health. Geneva: World Health Organization; 2001.
26. Daniel M, Long C, Murphy W, Kores R, Hutcherson W. Therapists' and chronic pain patients' perception of treatment outcome. J Nervous Mental Dis 1983; 171: 729–733.
27. Bodiam C. The use of the Canadian occupational performance measure for the assessment of outcome on a neurorehabilitation unit. Br J Occup Ther 1999; 62: 123–126.
28. McColl M, Paterson M, Davies D, Doubt M. Validity and community utility of the Canadian Occupational Performance Measure. Can J Occup Ther 1999; 67: 22–30.
29. Eklund M, Hansson L, Bejerholm U. Relationships between satisfaction with occupational factors and health-related variables in schizophrenia outpatients. Soc Psychiatr Psychiatr Epidemiol 2001; 36: 79–85.