RESEARCH PAPER

A prospective study of cognitive behavioural factors as predictors of pain, disability and quality of life one year after lumbar disc surgery

JOHANSSON, STEVEN J. LINTON, ANDREAS ROSENBLAD, LEIF BERGKVIST & OLLE NILSSON

1Department for Orthopaedic Surgery, Centre for Clinical Research, Uppsala University, Central Hospital, SE-721 89 Västerås, Sweden, 2Department of Behavioural, Social and Legal Sciences Psychology, Örebro University, Örebro, Sweden, 3Centre for Clinical Research, Uppsala University, Central Hospital, Västerås, Sweden, 4Department of Surgery, Centre for Clinical Research, Uppsala University, Central Hospital, Västerås, Sweden, and 5Department of Orthopaedics, Uppsala University Hospital, Uppsala, Sweden

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Abstract

Purpose. The primary aim of this study was to analyse the predictive value of cognitive and behavioural factors, in relation to pain, disability and quality of life (QoL) one year after lumbar disc surgery.

Method. The study design was prospective. Fifty-nine patients scheduled for first time lumbar disc surgery were included. Pain, disability, QoL, coping, fear avoidance beliefs, expected outcome and sick leave were assessed preoperatively and 12 months after surgery. Multiple backward stepwise logistic regression analyses were performed to study the contribution of the preoperatively measured independent behavioural/cognitive factors (coping, fear avoidance beliefs and assessed chance to return to work within 3 months) to the dependent variables pain, disability and quality of life at 12 months after surgery.

Results. Low expectations on work return within 3 months after surgery was significantly predictive for residual leg pain, odds ratio (OR) = 8.2, back pain, OR = 9.7, disability, OR = 13.8 and sick leave, OR = 19.5. Low QoL, was best predicted by preoperatively high scores on fear avoidance beliefs OR = 6.6 and being a woman OR = 6.0. The regression model explained 26–40% of the variance in pain, disability, QoL and sick leave.

Conclusions. Eliciting patients' expectations on work return after surgery could contribute to early identification of those who run the risk of developing long-term disability and sick-leave.

Keywords: Lumbar disc surgery, expectation, prediction

Introduction

Although high proportions of successful outcome after lumbar disc surgery are consistently reported, there are still about 20–30% of the surgically treated patients who develop chronic disability [1,2]. Identifying these patients at an early stage is important, in the search for appropriate postoperative care and prevention of persistent disability.

Some individual risk factors for a negative outcome of disc surgery have been identified; long-lasting sick leave and long duration of back pain and/or sciatica preoperatively [3], a negative life style (smoking, low physical activity levels) and co-morbidity in terms of other joint problems, systemic disease (e.g. inflammatory disease) and depression [4–7], are all identified as predictors of a negative outcome after surgery. Severity of pathology preoperatively concerning MRI findings, e.g. characteristics of the herniated disc [8] and the extent of nerve compression due to the disc herniation [9], have also been referred to as predictors of a poor outcome. Other authors have claimed that neurological affection preoperatively is predictive of a good outcome after surgical treatment [5,10]. Heavy work load can have a negative influence on outcome according to some studies [11,12] but there are also studies pointing in the opposite direction [13,14].
Mannion and Elfering have emphasised that interaction between several risk factors makes identification of unequivocal predictive factors extremely difficult [15].

In recent years, the influence of cognitive and behavioural factors on the outcome of lumbar disc surgery has attracted attention. It is well known that these aspects play an important role in the development of non-specific chronic back pain [16–20], and are even predictive for disabling neck and/or back pain [18]. Cognitive and behavioural factors, including expectations, have also been studied among patients with lumbar disc herniation. These factors have been shown to predict decreased work capacity 6 months after surgery [21], as well as disability and residual pain at both 6 weeks and 6 months after surgery [22].

Expectations of outcome seem to be crucial for the success of rehabilitation and are important for the levels of postoperative pain and recovery [23]. Elfering concluded in his review that low expectation of treatment success regarding early return to work, is strongly linked to poor work prognosis among patients with spinal disorders [24]. In a prospective analysis on patients with non-specific back and/or neck pain, Boersma found that negative expectancies, negative effect and a belief that activity may result in (re) injury or increased pain, explained 38% of the variance in average pain at the 1-year follow up. They also found that pain, expectancy and pain related fear and function were strongly interrelated [25]. Likewise Goossens et al. who studied chronic pain patients, showed that patients with high expectations had less negative emotions and better pain control than patients with low expectations [26].

A belief that activity will cause injury and thereby exacerbate the pain problem can be manifested/expressed/result in avoidance of activity [27]. The fear-avoidance model is a cognitive and behavioural framework which gives an explanation on how pain related fear can develop to persistent disability [28,29]. The model includes factors which contribute to deconditioning, and in turn reinforces further pain experience, negative expectancies and avoidance [30]. Studies on the consequence of fear of movement among patients treated by disc surgery are sparse. Ostelo et al. [31] found that fear of movement were not associated to recovery after treatment by disc surgery, whereas denBoer et al. [22] came to the conclusion that fear of movement were predictive for pain and disability as well as work capacity [21], 6 weeks and 6 months after disc surgery.

However, the question still remains whether cognitive and behavioural factors, which have negative impact on the outcome after treatment by surgery, are present preoperatively, or if these factors develop in the postoperative phase.

The aim of this study was to address this issue by analysing the predictive value of cognitive and behavioural factors in relation to pain, disability and quality of life 1 year after lumbar disc surgery.

**Methods**

**Study design**

The predictive value of cognitive and behavioural factors in relation to pain, disability and quality of life 12 months after lumbar disc surgery were analysed prospectively.

**Participants**

The patients were recruited from two neighbouring orthopaedic departments in Sweden, one university department and one community hospital, between March 2003 and March 2005. Both departments have a catchments area of about 250,000 inhabitants.

The patients in this study are part of the Middle Sweden Disc Surgery Recovery Study and the results of the intervention are reported elsewhere [32].

Patients were eligible for inclusion if they were scheduled for planned (not acute), first time lumbar disc surgery, were between 18 and 60-years old, and had a MRI-confirmed lumbar disc herniation. All had incapacitating pain and physical signs of nerve root compression corresponding to the level of disc herniation.

Criteria for exclusion were co-morbidity influencing daily activities and not being fluent in the Swedish language.

When screening for patients, the operation lists of the two departments were searched. Out of 253 patients who were scheduled for lumbar disc surgery, 83 had an acute operation and 14 had a reoperation leaving 156 patients who were checked for eligibility; 33 patients were excluded due to age, 25 patients due to geographic reasons, 20 patients had co-morbidity, 2 patients were not Swedish speaking, 4 patients had a policlinic operation, 5 patients refused to participate and 8 patients were not included for logistic reasons, resulting in 59 patients who finally met all inclusion criteria and gave their informed consent to participate in the study.

Forty-one (69%) patients were recruited from the community hospital and 18 patients (31) from the university clinic.

All participating patients had a lumbar disc herniation and with a MR-verified prolapsed or sequestered disc at the level of L5–S1 (30 patients), L4–L5 (26 patients), L3–L4 (1 patient) and L2–L3 (2 patients), which was confirmed by operative findings.
Two patients were treated by repeated surgery within the follow-up period; one patient due to discitis and another patient due to recurrent disc herniation, these two patients were excluded from the 12 months follow-up, and additional two patients did not respond to the 12 months follow-up questionnaire despite several reminders, rendering 55 patients in the 12 months analysis. The demographics of the participating patients are presented in Table I.

All patients were treated surgically with a standard lumbar discectomy, using microsurgical technique with magnifying glasses, but no microscope.

Postoperatively, the patients were mobilised with light exercises the first day after surgery and they were instructed to continue with a daily exercise program at least the first 3 months after surgery. As the patients also participated in another rehabilitation study, 28 patients were subjected to behavioural oriented physiotherapy (the influence of rehabilitation group was not significant and this variable was not included in the analysis). All patients were instructed to stay active, gradually increase exercising and regular physical activity was encouraged.

The patients had no restrictions apart from refraining from heavy lifting the first 3 months after surgery.

Preoperatively, the participating patients completed a clinical examination including determination of neurological deficits by an experienced orthopaedic surgeon when they were enrolled 7–14 days before planned surgery. Segmental motor and sensory function of the myotomes and dermatomes were assessed at a 3-point scale: 1, no neurological deficits; 2, either sensory or motor deficits; and 3, both sensory and motor deficits.

A clinical follow-up was done 8–12 weeks after surgery.

**Assessment questionnaires**

All patients received a questionnaire preoperatively which they were asked to complete.

Twelve months after surgery, a follow-up questionnaire was mailed for evaluation of follow-up measures.

The questionnaire contained information on;

- **Back and leg pain intensity**, assessed by visual analogue scales (VAS) [33].
- **Disability** assessed by Oswestry Disability Index [34] with a possible score distribution from 0, indicating no disability to 100, indicating maximal disability. The Swedish version of ODI has a confirmed validity and a high degree of responsiveness in lumbar spine disease [35].
- **Quality of life** was measured by EuroQol 5D [36,37] with a possible distribution from (0.01 to 1.00, higher scores indicating better quality of life.
- **Coping strategies** were assessed by the subscales of coping self-statement, and catastrophising from the Coping Strategies Questionnaire (CSQ). The dimensions, coping self-statement and catastrophising, contain six questions, respectively, with a possible low score of 0 to a high of 36 at each dimension. Higher scores indicate more self-statement respectively more pain catastrophising [38,39]. Reliability coefficients for each of the subscales range from 0.71–0.85 [39], the Swedish version has demonstrated a reliability coefficient of 0.83 [40].
- **Fear avoidance beliefs** were assessed by a modification of the Tampa Scale of Kinesiophobia (TSK) with possible score distribution from a low of 12 to a high of 48 [41]. Low scores indicate no fear avoidance, and high scores indicate fear avoidance. Five questions from the TSK scale, which dealt with attitudes towards pain, were omitted, since these five questions referred to pain as not being cause by a serious disease. Most psychometric research has been done with the Dutch version; reliability ($\beta = 0.77$) and acceptable validity [42].

**Expected outcome**; the patient's own perception of likeliness to recover was measured with one item. The question was 'In your estimation, what are the chances that you will be working in 3 months?' This question was rated on a scale of 0–10 where 0 was 'no chance' and 10 was 'very large chance'. Low estimation at this question has been reported to be a

<table>
<thead>
<tr>
<th>Table I. Patient baseline characteristics ($n=59$).</th>
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<tbody>
<tr>
<td>Age, years, mean (SD)</td>
</tr>
<tr>
<td>Sex: female</td>
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<tr>
<td>Smokers</td>
</tr>
<tr>
<td>Work load:</td>
</tr>
<tr>
<td>Heavy</td>
</tr>
<tr>
<td>Moderate</td>
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<tr>
<td>Light</td>
</tr>
<tr>
<td>Unemployed</td>
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<tr>
<td>Patients on sick leave</td>
</tr>
<tr>
<td>Duration of sick leave, months, mean (SD)</td>
</tr>
<tr>
<td>Educational level &lt; 12 years</td>
</tr>
<tr>
<td>Regularly physically active during leisure periods</td>
</tr>
</tbody>
</table>

**Clinical variables**

| Duration of leg pain before surgery, months, mean (SD) | 13 (12) |
| Duration of back pain before surgery, months, mean (SD) | 17 (18) |

<table>
<thead>
<tr>
<th>Level of disc herniation:</th>
</tr>
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<tbody>
<tr>
<td>L5–S1</td>
</tr>
<tr>
<td>L4–L5</td>
</tr>
<tr>
<td>L3–L4</td>
</tr>
<tr>
<td>L2–L3</td>
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</tbody>
</table>

<table>
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<tr>
<th>Neurological signs:</th>
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<tbody>
<tr>
<td>1 = no neurological deficit</td>
</tr>
<tr>
<td>2 = either sensory or motor deficit</td>
</tr>
<tr>
<td>3 = both sensory and motor deficit</td>
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</table>
significant risk factor for development of chronic musculoskeletal pain [43]. This question is one of the 25 questions in the Örebro Screening Questionnaire which is sensible for identifying patients with risk for developing pain and dysfunction. Specificity of 44%, sensitivity of 90% and acceptable reliability (0.84) of the questions assessing prediction of future sick leave have been reported [44,45].

Sick leave was obtained at baseline and 12 months after surgery with the patients reporting their own current sick leave. Previous research has shown that self-ratings highly correlate to register data from the National Social Insurance office [46,47]. The patients reported if they were on sick leave or not, and if they were at sick leave the duration of sick leave was asked for.

Work load, physical activity level and duration of current back- and leg pain preoperatively, were addressed by separate questions.

The study was approved by the Regional Committee on Research Ethics.

Statistics

Median values were used as a measure of location and interquartile range as a measure of dispersion for ordinal data. Means and standard deviation (SD) were correspondingly used for interval data.

Differences of proportions were analysed with \( \chi^2 \) statistics, and changes of proportions over time with McNemar’s test.

Changes over time of the outcome variables, pain, disability, coping, and fear avoidance beliefs and quality of life were measured by Wilcoxon paired variable test.

Multiple backward stepwise logistic regression analyses were performed to study the contribution of the preoperatively measured independent behavioural/cognitive factors (coping, fear avoidance beliefs and assessed chance to return to work within 3 months) to the dependent variables pain, disability and quality of life at 12 months after surgery.

To check the possible multicollinearity of predictor variables (i.e. insufficient unique variance of different predictors because of high intercorrelation), we calculated correlation coefficients for all studied variables with each other. If a couple of variables had a correlation coefficient \( r > 0.40 \), the variable with the lowest \( p \)-value in the multiple logistic regression model was retained in the regression model, whereas the other one was excluded (e.g. the coping self-statement variable was omitted since its correlation to ‘chance to return to work within 3 months’ was too high, and the latter variable had a lower \( p \)-value).

The final logistic regression model included independent variables which fulfilled the restrictions because of multicollinearity and had a multiple regression \( p \)-value \(< 0.10 \). The independent variables were divided into high or low scores based on median values. The variables age, gender, work load, duration of leg pain preoperatively and the behavioural variables coping catastrophising, fear avoidance beliefs and expectations of chance to return to work within 3 months after surgery were included in the final regression model.

Results

Pain intensity, disability, quality of life and sick leave, Table II

After 12 months, there was a highly significant mean decrease in pain, disability (ODI) and also a significant increase in quality of life (EuroQol 5D), from median 0.29 before surgery to median 0.74.

Preoperatively, 35 patients (63 %) were on sick leave, compared to 9 patients (16 %) 12 months after surgery, which was a highly statistically significant decrease of the proportion of patients being on sick leave.

Predictors of pain, disability and quality of life and being on sick leave at 12 months after surgery, Table III

Scoring low on the item ‘In your estimation, what are the chances that you will be working in 3 months?’ was significantly predictive for all outcome variables, with the highest odds ratio (OR) for being on sick leave 12 months after surgery (OR = 19.5).

Of the 13 patients who preoperatively had scored low chance of return to work within 3 months, 46% (6 patients) were still on sick leave 12 months after surgery.

The strongest predictor for low quality of life 12 months after surgery was high scores of fear avoidance beliefs, (OR = 6.6).

It should be noted that the confidence intervals are quite wide for the predictors meaning that the precision of the OR estimates are uncertain which probably is due to the small sample size.

Being a woman was also predictive for low quality of life 12 months after surgery, (OR = 6.0).

The predictive value of the regression model explained 26–40% of the variance in the outcome variables, pain (leg pain 26%, back pain 24%), disability (26%), quality of life (35%) and sick-leave (40%). Almost 40% of the variation in sick-leave 12 months after surgery could be explained by
preoperatively low scores of the item chance to return to work within 3 months.

**Discussion**

The main finding in this study was that the strongest predictor for residual leg pain, back pain and remaining disability and still being on sick leave at 12 months after disc surgery were low scores on the preoperatively asked question ‘In your estimation, what are the chances that you will be working in 3 months?’ Odds ratio for leg pain was 8.2, back pain 9.7, disability 13.8 and for sick leave 19.5, at 12 months after surgery (Table III).

Low quality of life 12 months after surgery was best predicted by high scores on fear avoidance beliefs preoperatively, with a significant odds ratio of 6.6.

Being a woman was also predictive for low quality of life 12 months after surgery with a significant odds ratio of 6.0.

The regression model explained 26–40% of the variance in the outcome variables, pain, disability, quality of life and sick-leave, with the strongest explanatory value for being on sick leave 12 months after surgery (40%), odds ratio = 19.5.

Cognitive behavioural models with pain-related avoidance factors and negative outcome expectancies have been presented to precede pain, disability and work capacity among patients with non-specific low back pain [17,48,49] and likewise among patients with verified diagnosis of lumbar disc herniation [21,22,31]. Our results are in line with the study by denBoer especially regarding the importance of positive expectations on outcome after disc surgery. In the study by Ostelo et al. [31] in which only patients with residual complaints 6 weeks after surgery were included, they likewise found that high treatment expectancy was associated with a favourable outcome on perceived recovery and functional status both at short-term and at 1-year follow-up.

Fear avoidance beliefs and being a woman were most predictive for low scores on quality of life at 12 months after surgery (OR = 6.6 respectively 6.0). To the authors knowledge, this is the first time fear avoidance beliefs are assessed preoperatively and analysed in relation to the quality of life after disc surgery. Being a woman was also predictive for low quality of life 12 months after surgery (OR = 6.0). According to a national EuroQol 5D survey by Burström et al. [50], women in general suffer more from anxiety and depression, and tend also to have lower scores on quality of life than men [51], which might have been reflected in this finding.

In earlier studies, expectancies of outcome have been reported to be crucial to success of rehabilitation and linked to levels of postoperative pain and recovery [23,52]. Different mechanisms can explain how expectations can affect outcomes such as triggering of physiologic responses which act to help motivate patients to achieve better outcomes, conditioning the patient psychology to obtain certain symptoms and ignore others, the expectation itself can by that be directly self-confirming [53]. Feelings and perceptions may as well affect biological disease processes through behavioural and non-behavioural mechanisms [54]. It has been suggested that expectations, beliefs and affect should also be seen as interrelated components of pain-related anxiety [25], which in turn may be driven by pain experience, and for patients treated by surgery unexpected residual pain after surgery. It is possible that this process also interacts with more general individual vulnerability factors.

| Table II. Median, interquartile range, q₁, q₃, proportion (%) of outcome variables at baseline and 12 months after surgery. |
|---|---|---|---|
| **Clinical variables, n = 55** | **Baseline values** | **12 months** | **p-value** |
| | Median | q₁–q₃ | Median | q₁–q₃ | |
| Leg pain (VAS 0–100) | 72 | 52–85 | 12 | 1–65 | <0.001*** |
| Back pain (VAS 0–100) | 70 | 51–80 | 21 | 2–57 | <0.001*** |
| Oswestry Disability Index | 38 | 30–49 | 8 | 2–22 | <0.001*** |
| EuroQol (0–1.0) | 0.29 | 0.06–0.62 | 0.74 | 0.67–0.78 | <0.001*** |
| Proportion of patients on sick leave | 61% | | 16% | | <0.001*** |
| **Behavioural variables, n = 35** | | | |
| Coping, CSQ | | | |
| Self-statement (0–36) | 20 | 16–24 | 19 | 17–25 | 0.601 |
| Catastrophising (0–36) | 14 | 9–18 | 8 | 4–12 | 0.002** |
| Fear avoidance beliefs, TSK (0–48) | 32 | 27–36 | 22 | 1–30 | <0.001*** |

*p-values for differences from baseline to 12 months after surgery, paired comparison (n = 55).
**p < 0.01.
***p < 0.001.
Table III. Multiple logistic regression analysis of outcome variables 12 months after surgery.

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Leg pain 12 months after surgery ( n = 55 )</th>
<th>Back pain 12 months after surgery ( n = 54 )</th>
<th>Oswestry Disability Index 12 months after surgery ( n = 55 )</th>
<th>EuroQol 5D 12 months after surgery ( n = 54 )</th>
<th>Being on sick leave 12 months after surgery ( n = 55 )</th>
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<tr>
<td></td>
<td>( p ) OR (95% CI)</td>
<td>( p ) OR (95% CI)</td>
<td>( p ) OR (95% CI)</td>
<td>( p ) OR (95% CI)</td>
<td>( p ) OR (95% CI)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.173 0.4 (0.1–1.5)</td>
<td>0.509 0.6 (0.2–2.3)</td>
<td>0.557 0.7 (0.2–2.4)</td>
<td>0.030* 6.0 (1.2–30.3)</td>
<td>0.361 2.4 (0.4–14.9)</td>
</tr>
<tr>
<td>Male (reference)</td>
<td>1.0 1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Fear avoidance beliefs</strong></td>
<td><strong>Not included in the model</strong></td>
<td><strong>Not included in the model</strong></td>
<td><strong>Not included in the model</strong></td>
<td><strong>1.0</strong></td>
<td><strong>Not included in the model</strong></td>
</tr>
<tr>
<td>Low score (0–32) (reference)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>High score (33–48)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Chance of returning to work within three months (range 0–10):</strong></td>
<td><strong>Not included in the model</strong></td>
<td><strong>Not included in the model</strong></td>
<td><strong>1.0</strong></td>
<td><em><em>0.027</em> 6.6 (1.2–35.3)</em>*</td>
<td><strong>Not included in the model</strong></td>
</tr>
<tr>
<td>Low (0–7) ( n = 13 )</td>
<td>0.010** 8.2 (1.7–41.1)</td>
<td>0.006** 9.7 (1.9–49.1)</td>
<td>0.004** 13.8 (2.2–79.8)</td>
<td>0.040* 0.2 (0.3–0.9)</td>
<td>0.009** 19.5 (2.1–179.2)</td>
</tr>
<tr>
<td>Some chance (8–9) ( n = 11 )</td>
<td>0.626 1.5 (0.2–8.2)</td>
<td>0.451 1.9 (0.4–9.2)</td>
<td>0.781 1.3 (0.2–6.2)</td>
<td>0.525 0.5 (0.1–3.5)</td>
<td>0.872 1.2 (0.91–16.8)</td>
</tr>
<tr>
<td>High chance (10) ( n = 33 ) (reference)</td>
<td>1.0 1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Nagelkerke ( R^2 )</td>
<td>0.262 0.243</td>
<td>0.243</td>
<td>0.260</td>
<td>0.345</td>
<td>0.399</td>
</tr>
</tbody>
</table>

\( p \)-value, odds ratio (OR) and 95% confidence interval (95% CI); adjusted for age, gender, educational level, work load and leg pain preoperatively and rehabilitation group. Only significant \( p < 0.05 \) independent variables for at least one outcome variable are included in the table.

\*\( p < 0.05 \).

\*\*\( p < 0.01 \).

\*\*\*\( p < 0.001 \).

\*\*\*\( n = 10 \).

\*\*\*\( n = 32 \).
Anxiety for future persistent pain problems might set the stage for behavioural changes regarding dysfunctional avoidance and catastrophising.

Expectations of future work disability might furthermore reflect aspects which not directly were asked for in this study; such as how firmly the patient is established at his work, the patients’ beliefs about how his/her work might influence his/her future prognosis, or the patient’s psychological well being. Expectations are also linked to the individual’s view of what is possible, what he or she can manage in relation to work demands [55]. Our results are in accordance with the conclusion drawn by Elfering, that low expectation of treatment success regarding early return to work, is strongly linked to poor work prognosis among patients with spinal disorders [24]. Assessing patients’ belief about future work capacity might help identifying those patients who are at risk for unfavourable outcome.

The question about chance to return to work within 3 months was rated on a scale of from 0 to 10, and the patients were divided into three groups; low chance = ratings at 7 or below 7, some chance = ratings of 8 to 9 and high chance ratings of 10. These three groups were based on how the patients had responded to this question. Thirty-three patients rated 10, 11 patients rated 8 or 9, and 13 patients rated seven or lower. The difference between these ratings might not appear to be very large, but with an odds ratio of 19.5 for still being on sick leave at 12 months if patients had rated the chance to return to work within 3 months at 7 or below 7, indicate that if patients have doubts regarding work return after surgery have to be taken as an important prognostic signal in clinical practice.

Limitations

Firstly, most data was self-reported and other sources of verification of for example disability status are lacking. On the other hand, these questionnaires capture the patients perception of his/her back problem, which might be of greater relevance in assessing outcome after treatment than objective measures of impairment [34]. Besides, previous studies have shown high correlation between subjective and objective measures of disability [56].

Secondly, expectancy was measured with a single question, risking low validity, however this question is well researched as part of The Örebro Musculoskeletal Pain Questionnaire [45] which have been shown to have satisfactory psychometric properties. In addition, this question was one of two questions which best could predict treatment outcome, and these two questions have been shown to be highly intercorrelated [45,57,58], still it is not entirely clear how well representation of the construct ‘expectations of work capacity within 3 months’.

Thirdly, the sample size was small which resulted in wide confidence intervals for the predictors meaning that the precision of the OR estimates are uncertain.

Conclusions

Patient’s expectations of returning to work after surgery could predict pain, disability, quality of life as well as sick leave 1 year after surgery. Furthermore, fear avoidance beliefs and being a woman was predictive for low quality of life 1 year after surgery.

In clinical practice, identifying patients with low expectations preoperatively concerning their ability to return to work after surgery seem to be important. Patients with low expectations might need a more extensive work oriented rehabilitation than is usually offered in routine care after lumbar disc surgery. In order to develop adequate rehabilitation programmes, the underlying causes for low expectations must be further analysed.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

References


