

## ORIGINAL REPORT

# PERCEIVED DISADVANTAGES CAUSED BY LOW BACK PAIN

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**Objective:** To evaluate the perceived disadvantages caused by low back pain in work, household chores and leisure-time activities, as expressed by patients themselves.

**Design and subjects:** Structured telephone interviews, carried out among a sample of 39 physician referrals (29 women and 10 men) for non-specific chronic low back pain to University Hospital, Turku, covered how low back pain affected their daily living, with separate sections for work, household chores and leisure time. Disadvantages in daily activities were measured using numeric rating scales (0–100). The differences between scores for ability to perform with low back pain and for expected performance if the subject did not have low back pain were used to depict the disadvantage in each activity.

**Results:** Men reported a greater disadvantage than women in work, household chores and leisure-time activities. The ability to perform in any of the 3 daily activities was associated with an ability to perform in the others. Good performance at work was reported by 81.0% of the women and 42.9% of the men. Because of low back pain, leisure-time activities had been reduced by 82.1% of the patients and, out of them, 64.1% had completely given up at least one leisure-time activity.

**Conclusion:** When estimating the overall burden of low back pain, the measure of work-related loss of productivity should be complemented by measures of performance in household chores and limitations to leisure-time activities. To depict extensively the burden to the patients, such measures should be based on the activities the patients consider important. These are best determined by using the phrasings and expressions the patients themselves use.

**Key words:** low back pain; disadvantage; daily activities.

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## INTRODUCTION

Low back pain (LBP) affects up to 80% of people at some point in their lives (1) and its incidence and prevalence are roughly the same worldwide (2). LBP is considered to be one of the major causes of musculoskeletal disability (3) and is a common reason for using healthcare (4). Estimates of prevalence

at any time-point vary from 11% to 21%, depending on the population selected and how LBP is defined (5, 6).

Depending on the society studied and its healthcare funding, the overall cost per patient with LBP varies considerably (7–9). In 2008, back disorders were the reason for 2.3 million days of sick leave in Finland (10). Indirect costs, such as sick leave and early retirement (8), contribute up to 85% of the total costs of LBP. Cost-of-illness studies lack a common methodology, making comparisons difficult, and actual cost estimates can vary a great deal depending on the costing methodology employed (11).

In addition to the financial losses to society and patients, LBP also has a major impact on various aspects of patients' everyday lives. In an earlier study 80% of patients reported that LBP impaired their ability to perform activities of daily living, such as toileting, driving and doing household chores. Nearly one-third of the patients refrained from participating in sporting activities because of their LBP (12). In another study, 47% of LBP patients spent less time on household chores during the week prior to the study. For 35% of the patients, the household chores were taken over by others (13). Furthermore, in a Finnish study, 38.7% of patients with undefined LBP had to reduce their leisure-time activities (14).

The aim of this study was to evaluate the perceived disadvantages caused by LBP in work, household chores and leisure-time activities, as expressed by patients themselves.

## METHODS

### *Patient sample and questionnaire*

The patient sample was based on 202 systematic physician referrals during 2007–08 for non-specific chronic LBP to the Turku University Hospital, Department of Physical and Rehabilitation Medicine. However, at the time of patient entrance to the study the diagnosis had not been confirmed by a specialist in rehabilitation medicine. The duration of the various symptoms the patient had was unknown. The key inclusion criterion was chronic LBP (minimum 6 weeks) as the primary cause for referral; patients with LBP and also concomitant symptoms of pain in other parts of vertebrae, and pain and/or disabilities in the upper and/or lower extremities were also accepted. Exclusion criteria included infections, traumas and malignancy. The sampled patients participated in an earlier questionnaire studying how well they managed to carry out their usual daily activities. Based on the findings of two pilot studies, it was estimated that with a sample of about 30 patients it would be possible to detect factors that affect LBP patients' everyday lives. Out of the original sample, 42 randomly chosen patients were sent an additional questionnaire in which they were asked to describe in their own words which activities and functions LBP had affected.

All 42 returned completed questionnaire forms. Three patients declined to participate in further studies. In December 2008, the remaining 39 patients were contacted and were asked to participate in a structured interview over the telephone by a trained interviewer. They formed the final patient sample for this study.

The ethics committee of The Hospital District of Southwest Finland approved the study, and the sampled subjects had previously received a written description of the sampling procedure and study purpose, as well as the planned use and storage of the information they were to provide. This was followed by a description of the subject's rights according to the Declaration of Helsinki. Participation in the interview phase was voluntary.

*Interview*

The interviewer (ML) had been trained for this particular study by carrying out 10 practice interviews with unknown subjects who were not included in the actual study. The phrasing of some of the questions was modified based on the experience and received feedback from these practice interviews.

All 39 of the patients contacted were willing to participate in the interview and all of them completed the whole interview. The time allowed for answering each question was not limited. In the beginning of the telephone call the purpose of the interview was described. The interview comprised questions that dealt with how LBP affected their daily living, with separate sections for work, household chores and leisure time. The interviews lasted for a mean of 15 min on average (range 9–23 min).

Socio-demographic background data were collected. The mean age of the patients was 46 years (range 20–73 years), 29 were women and 10 were men. A dichotomy of: 0: younger than 50 years; and 1: 50 years and over was formed. The nature of the current or previous work was solicited and categorized as: 0: pensioner; 1: blue-collar worker; 2: white-collar worker; 3: student; and 4: unemployed. These were further dichotomized as: 0: out of active workforce; and 1: actively working (including students). A further dichotomy used was: 0: not a blue-collar worker; 1: blue-collar worker. The role of age and work-status were studied because occurrence of LBP can be expected to increase with increasing age, and physical strain in work may aggravate LBP.

*Disadvantage at work*

The subjects in the active workforce (28/39) were asked to assess how well they were able to perform in their normal work. This was done using a numeric rating scale (NRS) from 0 to 100, where 0 represented an inability to perform at all and 100 an ability to perform without any difficulty. They were first asked to assess their ability to perform at work with LBP at the moment of the interview, and in the next stage they were asked to estimate their expected performance in a hypothetical situation if they did not have LBP. The differences between the scores with and without LBP depicted the level of disadvantage caused by LBP. An ability to perform well at work was later arbitrarily set to NRS score 70.

*Disadvantage in household chores*

The subjects (39/39) were then asked how many hours of help friends and relatives had given them with household chores during one week. The reported time was later transformed into minutes. The ability to

perform household chores at the time of the interview was solicited using a similar NRS, as used earlier for work performance. The differences between reported performances with and without LBP showed the level of disadvantage caused by LBP in household chores.

*Disadvantage in leisure-time activities*

In an identical manner to the two previous assessments, the NRS scores for performing hobbies and leisure-time activities with and without LBP provided the figures for computing the disadvantage experienced in leisure-time activities to all subjects (39/39).

The subjects were then asked to list which hobbies or leisure-time activities had been affected by LBP to such an extent that they had been forced to either reduce the time spent engaged in these activities or to give them up completely. They reported how many hours per week they currently performed each mentioned activity and what percentage they had been forced to reduce them by due to LBP. They listed the hobbies and leisure-time activities using their own words, and they were not provided with any prepared list of activities to choose from. These were then sorted into 13 distinct categories, including: walking, social activities, gardening and 7 different sporting activities.

Sporting activities were also dichotomized: 0: other than sporting activities; and 1: sporting activities. Sporting activities included jogging, all ball games and gymnastics, for example. Several dichotomies were formed for being forced to reduce and to totally give up any leisure-time activities, sporting activities and other than sporting activities.

An overall disadvantage figure was obtained by computing a mean score for the disadvantages experienced in work, household chores and leisure-time activities.

*Statistical analysis*

The sample size was small, and the distributions of the studied variables were skewed in many cases. The statistical analyses of the data were based on the non-parametric Mann–Whitney *U* test, the Kolmogorov-Smirnov test, the  $\chi^2$  and Fisher's exact tests and Spearman's rank correlation coefficients, using SPSS software version 16.0 (SPSS Inc., Chicago, IL, USA). The level of statistical significance was set to  $p < 0.05$ .

RESULTS

The disadvantage caused by LBP was a mean of 21.7 when using the NRS scale of 0–100. Men reported a greater disadvantage than women in work, household chores and leisure-time activities (Table I). The ability to perform in any of the 3 daily activities was associated with an ability to perform in the others (Table II). Blue-collar workers experienced a greater disadvantage than non-blue-collar workers (Table III). A good performance at work (NRS score 70 or more) was reported by 81.0% of the women and 42.9% of the men.

Because of LBP, 82.1% (32/39) of the subjects had reduced their leisure-time activities, and, out of these, 64.1% (25/32) had completely given up at least one leisure-time activity. Overall, the patients had reduced the time spent doing a mean

Table I. Median differences in perceived disadvantages with and without low back pain measured by numeric rating scale (0–100) in work, household chores and leisure-time activities by sex

	Men	Women	All
Work ( <i>n</i> =28)	30.0	20.0	20.0
Household chores ( <i>n</i> =39)	30.0	20.0	30.0
Leisure time activities ( <i>n</i> =39)	27.5	20.0	20.0
Overall ( <i>n</i> =39)	26.2	21.7	21.7

All differences between sexes were statistically non-significant.

Table II. Relationships between age and perceived disadvantages in the studied activities shown as Spearman's rho values

	Age	Work	Household chores
Work ( <i>n</i> =28)	0.03		
Household chores ( <i>n</i> =39)	-0.33*	0.47*	
Leisure activities ( <i>n</i> =39)	-0.07	0.65***	0.49**

\* $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\* $p < 0.001$ .

Table III. Perceived median disadvantages caused by low back pain in work, household chores and leisure-time activities and overall disadvantages among blue-collar workers and non-blue-collar workers

	Blue-collar workers	Non-blue-collar workers
Work ( <i>n</i> =28)	30.0	20.0
Household chores ( <i>n</i> =39)	35.0	20.0
Leisure time activities ( <i>n</i> =39)	30.0	20.0
Overall ( <i>n</i> =39)	32.3	20.0

All differences between work-status were statistically non-significant.

of 2.1 leisure-time activities, and had given up a mean of 1.2 leisure-time activities. The proportion of the reduction in leisure-time activities was a mean of 76.9%. The most commonly reduced were walking (14/39) and different ball games (12/39). Overall, a reduction in sporting activities was more common ( $p < 0.05$ ) than in the other activities, and was pronounced among the men (Table IV).

Assistance with household chores had been received by 74.4% (29/39) of the patients. The weekly average amount of help lasted 260 min, ranging from 15 to 840 min. The men had received more assistance (400 min) than the women (224 min). Age had a minor, non-significant effect on the amount of assistance received.

## DISCUSSION

Systematic sampling of the patients was expected to provide a sample that represented typical non-specific chronic LBP patients treated by specialists in physical and rehabilitation medicine. However, our study sample was small, so one should be cautious when generalizing the findings of this study to all LBP patients. The small sample size, with, for example, only 10 men did not allow analyses of subgroups, such as various comorbidities. The patients were referred to the Department of Rehabilitation Medicine by physicians who were not working at the department and who had considered the patient would benefit from clinical assessment made by specialists. By the time of the interview the patients' diagnosis had not been confirmed by the specialists and they had not been assigned or participated in any rehabilitation programmes at the department.

In a previous questionnaire among the same patients, several assessments concerning functional abilities to carry out daily

activities were undertaken using the scale ranging from 0 to 100. Although in this interview study the assessments were made over the telephone, the patients had no difficulty comprehending the scale or quantifying their levels of disadvantage by expressing a figure to represent their perceptions. The patients in this interview phase had already participated in the earlier questionnaire study, and then expressed their willingness to participate in future studies. Interviewing these patients was expected to ensure a good participation rate. Due to the small sample size this was considered important. The same trained interviewer (ML) carried out all of the interviews strictly in the same manner, which undoubtedly reduced the possibility of interview bias. The type and severity of LBP patients' symptoms vary over time, and to minimize the effects of symptom variation and recall bias we used the time frame "Now". However, the assessment of ability to perform without LBP was not determined to mean the time before LBP had started. Some patients had experienced slowly deteriorating back condition over decades, whereas some others had experienced more rapid worsening. In particular, in those with longer developing LBP, it may have been difficult for patients to recall their actual performance from a long time ago. Use of a hypothetical situation without a definite time-frame was thought to decrease the variance caused by possible recall bias.

A structured interview method was chosen to guarantee that the patients gave their views of perceived disadvantages in all 3 aspects of daily living. An open interview without any structure would have produced a list of daily activities that have most affected the patients' lives. However, in such study settings patients may have reported on only one aspect of daily living. If the subject had answered at work, it may be that only work-related matters would have been reported.

The duration of interviews varied for several reasons: some patients were not in active workforce, and work-related questions were omitted in these cases. Some needed more time to recall the activities with disadvantages and the number of activities the patients mentioned varied considerably.

A wide range of instruments has been developed to measure the pain and disability of patients with LBP (15). The selection of measures and the definition of outcome criteria in chronic pain have typically been determined by researchers and clinicians, rather than by other stakeholders, such as service users and their families (16). In our study, the patients were asked to use their own words to describe the hobbies or leisure-time

Table IV. Percentage distributions of the patients who had been forced to reduce or to totally give up sporting activities and other leisure-time activities by the studied background factors (statistical analyses based on Fisher's exact test)

	Reduced sporting activities	Other reduced activities	Gave up sporting activities	Gave up other activities
All	69.2	51.3	56.4	41.0
Men	80.0	30.0	70.0	30.0
Women	65.5	58.6	51.7	44.8
> 50 years	70.6	64.7	52.9	52.9
< 50 years	68.2	40.9	59.1	31.8
Blue-collar workers	76.2	52.4	61.9	52.4
Non-blue-collar workers	61.1	50.0	50.0	27.8
Actively working	71.4	42.9	57.1	32.1
Out of active workforce	63.6	72.7	54.5	63.6

activities that had been affected by LBP to such an extent that they had either been forced to reduce the amount of time spent doing these activities or completely give them up. If ready-made lists compiled by professionals had been used for the hobbies and leisure-time activities, there would be a possibility that some activities that were important to the patients would have been missed out. In addition, such lists could have included either hobbies or leisure-time activities that were not among the most important ones to the patients, but they would have chosen them because the correct activity would not have been available to them. Our method of open-ended listing produced activity lists that precisely reflect the activities actually enjoyed by the patients. The activities in ready-made lists might be quite different from those that the patients would have chosen, which would make a quantification assessment more difficult, and decrease the reliability of the assessments. One shortcoming of this method is that the sample size in open-ended interview studies easily becomes limited, as in our study.

In earlier studies, questionnaires were developed to measure pain-related functional activities, which also took into account the patients' own ratings of the relative importance of different activities in their daily lives (17–21). In the assessment of LBP, however, questionnaires allowing the patients' own ratings of the perceived relative importance of everyday functions are not widely used (22). A patient-specific approach was stated as having potential for use as an outcome measure in clinical trials and in daily practice. The patient-specific approach was able to detect changes in complaints that were highly relevant for the individual patient (23).

Despite the clinical and economic importance of chronic LBP, the overall burden of this disease is not well documented (8). Our relatively small pilot study sample indicated that the level of overall disadvantage caused by LBP is significant, although not dramatic (score difference 20–30). Although the patients expressed equal disadvantage scores for the 3 aspects of daily living, the correlation matrix suggested that the disadvantage experienced in one aspect of daily living is not a direct indication of an equal experience in another. Future studies with larger and more representative samples are needed to confirm the findings of how LBP affects patients' overall living, work, household chores and leisure-time activities.

Although back pain seems to be equally common in men and women, back and spine impairments have been shown to be more common in women than in men (24). However, in our sample the women who were still working were able to perform better than the men in their work. The discrepancy between Andersson's review findings and our study may be explained by the fact that, in the articles reviewed by Andersson, patients of all functional states were represented, whereas our finding concerns only those still in the workforce. One explanation for the difference between the sexes may be the nature of the jobs that women and men traditionally undertake.

It was stated by Turk et al. (25) that both physical activities and hobbies play a large role in patients' lives. Our study patients had reduced or completely given up many leisure-time activities. Men had given up more sporting activities than

women, which may partly explain why men perceived a greater disadvantage in leisure-time activities. Reduced sporting activities can lead to gradual deterioration in a patient's physical condition, and this was probably experienced more often by men. This is consistent with the finding of Smeets et al. (26), who showed that male patients with LBP experienced deterioration in aerobic fitness more often than female patients.

LBP clearly impedes sporting activities more than other leisure-time activities. It is probable that men are more engaged in sporting activities and that these are more important to them than to women, which may have had an influence on how different disadvantages were recalled. In another Finnish study, 38.7% of patients with undefined LBP were forced to cut down on leisure-time activities (14). One explanation for our significantly higher proportion could be that the earlier study was based on a nationwide general population survey, whereas our material was collected from patients in a specialized university clinic.

The role of household chores in coping with everyday life is considerable. The majority of our study patients needed assistance with everyday household chores. According to a study by Turk et al. (25), household chores were more important to the patients than hobbies, but less important than physical activities. The difference between the sexes in needing assistance with household chores may be explained by women being more experienced in running the household. They may be able to modify their methods to do the chores, even with LBP.

When estimating the overall burden of LBP, the measure of work-related loss of productivity should be complemented by measures of performance in household chores and limitations to leisure-time activities. To depict extensively the burden to the patients, such measures should be based on the activities the patients consider important. These are best determined by using the phrasings and expressions the patients themselves use.

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#### REFERENCES

1. World Health Organization (WHO). The burden of musculoskeletal conditions at the start of the millennium, a report of a WHO scientific group. Geneva: WHO; 2003.
2. Ehrlich GE. Back pain. *J Rheumatol* 2003; 67 Suppl: S26–S31.
3. Ehrlich GE. Low back pain. *Bull World Health Organ* 2003; 81: 671–676.
4. Martin BI, Turner JA, Mirza SK, Lee MJ, Comstock BA, Deyo RA. Trends in health care expenditures, utilization, and health status among US adults with spine problems, 1997–2006. *Spine* 2009; 34: 2077–2084.
5. Heistaro S, Arokoski J, Kröger H, Leino-Arjas P, Riihimäki H, Nykyri E, Heliövaara M. Back pain and chronic low back pain syndrome. In: *Musculoskeletal disorders and diseases in Finland; results of Health 2000 survey*. Available from: <http://www.terveys2000.fi/julkaisut/2007b25.pdf>.
6. Picavet HS, Schouten JS. Musculoskeletal pain in the Netherlands: prevalences, consequences and risk groups, the DMC(3)-study.

- Pain 2003; 102: 167–178.
7. Boonen A, van den Heuvel R, van Tubergen A, Goossens M, Severens JL, van der Heijde D, et al. Large differences in cost of illness and wellbeing between patients with fibromyalgia, chronic low back pain, or ankylosing spondylitis. *Ann Rheum Dis* 2005; 64: 396–402.
  8. Ekman M, Jonhagen S, Hunsche E, Jonsson L. Burden of illness of chronic low back pain in Sweden: a cross-sectional, retrospective study in primary care setting. *Spine* 2005; 30: 1777–1785.
  9. Martin BI, Deyo RA, Mirza SK, Turner JA, Comstock BA, Hollingworth W, et al. Expenditures and health status among adults with back and neck problems. *JAMA* 2008; 299: 656–664.
  10. Social Insurance Institution of Finland. Statistical yearbook: rehabilitation statistics 2008. Helsinki: Social Insurance Institution of Finland; 2009.
  11. Maetzel A, Li L. The economic burden of low back pain: a review of studies published between 1996 and 2001. *Best Pract Res Clin Rheumatol* 2002; 16: 23–30.
  12. Duquesnoy B, Allaert FA, Verdoncq B. Psychosocial and occupational impact of chronic low back pain. *Rev Rhum Engl Ed* 1998; 65: 33–40.
  13. Lamers LM, Meerding WJ, Severens JL, Brouwer WB. The relationship between productivity and health-related quality of life: an empirical exploration in persons with low back pain. *Qual Life Res* 2005; 14: 805–813.
  14. Heliövaara M, Sievers K, Impivaara O, Maatela J, Knekt P, Makela M, et al. Descriptive epidemiology and public health aspects of low back pain. *Ann Med* 1989; 21: 327–333.
  15. Deyo RA, Battie M, Beurskens AJ, Bombardier C, Croft P, Koes B, et al. Outcome measures for low back pain research. A proposal for standardized use. *Spine* 1998; 23: 2003–2013.
  16. Morley S, Williams A. Conducting and evaluating treatment outcome studies. In: Gathcel RJ, Turk DC, editors. *Psychosocial factors in pain*. New York: Guilford; 2002, p. 52–68.
  17. Martin F, Camfield L, Rodham K, Kliempt P, Ruta D. Twelve years' experience with the Patient Generated Index (PGI) of quality of life: a graded structured review. *Qual Life Res* 2007; 16: 705–715.
  18. O'Boyle CA, McGee H, Hickey A, O'Malley K, Joyce CR. Individual quality of life in patients undergoing hip replacement. *Lancet* 1992; 339: 1088–1091.
  19. Haywood KL, Garratt AM, Dziedzic K, Dawes PT. Patient centered assessment of ankylosing spondylitis-specific health related quality of life: evaluation of the Patient Generated Index. *J Rheumatol* 2003; 30: 764–773.
  20. Tuominen R, Mottonen T, Suominen C, Vahlberg T, Tuominen S. Relative importance of the functional abilities comprising Health Assessment Questionnaire Disability Index among rheumatoid arthritis patients. *Rheumatol Int* 2010; 30: 1477–1482.
  21. Tuominen R, Tuominen S, Suominen C, Mottonen T, Azbel M, Hemmila J. Perceived functional disabilities among rheumatoid arthritis patients. *Rheumatol Int* 2010; 30: 643–649.
  22. Frost H, Lamb SE, Stewart-Brown S. Responsiveness of a patient specific outcome measure compared with the Oswestry Disability Index v2.1 and Roland and Morris Disability Questionnaire for patients with subacute and chronic low back pain. *Spine* 2008; 33: 2450–2457.
  23. Beurskens AJ, de Vet HC, Koke AJ, Lindeman E, van der Heijden GJ, Regtop W, et al. A patient-specific approach for measuring functional status in low back pain. *J Manipulative Physiol Ther* 1999; 22: 144–148.
  24. Andersson GB. Epidemiological features of chronic low-back pain. *Lancet* 1999; 354: 581–585.
  25. Turk DC, Dworkin RH, Revicki D, Harding G, Burke LB, Cella D, et al. Identifying important outcome domains for chronic pain clinical trials: an IMMPACT survey of people with pain. *Pain* 2008; 137: 276–285.
  26. Smeets RJ, Wittink H, Hidding A, Knottnerus JA. Do patients with chronic low back pain have a lower level of aerobic fitness than healthy controls? Are pain, disability, fear of injury, working status, or level of leisure-time activity associated with the difference in aerobic fitness level? *Spine* 2006; 31: 90–97.