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FUNCTIONING DESCRIPTION ACCORDING TO THE ICF MODEL IN CHRONIC BACK PAIN: DISABLEMENT APPEARS EVEN MORE COMPLEX WITH DECREASING SYMPTOM-SPECIFICITY

Marjon E. A. Wormgoor[1], Aage Indahl[1], Maurits W. van Tulder[2] and Han C. G. Kemper[2]

From the [1]Hospital for Rehabilitation, Department Stavern, Unit of the Rikshospital University Hospital, Oslo, Norway and [2]Institute for Research in Extramural Medicine, VU University Medical Centre, Amsterdam, The Netherlands

Objective: To determine the significance of degree of symptom-specificity in the disablement condition in chronic back pain.

Design: Cross-sectional design.

Subjects: All inhabitants of a restricted geographical area of Norway, who had had 8 weeks of sick-leave due to back pain during a 2-year period, were included in this study. Following examination they were diagnosed as having "specific back pain" ($n = 34$), "non-specific back pain" ($n = 113$) or "widespread pain" ($n = 49$).

Methods: Functioning of the 3 diagnostic subgroups was described and compared. Functioning assessment was guided by the concepts of the International Classification of Functioning, Disability and Health (ICF): health condition, body function and structure, activity, participation and contextual factors.

Results: Pain components and final participation restriction did not differ among the diagnostic subgroups. However, with increasing symptom-specificity, loss of physical body functions and structures and subsequent activity limitation tended to increase. On the other hand, with decreasing symptom-specificity, mental distress, unfavourable contextual factors and dissatisfaction with various factors of life tend to increase, which may raise the impact of pain on restricting participation in activities.

Conclusion: Functioning description according to the components of the ICF model indicated that the disablement condition in patients with back pain who had been on sick-leave for 8 weeks may appear more complex with decreasing symptom-specificity.

Key words: back pain, sick-leave, disability evaluation, examination, diagnosis, ICF.

INTRODUCTION

In general, the aim of clinical examination in back pain is to find or exclude specific causes. In the acute phase, the pain is likely to be elicited by structural changes, which are not necessarily identifiable, and may be associated with structural impairments in the back. However, unlike most health problems, such specific pathophysiology is often not found in chronic back pain. The pain symptoms are often associated only weakly with clinical findings and measures of loss of functioning (1–3). The specificity of pain symptoms in patients with chronic back pain vary widely, from being specific and related to specific pathology to being localized or widespread and not related to known pathology. With decreasing symptom-specificity and the analogous lack of objective pathological findings, pain may therefore become even more of a focus for the patient; not only due to the discomfort, but also because of its role as a clue to what is wrong with the back.

The disablement condition, referring to the consequences of back pain on functioning and to the multiple and interrelated factors associated with this, also varies widely. In the transition from acute to chronic back pain, pain may be perpetuated by factors that are both pathogenic and physically remote from the originating causes. Other pain-related consequences seem more prominent than pain and body function and structure impairments that are direct consequences of the organic pathology (4, 5). Catastrophizing about pain, depression, inactivity/disuse and uncertainty regarding the origin and treatment of the pain are known to be associated with decreased pain tolerance (6, 7). However, recent research also suggests that biological defects, such as neuroplastic changes in the central nervous system, may play an important role in the development and maintenance of chronic back pain and fibromyalgia (8, 9). Furthermore, other relatively stable personal and environmental contextual factors, including psychosocial and economic gain and the approach of our society and our healthcare system in particular towards back pain, may play significant intervening roles in the disablement. The cultural assumption that visualization of medical problems confirms the symptoms and leads us to the solution, does not often fit the back pain problem. Patients may feel that their pain is unconfirmed, leading to alienation from their body, problems and responsibilities and persistence of the pain problems (10). The contextual factors mentioned above may perpetuate the transition from acute to chronic back pain and maintain this condition. It is not known whether they differ in persons with back pain with varying symptom-specificity.

A clear disablement reveals an objective pathological condition that is directly associated with a certain impairment of body function and structure, causing a certain activity restric-

tion resulting in a certain participation limitation. However, back pain is not an illness, but a complaint and disablement may be rather complex. The interaction structure between components in the new International Classification of Functioning, Disability and Health (ICF) (11), the inclusion of pain as an impairment of body function and the explicit inclusion of contextual factors seem to offer a better possibility of fitting the disablement condition in chronic back pain into a conceptual scheme than did former models. In the ICF disability and functioning are viewed as outcomes of interactions between health conditions (diseases, disorders and injuries) and contextual factors. The model identifies 3 levels of human (dys)functioning: functioning at the level of body or body part (body function and structure), the whole person (activity) and the whole person in a social context (participation).

Surprisingly, comparative documentation of the level of (dys)functioning within individuals with chronic back pain with varying degrees of symptom-specificity is scarce. The objective of this paper is to compare the level of functioning as defined by the ICF model between patients with specific, non-specific or widespread back pain. Specific back pain is regarded as being highly symptom-specific, non-specific back pain as moderately symptom-specific and back pain as part of widespread pain symptoms as little symptom-specific. The hypothesis to be tested here is that disablement in chronic back pain appears more complex with decreasing symptom-specificity. In a group of patients with similar participation restriction in the sense of duration of sick-listing, patients with specific back pain are expected to show higher impairment of physical body function and structure, with consequential activity restriction. On the other hand, patients with widespread pain are expected to show higher impairment of mental function and more unfavourable contextual factors.

METHODS

Subjects

All inhabitants of an urban and a rural town (Sandefjord and Lardal municipality) in southern Norway who had had 8 weeks of sick-leave[1] with back pain as the dominant symptom were referred to the outpatient department of the Kysthospital, Vestfold counties hospital for physical medicine and rehabilitation. All subjects were informed orally and in writing that their referral to the hospital and examination was part of the Vestfold Back Project. This project was initiated to accelerate referral to secondary healthcare of patients with back pain in order to reduce long-term sick-leave. The project was not designed as a research project but merely as a socio-medical initiative. The research study described in this paper focuses on all patients referred to the hospital during a 2-year period. They went through a comprehensive diagnostic evaluation and were referred to treatment if indicated. Patients were obliged to attend the examination in order to receive sickness benefits. The medical insurance status of all subjects was registered for 3 years following initial sick-listing. All diagnostic procedures, history taking and data collection within this study were part of a standard specialist practice and therefore not subjected to approval by an ethics committee.

To be included to this research study, the subjects had to be between 17 and 60 years of age and participators in the Vestfold Back Project. Two percent of the patients who were referred to the project did not attend, for unknown or invalid reasons. Subjects who were no longer sick-listed or who had a sickness grade of less than 75%, who were receiving any disability pension, who were pregnant, who were on sick-leave because of back surgery or who were employed by the government[2] were excluded from this study. A total of 196 subjects (98 women, 98 men) met the inclusion criteria and was included in the study. No attempt was made to equalize the gender proportion. They represented 1.2% and 1.0% of the female and male total labour force of this region, respectively.

The subgroups defined (definitions subgroup 1 and 2 according to van Tulder et al. (12)) and corresponding spine injury/illness codes according to International Classification of Diseases (ICD-9) were:

1. Chronic "specific back pain" (SBP)-symptoms caused by a specific pathophysiological mechanism; displacement of thoracic or lumbar intervertebral disc without myelopathy (ICD 722.1), spinal stenosis (ICD 724.0), sciatica (ICD 724.3).
2. Chronic "non-specific back pain" (N-SBP)-symptoms without clear specific cause; spondylosis without myelopathy (ICD 721.2, 721.9), backache, unspecified (ICD 724.5).
3. Chronic "widespread pain" (WSP)-back pain as part of widespread musculoskeletal pain; myalgia (ICD 729.1). This last subgroup may also include patients with a fibromyalgia diagnosis according to the ACR-90 criteria.

Some characteristics of the subjects according to symptom-specificity are shown in Table I.

Procedures

Prior to examination, the subject's general practitioner ordered blood, urine and X-ray examinations. At home, the patients had to fill in a simple questionnaire including socio-demographic data, medical history and pain experience. At the rehabilitation hospital, a specialist in physical medicine and rehabilitation performed a standardized clinical examination and measured lumbar spine and hip mobility. Directly following examination, the patients were asked to complete 3 standardized instruments concerning satisfaction with different aspects of life, psychological and emotional status. A human movement scientist was responsible for the physical fitness tests and anthropometry measurements. In addition, in the patients who were referred to the functional restoration program (female/male distribution: SBP: 12/11, N-SBP: 32/36 WSP: 13/6) (13), domestic work and leisure and physical activity habits were evaluated at the start of intervention with a structured interview by an instructor in adapted physical activity.

Assessment of health condition

To assess health condition, a questionnaire was used to assess back pain history and former treatment. Pain localization was evaluated by a pain drawing. To assess neurological findings and muscular status a standardized clinical examination was carried out. The presence of signs of spinal degeneration at the painful site was determined by X-ray analysis of the lumbosacral spine by a radiologist. For subjects over 50 years of age, X-rays of the hips were also analysed.

Assessment of functioning

To quantify body function and structure impairment, pain intensity was assessed by a 100-mm horizontal visual analogue scale ((VAS) 0 = no pain to 100 = worst imaginable pain) and pain during some specific activities by the Activity Discomfort Scale (ADS) (14). Lumbar spine mobility was assessed with an electronic digital inclinometer by measuring differences between range of motion in flexion (true lumbar spine flexion) in sacrum and T12-L1, respectively (15). Aerobic capacity was tested with the Åstrand sub-maximal 6-minute protocol on an electronically braked cycle ergometer (16). To quantify mental distress, the Anxiety, Depression and Irritability scheme (ADI) was used (17).

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[1] All residents in Norway are required to be members of the National Social Insurance Scheme. Individuals taking sick-leave of more than 3 days need a sickness certificate from their primary physician. Individuals taking more than 8 weeks of sick-leave must be issued a Sickness Certificate II to be eligible for more sickness benefits.

[2] For civil servants there are no detailed data registered at the local National Social Insurance offices.

Table I. *Characteristics of the subjects by type of diagnosis (ICD-9 classification) as defined after baseline examination. Values are expressed as mean with (standard deviation), median with (interquartile range) or percentage*

Characteristics	SBP	N-SBP	WSP
Number of patients, *n* (%) of total group	34 (17)	113 (58)	49 (25)
Gender (% male)	55.9	54.0	36.7
Age (years, mean)			
Men	43.7 (6.8)	41.3 (12.7)	42.5 (7.4)
Women	45.7 (9.2)[3]	41.5 (10.7)[3]	35.6 (9.6)[1,2]
Sick-leave (days, median)	81.5 (19)	79.0 (25.5)	75.5 (19.5)

[1,2,3] Significant *post hoc* Scheffé analysis subgroup differences for [1]SBP, [2]N-SBP and [3]WSP, respectively.
SBP = specific back pain; N-SBP = non-specific back pain; WSP = widespread pain.

Perceived pain-related activity limitation was assessed with the Oswestry Low Back Pain Disability Index (ODI) (0% = absence of disability to 100% = maximal disability) (18). Ability to run ("yes/no") was evaluated with the Norwegian questionnaire "Sports, Leisure Time and Living Circumstances" (19). Practical physical performance was evaluated with a standardized lifting test. Lifting technique was optional. The number of lifts was recorded (20).

Participation restriction was evaluated by checking employment state (sick-listing, permanent disablement and unemployment) from the records of the local offices of the National Insurance Scheme, 3 years after initial sick-leave. In addition, participation in outdoor activities and domestic work was evaluated with some items from the Norwegian questionnaire "Sports, Leisure Time and Living Circumstances" (19) among those who participated in the intervention.

Assessment of contextual factors

Contextual factors were evaluated with questionnaires concerning education, employment, back problems and occupational disablement among relatives, perceived clarity concerning back problems and satisfaction with economy, housing and employment. Satisfaction with social aspects of life (family, friends and work) was assessed with APGAR test (adaptation, partnership, growth, affection and resolve) (21). From anthropometry measurements body mass index (BMI) was calculated (weight (kg)/height^2 (m^2)). In addition, quality of ergonomic technique during a lifting activity was scored (5 point scale (1 = worst to 5 = best), reliability and validity is unknown) and activity level was evaluated from some items of the Norwegian questionnaire "Sports, Leisure Time and Living Circumstances" (19).

Statistical analysis

All results were related to diagnostic subgroup and, if relevant, to gender. Aerobic capacity (gender, age and weight specific (22)) and trunk mobility (gender and age specific (15)) are reflected as a ratio related to adjusted normal values. A value of 1.0 reflects test results equal to a population average normal database; values below 1.0 reflect results below normal.

To test the mutual differences of the 3 diagnostic subgroups, for factors measured at a nominal scale or ordinal scale with maximal 3 response categories, Linear-by-Linear Association was used if results declined or inclined with increasing symptom specificity, otherwise Pearson chi-square. Other factors measured at an ordinal scale were evaluated with the non-parametric Median test. For factors measured at an interval and ratio scale, 1-way ANOVA and *post hoc* Scheffé analyses were applied.

Because of multiple testing, *p*-values below 0.001 were considered statistically significant and *p*-values below 0.05 were considered as showing a tendency. The analyses were performed with SPSS 11.0.0 software (SPSS Inc, Chicago, USA).

RESULTS

Health condition

In most patients pain development had started acutely (i.e. within a few hours). While 87% of the patients in the WSP group reported that their back pain started acutely, only 67% of the patients with N-SBP reported an acute onset (*p* = 0.025). Pain duration and former sick-listing because of back pain among the 3 diagnostic subgroups did not differ significantly (*p* = 0.780).

Nearly all patients had received treatment. The type of treatment received was generally independent of the type of diagnosis (*p* = 0.166–0.963). Use of simple analgesics and non-steroidal anti-inflammatory drugs (NSAIDs) tended to be greatest in patients with SBP (*p* = 0.007–0.025) (Table II).

Functioning

Body function and structure. No subgroup differences were found in either pain intensity (*p* = 0.737) or in pain scores during activity-related pain (ADS) (*p* = 0.452). With increasing symptom-specificity, impairment increased significantly in lumbar spine mobility (*p* ≤ 0.000) and aerobic capacity tended to decrease (*p* = 0.005). Mental distress tended (*p* = 0.018–0.124) to become more apparent with decreasing symptom-specificity. The proportion of patients with a divergent score varied from 27% to 62% (Table III).

Activity. Perceived pain-related disability (ODI) (*p* = 0.017) and stated ability to run (*p* = 0.012) increased with decreasing symptom-specificity, but differences were not significant. Shortcomings concerned walking, sitting, travelling and social life in particular. Lifting capacity did not differ among diagnostic subgroups (Table IV).

Participation. Leisure activity, participation in outdoor activities, domestic work or future employment did not differ among the diagnostic subgroups. Taking into consideration both work ability (absence of sick-listing and disability pension) and unemployment, 3 years following examination only 62%, 60% and 55% were at work, respectively (Table V).

Contextual factors

Unfavourable contextual factors were apparent in all 3 diagnostic subgroups. The only significant difference between diagnostic subgroups concerned education. Educational level was relatively highest in patients with SBP.

Overall satisfaction concerning employment, economy and housing conditions showed a tendency to decrease (*p* = 0.029) with decreasing symptom-specificity, but no differences were found between the 3 diagnostic subgroups in patient's social satisfaction in the context of leisure time and family, friends and work. However, among the individual items, patients with WSP showed a tendency to be more often dissatisfied with the way their colleagues shared time (*p* = 0.033) and emotions (*p* = 0.027) with them and they tended more frequently to obtain the feeling that their ideas were not accepted (*p* = 0.032). No

Table II. *Results of the factors evaluating the ICF dimension "Health Condition" among patients with specific back pain (SBP), non-specific back pain (N-SBP) and widespread pain (WSP). Values are expressed median with percentage. p-values evaluate subgroup differences*

Health condition	p-value	SBP n = 34	N-SBP n = 113	WSP n = 49
Clinical examination				
neurology (% positive findings)	0.000	81.3	8.0	4.2
muscle (% positive findings)	0.004	50.0	67.6	80.9
Spinal radiography[1]				
disc degeneration (% positive findings)	0.000	76.9	50.6	17.6
Back pain				
development (% acute)	0.025	78.8	66.7	87.0
duration (months, median)	0.780	36.0	60.0	48.0
former sick-leave because of back-pain (%)	0.568	70.6	63.7	59.2
localization				
cervical/thoracic (%)	0.000	29.4	46.4	85.7
lumbar/sacral (%)	0.019	94.1	97.3	85.7
legs (%)	0.001	85.3	65.2	49.0
Treatment				
received (%)	0.142	94.1	98.2	91.8
number of modalities (0–16, median)	0.324	5.0	4.0	4.0
manipulation/chiropractor (%)	0.166	61.8	51.3	40.8
acupuncture/electrophoresis/TNS (%)	0.963	52.9	51.8	50.0
passive: heat, massage (%)	0.879	70.6	70.5	66.7
active: exercises, ergonomy (%)	0.572	67.6	62.5	70.8
psychologist, intervention/counselling (%)	0.258	2.9	4.4	10.2
laser/ultra sound (%)	0.399	50.0	48.2	37.5
alternative (%)	0.177	29.4	21.2	34.7
Medication				
simple analgesics (%)	0.007	73.5	44.0	59.2
NSAIDs (%)	0.025	26.5	13.8	8.2

[1] Missing values; n = 26, 87 and 34, for SBP, N-SBP and WSP, respectively.
NSAIDs = non-steroidal anti-inflammatory drugs; TNS = transcutan nerve stimulation; ICF = International Classification of Functioning, Disability and Health.

difference was observed with satisfaction concerning the executed work or with the relationship with closest superior. Concerning dissatisfaction with their leisure time, with decreasing symptom-specificity, family care tended ($p = 0.034$) to be mentioned more frequently as a hindrance to spending leisure time as desired.

The prevalence of back pain in family members was similar, but occupational disability among the relatives tended to increase ($p = 0.030$) with decreasing symptom-specificity.

Although mean body mass index (BMI) did not differ significantly among subgroups, the proportion of women having a BMI <20 tended to increase with decreasing symptom-specificity. At the same time significantly more women with N-SBP were obese (BMI >30). In men, no significant differences were observed. While employment data indicated an equally heavy physical and psychological burden for all subgroups and both sexes, the proportion of women undertaking heavy work who had low (<20) (92%) or high (>30)

Table III. *Values of the factors evaluating functioning in the ICF dimension "Body Function and Structure" among patients with specific back pain (SBP), non-specific back pain (N-SBP) and widespread pain (WSP). Values are expressed as mean with (standard deviation), or percentage, p-values evaluate subgroup differences*

Body function and structure	p-value	SBP n = 34	N-SBP n = 113	WSP n = 49
Pain				
Intensity (0–100, mean)	0.737	38.7 (21.6)	41.8 (18.7)	41.9 (17.8)
During activity (total score ADS 18–90, mean)	0.452	43.2 (9.6)	41.0 (8.4)	41.8 (8.8)
Lumbar spine mobility				
Lumbar spine flexion (index, mean)	0.000	0.48 (0.23)[2,3]	0.62 (0.23)[1,3]	0.72 (0.18)[1,2]
Cardiovascular function				
Aerobic capacity (index, mean)	0.005	0.71 (0.17)[3]	0.80 (0.17)	0.86 (0.23)[1]
Mental distress (% with divergent score)	0.051	36.4	47.7	58.3
Anxiety (% with divergent score)	0.018	36.4	47.7	62.5
Depression (% with divergent score)	0.042	27.3	40.4	50.0
Irritability (% with divergent score)	0.124	54.5	60.6	62.1

[1,2,3] Significant *post hoc* Scheffé analysis subgroup differences for [1]SBP, [2]N-SBP and [3]WSP, respectively.
ICF = International Classification of Functioning, Disability and Health.

Table IV. *Results of the factors evaluating functioning in the ICF dimension "Activity" among patients with specific back pain (SBP), non-specific back pain (N-SBP) and widespread pain (WSP). Values are expressed as mean with standard deviation or percentage. p-values evaluate subgroup differences*

Activity	*p*-value	SBP *n* = 34	N-SBP *n* = 113	WSP *n* = 49
Perceived pain-related disability (ODI) (mean total score)	0.017	40.7 (12.9)[2,3]	34.4 (13.2)[1]	32.8 (11.9)[1]
Ability to run[4] (%)	0.012	59.1	74.1	94.4
Lifting (mean number)	0.702	15.8	16.8	17.3

[1,2]or [3]indicate significant *post hoc* Scheffé analysis subgroup differences for [1]SBP, [2]N-SBP and [3]WSP, respectively.
[4] Missing values; *n* = 22, 58 and 18, for SBP, N-SBP and WSP, respectively. ODI: Oswestry Disability Index.

(73%) BMI was very high. In WSP, all patients with deviant BMI were carrying out heavy manual labour. In addition, men with WSP more often showed significantly poor ergonomic techniques in lifting (Table VI).

DISCUSSION

This study, using the ICF model to describe functioning, showed that disablement in patients with chronic back pain may appear more complex with decreasing symptom-specificity. Pain components and final participation restriction did not differ among the diagnostic subgroups. However, with increasing symptom-specificity, loss of physical body functions and subsequent activity limitation increased. On the other hand, with decreasing symptom-specificity, mental distress, prevalence of unfavourable contextual factors and dissatisfaction with various life factors tended to increase, which may result in an increased impact of pain on restricting participation. However, because of the small subgroups of SBP and WSP and the chosen conservative level of significance (*p*-values below 0.001), this study may have lacked the power to detect some actual relevant subgroup differences. A larger study may be needed to confirm our findings.

Choice of methods to assess functioning within the different domains of ICF may be challenging. Unfortunately, only a few acceptably validated questionnaires are designed to distinguish between the different domains of functioning (23). Although many reliable performance-based assessment tests exist, neither clinician-measured nor self-reported physical body function are pure measures of body function and structure impairment. Spinal mobility and aerobic capacity, for instance, are true bodily functions, but are difficult to operationalize. Such assessments require maximal effort from the patient. Other factors, such as motivation, pain and fear of injury/pain, strongly affect maximal physical performance in back patients and inhibit real physical functioning (24, 25). In fact, they may rather reflect activity limitation.

Other studies comparing localized back pain with WSP (26–28) have found that impaired mental functioning becomes more apparent with decreasing symptom-specificity. The tendency shown in this study supports these findings. Mental distress is often considered to be associated with uncertainty about pain causation and prognosis, reduced physical functioning and increased pain intensity (29). In this study, pain intensity, pain duration and "uncertainty" did not differ among the subgroups, and physical functioning even increased with decreasing symptom-specificity. Hence these factors cannot explain the observed increase in impaired mental functioning associated with decreased symptom-specificity. After 3 years, work ability among diagnostic subgroups (72–78%) still did not vary. Notable however, was the high unemployment rate. As many as 29% of the patients with WSP and 16–19% of the other patients who were no longer sick-listed were unemployed after 3 years. In that period the unemployment rate was only 4.5–6.0% in the area concerned.

The contextual factors that are known risk factors for occurrence and chronicity of back pain (12) were present in all 3 subgroups of this study. Although this was most frequent in WSP, most differences were not statistically significant at the 0.001 level. Of the patients with N-SBP and WSP as many as 82% and 71%, respectively, had less than 10 years of education, while this applied to 52% of the patients with SBP and only 15%

Table V. *Results of the factors evaluating functioning in the ICF dimension "Participation" among patients with specific back pain (SBP), non-specific back pain (N-SBP) and widespread pain (WSP). Values are expressed as mean with (standard deviation) or percentage. p-values evaluate subgroup differences*

Participation	*p*-value	SBP *n* = 34	N-SBP *n* = 113	WSP *n* = 49
Participation leisure outdoor activities[1] (% >9 ×last year)	0.274	100.0	89.7	89.5
Domestic work[2] (hours/week, mean)	0.125	14.8 (9.8)	12.4 (10.8)	18.7 (16.3)
Future employment, 3 years later				
"Workable" (>75% employment grade, %)	0.689	76.5	71.7	77.6
Unemployed (% of "workables")	0.259	19.2	16.0	28.9

[1] Missing values; *n* = 23, 63 and 18, for SBP, N-SBP and WSP, respectively.
[2] Missing values; *n* = 22, 63 and 18, for SBP, N-SBP and WSP, respectively.

Table VI. *Results of the factors evaluating functioning in the ICF dimension "Contextual factors" among patients with specific back pain (SBP), non-specific back pain (N-SBP) and widespread pain (WSP). Values are expressed as, median with percentage, p-values evaluate subgroup differences*

Contextual factors	p-value	SBP n = 34	N-SBP n = 113	WSP n = 49
Education (%)				
<10 year	0.000	51.5	82.9	71.4
Advanced college/university		21.2	1.8	4.1
Employment				
Physical workload (%) heavy physical work	0.899	55.9	67.0	59.2
Working-hours (%) beyond normal working time	0.413	52.9	62.0	52.1
>40 hours/week[1]	0.432	82.4	76.0	74.5
Satisfaction				
Economy/housing/employment (%)	0.029	87.9	76.1	67.3
Family/friends/colleagues (%)	0.723	80.6	78.0	77.1
Leisure time (%)[2]	0.745	52.2	59.7	63.2
Unsatisfactory due to health problems (%)	0.989	30.4	29.9	31.6
Unsatisfactory due to family care (%)	0.034	4.3	10.4	26.3
Back pain				
Clarity				
cause (1–9) (median)	0.813	5.0	5.0	5.0
treatment (1–9) (median)	0.214	5.0	5.0	5.0
Family members				
back pain (%)	0.620	70.6	77.9	72.9
occupational disablement (%)	0.030	17.6	28.3	39.6
Body mass index (kg/m², %)				
men <20/ >30	0.311	5.6/0.0	1.7/10.0	0.0/5.9
women <20/ >30	0.037	0.0/7.7	11.8/19.6	23.3/3.3
Activity level[3]				
Training (at least once a week, %)	0.114	69.9	51.5	73.7
Training 3 years ago (more often, %)	0.158	45.5	62.9	66.7
Ergonomy lifting[4] (1–5) (median)	0.407	2.0	3.0	2.0 (1.25)

[1] Missing values; n = 34, 104 and 47, for SBP, N-SBP and WSP, respectively.
[2] Missing values; n = 23, 67 and 19, for SBP, N-SBP and WSP, respectively.
[3] Missing values; n = 22, 62 and 18, for SBP, N-SBP and WSP, respectively.
[4] Missing values; n = 12, 97 and 46, for SBP, N-SBP and WSP, respectively.

of the population of this area. This high proportion may be explained by the assumption that persons with a low level of education are more likely to develop maladaptive pain beliefs and coping strategies and, subsequently, participation restriction (30).

Low symptom-specificity seemed to be associated with deviant BMI combined with heavy workload. Since pathology is lacking in the disablement processes of these patients, one might suggest that external physical load could be an explanation for back pain.

Previous studies have described a familial predisposition to chronic pain and coping methods (31). From a biological point of view a higher familial occurrence in patients with SBP was expected. From a psychosocial point of view, maladaptive pain-related behaviour was expected to become more obvious with decreasing symptom-specificity. Prevalence of back pain among family members did not differ among the subgroups, but prevalence of occupational disability of family members tended to increase from 13% to 40% with decreasing symptom-specificity (p = 0.030), possibly indicating an increase in unfortunate pain coping-techniques. Much responsibility for family care may be an additional burden for the patients with WSP in particular; 26% (vs 4% and 10%) mentioned this as a hindrance for spending their leisure time as desired.

Implications for clinical practice and research

This study showed that sick-listed patients with chronic back pain have been treated as a single group and received many types of intervention, irrespective of underlying specific diagnosis and problems. A differentiation of approach offered to the different groups may improve outcome. For instance, management of patients with WSP should probably focus on improving contextual factors and mental functioning instead of improving body function. However, for all subgroups it seems important to receive an adequate explanation of their back problem (32) and to understand the intervening role of mental distress and contextual factors in the disablement process.

Functioning appears to be a significant concept in back pain. It therefore seems meaningful to quantify functioning, not only to assess which functioning components are impaired, but also to guide intervention (33). Quantification of functioning through physical examination, testing or observation may also provide important information concerning the association between objective and subjective levels of functioning and perceived physical effort.

In interpreting intervention results, one should focus attention on symptom-specificity of the subjects and the level at which the functioning outcome is evaluated. It is important to develop or recognize reliable validated assessment methods that

distinguish between the different domains of functioning. Another challenge for future research is to study the impact of improvements in functioning and the significance of symptom-specificity for prediction of return-to-work and pain relief.

An important question that this study is unable to answer is: What if the approach from the healthcare system had been directed toward continuing work participation or early work resumption instead of focusing on diagnostic procedures and finding a possible cure? Would the disabling process and the outcome be different?

Since the disablement condition appears to be complex in all 3 diagnostic subgroups, the use of the ICF model seems helpful in directing our attention to different perspectives of functioning rather than focusing on diagnostic procedures and finding a possible cure. This may improve the outcome of this group of patients.

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REFERENCES

1. Michel A, Kohlmann T, Raspe H. The association between clinical findings on physical examination and self-reported severity in back pain. Spine 1997; 22: 296–304.
2. Deyo RA, Rainville J, Kent DL. What can the history and physical examination tell us about back pain? JAMA 1992; 268: 760–765.
3. Waddell G. Clinical assessment of lumbar impairment. Clin Orthopaed Rel Res 1987; 221: 110–120.
4. Indahl A, Haldorsen EH, Holm S, Reikeras O, Ursin H. Five-year follow-up study of a controlled clinical trial using light mobilization and an informative approach to low back pain. Spine 1998; 23: 2625–2630.
5. Linton SJ. A review of psychological risk factors in back and neck pain. Spine 2000; 25: 1148–1156.
6. McQuade KJ, Turner JA, Buchner DM. Physical fitness and chronic low back pain. An analysis of the relationships among fitness, functional limitations, and depression. Clin Orthop 1988; 233: 198–204.
7. Vlaeyen JWS, Linton SJ. Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. Pain 2000; 85: 317–332.
8. Flor H. Cortical reorganisations and chronic pain: implications for rehabilitation. J Rehabil Med 2003; 41(suppl): 66–72.
9. Giesecke T, Gracely RH, Grant MAB, Nachemson A, Petzke F, Williams DA, et al. Evidence of augmented central pain processing in idiopathic chronic low back pain. Arth Rheum 2004; 50: 613–623.
10. Rhodes LA, McPhillips-Tangum CA, Markham C, Klenk R. The power of the visible: the meaning of diagnostic tests in chronic back pain. Soc Sci Med 2003; 48: 1189–1203.
11. World Health Organization. The international classification of functioning, disability and health – ICF. 22-5-2001. Geneva: World Health Organization. Available from URL:http://www3.who.int/icf/icftemplate.cfm
12. Tulder van M, Koes B, Bombardier C. Low back pain. Best Pract Res Clin Rheumatol 2002; 16: 761–775.
13. Haldorsen EMH, Wormgoor MEA, Bjørholt PG, Ursin H. Predictors for outcome of a functional restoration program for low back patients – a 12 month follow-up study. Eur J Phys Med Rehabil 1998; 8: 103–109.
14. Turner JA, McCreary CP. Chronic low back pain: predicting response to nonsurgical treatment. Arch Phys Med Rehabil 1983; 64: 560–563.
15. Keeley J, Mayer TG, Cox R, Gatchel RJ, Smith J, Mooney V. Quantification of lumbar function. Part 5: reliability of range-of-motion measures in the sagittal plane and an in vivo torso rotation measurement technique. Spine 1986; 11: 31–35.
16. Åstrand I. Aerobic work capacity in men and women with special reference to age. Acta Physiol Scand 1960; (suppl): 49.
17. Havik OE, Maeland JG. The ADI-inventory: the reliability and validity of a short inventory for measuring anxiety, depression, and irritability. N Psyk Tidsskr 1983; 20: 70 (abstract in English).
18. Fairbank JC, Davies JB, Couper J, O'Brian JP. The Oswestry low back pain disability questionnaire. Physiotherapy 1980; 66: 271–272.
19. Danielsen Ø. Den nye bredde idretten. Ønsker og behov for fysisk aktivitet. [The new broad sport. Wishes and needs for physical activity.] 3. Delrapport for prosjektet 'Idrett, fritid og levekÅr'. 088. Oslo: Fafo; 1989 (in Norwegian).
20. Wie SL. An evaluation of lifting function in persons with low-back pain. An assessment and evaluation of the reliability and validity of the dynamic lift test "Kystatesten Lifting-low." Master's thesis. Bergen: University of Bergen; 1996.
21. Smilkstein G, Ashworth C, Montano D. Validity and reliability of the family APGAR as a test of family function. J Fam Pract 1982; 10–311.
22. Fletcher GF, Balady G, Froelicher VF, Hartlsy LH, Haskell WL, Pollock ML. Exercise Standards: a statement for healthcare professionals from the American Heart Association. Circulation 1995; 91: 580–615.
23. Grotle M, Brox JI, Vollestad NK. Functional status and disability questionnaires: what do they assess? A systematic review of back-specific outcome questionnaires. Spine 2005; 30: 130–140.
24. Al-Obaidi SM, Nelson RM, Al-Awadhi S, Al-Shuwaie N. The role of anticipation and fear of pain in the persistence of avoidance behavior in patients with chronic low back pain. Spine 2001; 25: 1126–1131.
25. Wallbom AS, Geisser ME, Haig AJ, Yamakawa K, Montgomery D. Concordance between rating of perceived exertion and function in persons with chronic, disabling back pain. J Occup Rehabil 2002; 12: 93–98.
26. Croft P, Lewis M, Hannaford P. Is all chronic pain the same? A 25-year follow-up study. Pain 2003; 105: 309–317.
27. Natvig B, Bruusgaard D, Eriksen W. Localized low back pain and low back pain as part of widespread musculoskeletal pain: two different disorders? A cross-sectional population study. J Rehabil Med 2001; 33: 21–25.
28. Hawley DJ, Wolfe F. Pain, disability, and pain/disability relationships in seven rheumatic disorders: a study of 1,522 patients. J Rheumatol 1991; 18: 1552–1557.
29. Walter B, Vaitl D, Frank R. Affective distress in fibromyalgia syndrome is associated with pain severity. Z Rheumatol 1998; 57(suppl 2): 101–104.
30. Roth RH, Geisser ME. Educational achievement and chronic pain disability: mediating role of pain-related cognitions. Clin J Pain 2002; 18: 286–296.
31. Lea RD, Etheredge GD, Freeman JN, Wax BL. Familial disability patterns in individuals with chronic work-related spine injury/illness. Spine 2003; 28: 2292–2297.
32. Deyo RA, Diehl AK. Patient satisfaction with medical care for low-back pain. Spine 1986; 11: 28–30.
33. Wormgoor ME, Bjorholt PG. Physical functional level and chronic back pain. Methods for an objective assessment as a part of diagnosis and treatment. Tidsskr Nor Laegeforen 1994; 114: 1301–1305.