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A Systematic Review of the Predictive Ability of the Orebro Musculoskeletal Pain Questionnaire

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Study Design. Systematic review.

Objective. To establish the ability of the Orebro Musculoskeletal Pain Questionnaire (OMPQ) to predict outcome in patients with recent onset spinal pain.

Summary of Background Data. Psychosocial factors are believed to play a significant role in the development of a chronic pain problem. The OMPQ is a self-administered screening questionnaire that was developed to identify those patients with acute or subacute musculoskeletal pain who are at risk of delayed recovery. Clinical guidelines recommend its use, despite its predictive ability never having been systematically reviewed.

Methods. Searches of electronic databases were undertaken. Eligible studies were those that enrolled subjects with acute or subacute spinal pain, administered the OMPQ at baseline and measured outcomes in terms of pain, disability, sick leave, and/or global recovery. Ratings of study quality and data extraction were conducted by 2 independent assessors.

Results. Seven publications (5 discreet data sets) of variable methodologic quality were included. Baseline OMPQ scores were shown to have moderate ability in predicting long-term pain, disability, and sick leave outcomes. For example, the area under the curve values for predicting persisting pain ranged from 0.62 to 0.75 and for persisting disability from 0.68 to 0.83.

Conclusion. The OMPQ has moderate predictive ability in identifying patients with spinal pain at risk of persisting pain and disability. This evidence supports clinical guidelines recommending its use as an assessment tool for identifying psychosocial risk factors. Further research is needed to confirm the predictive ability of individual items in different populations and settings, to enhance its usefulness.

Key words: back pain, prognosis, cohort studies, screening, questionnaire. **Spine 2008;33:E494–E500**

The majority of health care costs associated with spinal pain are incurred in the management of patients with chronic pain.[1,2] There is some evidence to suggest that psychosocial factors are important in the progression from an acute to a chronic pain problem.[2–4] The Orebro Musculoskeletal Pain Questionnaire (OMPQ) was developed as a simple tool to allow a primary care practitioner to screen for psychosocial "yellow flags." The OMPQ is used to provide patient-specific estimates of prognosis and to direct therapy.[5–7]

Clinical guidelines such as the New Zealand guidelines for acute low back pain[8] and the New South Wales WorkCover guidelines for management of soft tissue injuries,[9] recommend the use of the OMPQ to screen for people at risk of delayed recovery. Despite these guidelines recommending its use, the predictive validity of this questionnaire has not been systematically reviewed. Therefore, the aim of this review was to investigate the ability of the OMPQ to predict long-term outcome in patients with recent onset spinal pain.

Materials and Methods

Search Strategy

MEDLINE, Pre-MEDLINE, CINAHL, EMBASE, Pubmed, PsychINFO, PEDro, SportDiscus, Cochrane Central Register of Clinical Trials and Cochrane Database of Systematic Reviews were searched from the earliest record available up to September 2007. The search strategy is detailed in Appendix A. Personal files were searched and reference lists of all potential papers were searched to identify studies missed by the electronic search process. Studies citing the included articles were also identified using the Science Citation Index.

Eligibility Criteria

A study was included if it fulfilled all of the following criteria:

1. The study population included subjects described as having acute or subacute spinal pain (with or without pain radiating down the leg) of no specific cause. Studies that included subjects with previous spinal pain problems were included, as recurrences are common,[10] and thus this reflects many of the usual patients seeking health care for spinal pain.
2. Study participants completed the Orebro Musculoskeletal Pain Questionnaire at baseline when they first entered the study.
3. The study included at least one of the following outcome measures: measures of pain, disability, sick leave, and/or self-rated recovery using a global perceived effect scale at follow-up.
4. The study design was prospective (either cohort studies or clinical trials). Studies with participants receiving conservative treatment from primary health care professionals (general practitioners, physiotherapists, and chiropractors) were included.
5. Source of participants and method of sampling were described.
6. The article was available in English.

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Table 1. Methodological Quality of Included Studies

Study	Defined Sample*	Representative Sample†	Inception Cohort‡	Complete Follow-up§	Prognosis¶	Blinded Outcome‖	Statistical Adjustment**
Grotle *et al*, 2005[14]	Yes	No	Yes	Yes	Yes	Yes	Yes
Grotle *et al*, 2006[18]	Yes	No	Yes	Yes	Yes	No	Yes
Grotle *et al*, 2007[15]	Yes	No	Yes	Yes	Yes	No	Yes
Heneweer *et al*, 2007[16]	Yes	Yes	No	Yes	Yes	No	Yes
Jellema *et al*, 2007[17]	Yes	Yes	No	Yes	Yes	No	Yes
Linton *et al*, 1998[6]	Yes	No	No	Yes	Yes	No	Yes
Linton *et al*, 2003[13]	Yes	Yes	No	Yes	Yes	No	Yes

*Description of source of participants and inclusion and exclusion criteria.
†Participants selected by random selection or as consecutive cases.
‡Study recruited participants with spinal pain of less than 3 wk duration.
§At least one outcome measure available from at least 80% of study population at 3 mo follow-up or later.
¶Provided raw data, percentages, proportion or rate, or continuous outcomes.
‖Assessor unaware of baseline value of Orebro Musculoskeletal Pain Questionnaire, used to predict outcome, at time outcome was measured.
**Statistical adjustment for at least two prognostic factors, with adjustment factors reported.
Yes indicates criterion satisfied; No, criterion clearly not satisfied or unclear if criterion is satisfied.

Studies were excluded that recruited patients with "red flag" conditions such as fracture, arthritis, infection, tumor, *cauda equina* syndrome, ankylosing spondylitis, or other inflammatory diseases. Studies that recruited pregnant women were also excluded.

Assessment of Methodologic Quality

Although there is no widely accepted method for assessing methodologic quality of prognosis studies and there is little empirical evidence of bias related to various methodologic features of such studies, validity criteria have been proposed.[11] Methodologic quality of the included studies was assessed by 7 criteria (Table 1). These criteria have been used in previous prognostic reviews of musculoskeletal disorders.[10,12] Two reviewers independently assessed the quality of included studies and any disagreements were resolved by consensus.

Data Extraction and Analysis

Study characteristics extracted from eligible papers were target population, sample size, duration of pain at time of enrolment (if stated in paper), description of interventions, duration of follow-up, outcome measures and measures of the predictive ability of the OMPQ. Outcome data extracted were pain, functional disability, sick leave, and global recovery.

Where possible, areas under the receiver operator characteristic curve (AUC) with 95% confidence intervals (CI) were extracted from papers or calculated by the authors from primary data provided in the original papers. The AUC value can be interpreted as the probability of correctly predicting outcome for randomly selected pairs of people who did and did not eventually recover. The AUC varies from 0.5 (prediction no better than chance) to 1.0 (perfect prediction).

Receiver operator characteristic (ROC) curves were generated by plotting true-positive rates (sensitivity) against false-positive rates (1-specificity) using data reported in articles for different cut-off scores of the OMPQ. AUCs with 95% CIs were calculated using the Statistical Package for the Social Sciences version 15.0. In 2 studies,[6,13] sensitivity values for 1–30 and greater than 30 days of sick leave for each reported OMPQ cut-off score were combined to form one sensitivity value for each cut-off score. These calculated sensitivity values were used along with specificity values reported in the studies, to generate the ROC curves used to establish the ability of OMPQ scores to predict subjects who took sick leave in the past 6 months due to back or neck pain.

Crude odds ratios with 95% CIs were extracted for one data set.[14,15] Outcome measures were assessed and recovery defined differently across studies, making pooling across studies problematic. Therefore, no attempt to pool statistics on predictive ability of the OMPQ was made. A second reviewer checked the data extraction.

■ Results

Selection of Studies

Initially, the search yielded 1137 citations (MEDLINE 144, Pre-MEDLINE 5, CINAHL 282, EMBASE 138, Pubmed 449, PsychINFO 86, PEDro 1, SportDiscus 17, Cochrane Central Register of Clinical Trials 7, Cochrane Database of Systematic Reviews 8). After the first screening, 823 nonduplicate titles were selected and after reading the title and/or abstracts, 29 full publications were retrieved (Figure 1). Another 3 citations were added by checking the references of the 29 full publications, resulting in a total of 32 potential papers. Seven publications (with 5 discreet data sets) fulfilled all inclusion criteria and were included in this review.

Methodologic Quality

Two reviewers scored quality criteria for the 7 included studies (total of 49 quality criteria) and agreed on 41 (85%). Results of the quality assessment are presented in Table 1. The initial inter-rater agreement was 71% for defined sample, 86% for representative sample, 100% for inception cohort, 100% for complete follow-up, 100% for prognosis, 86% for blinded outcome and 43% for statistical adjustment. All studies defined the sample. Three studies (43%) specifically described methods for recruiting a representative sample.[13,16,17] Three publications (1 data set) recruited an inception cohort[14,15,18] and all had follow-up of at least 80%. All publications quantified prognosis and reported prognostic factors. One study (14%)[14] used blinded assessment and all studies performed statistical adjustment for prognostic factors.

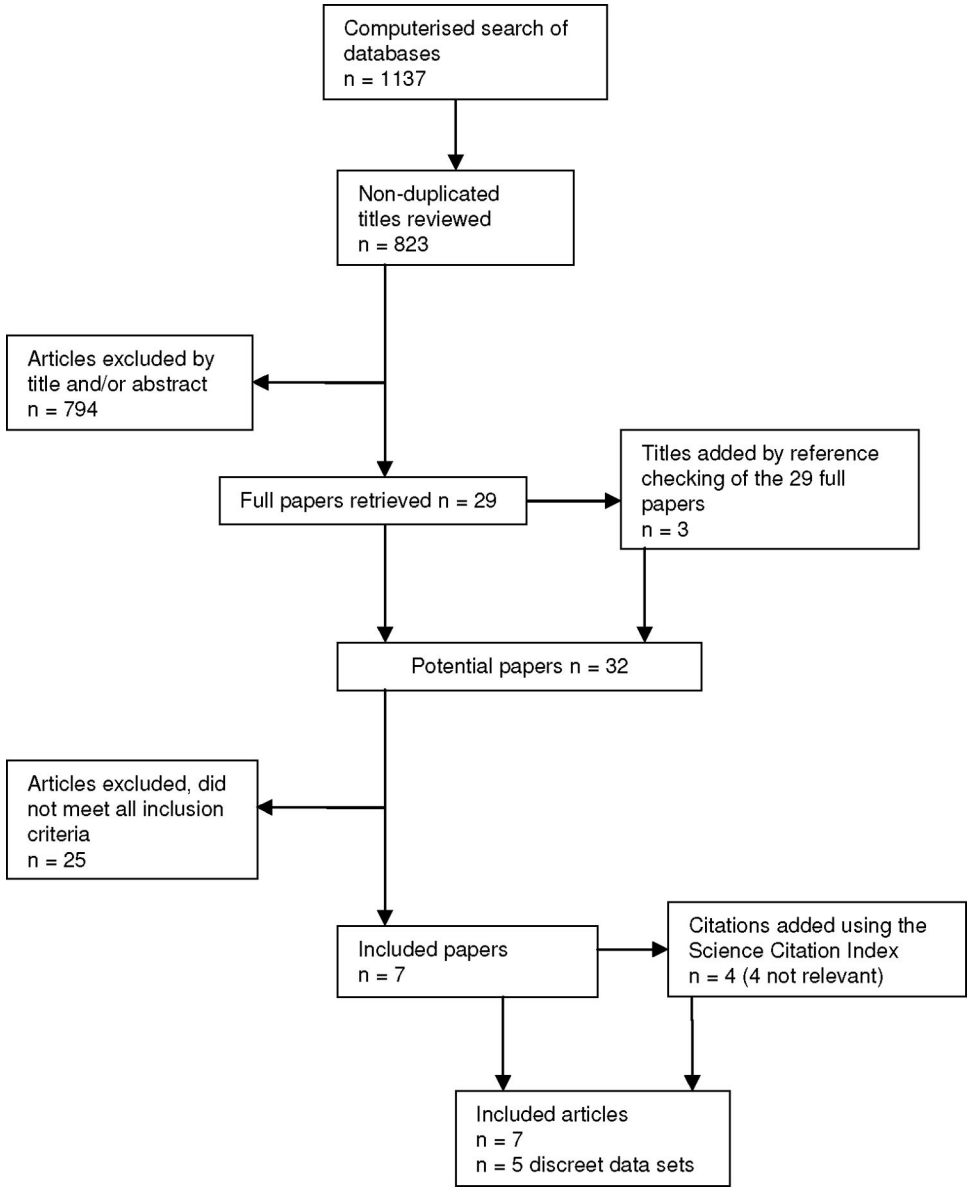

Figure 1. Flow diagram of papers accepted and rejected during the selection process.

Data Extraction

Study design, subject characteristics, setting, outcome measures, and durations of follow-up of the included studies are summarized in Table 2. One data set was described in more than one publication.[14,15,18] Of the 5 discreet data sets, only two[6,13] included patients with back and neck pain and 3 included patients with low back pain.[14–18] One data set included only patients who contacted a primary care practitioner for the first time due to acute low back pain.[14,15,18] The studies included were all cohort studies, with interventions by primary health care clinics,[6] physiotherapists,[16] general practitioners,[17] or a combination of the latter two.[13] In one study,[14,15,18] patients with acute low back pain were provided with information according to clinical guidelines for acute low back pain after the baseline assessment and were able to contact a health care provider if they needed to during the study period. Patients were recruited through presentation to general practitioners[16,17] or through a variety of primary health care providers[6,13–15,18] and/or newspaper advertisements.[14,15,18]

Reported AUCs were extracted from 3 studies[16–18] and were calculated from primary data provided in studies.[6,13] The ability of the OMPQ to predict persisting pain and disability were reported in two[13,18] and four[13–15,18] studies, respectively. The ability of this questionnaire to predict sick leave was evaluated in 3 studies[6,13,18] and AUC values for predicting global recovery were extracted from 2 studies.[16,17]

Course of Spinal Pain

Three studies reported on pain intensity during the follow-up period.[13–15] Grotle *et al*[15] reported there was a mean reduction in pain intensity of 53% during the first month and 58% during the first 3 months.[14] One study reported the proportion of subjects who had recovered (as measured by pain intensity), was 52% at 6 months.[13] Three studies reported on disability levels at follow-

Table 2. Description of Included Studies

Study	Participants (setting)	Design	Prognostic Outcome(s)	Follow-up
Grotle *et al*, 2005[4]; Grotle *et al*, 2006[18]; Grotle *et al*, 2007[15]	123 patients with acute low back pain <3 wk, consulting general practitioner, physiotherapist or chiropractor, or recruited through newspaper advertisement (Norway)*	Inception cohort study, provided with information according to clinical guidelines for acute low back pain and able to contact health care provider if needed	Pain intensity (non-recovery defined as >2 out of 10 on NRS†), disability (non-recovery defined as >4 on RMDQ‡), sick leave (non-recovery defined as >30 days of sick leave)	6 and 12 mo
Heneweer *et al*, 2007[16]	66 patients with acute or subacute low back pain, referred by general practitioner or medical specialist to physiotherapist (Netherlands)	Cohort study, with intervention by physiotherapist	Self-rated global recovery (dichotomised question: recovered or not)	12 wk
Jellema *et al*, 2007[17]	314 patients with low back pain for <12 wk, consulting general practitioner (Netherlands)	Cohort study, with intervention by general practitioner	Self-rated global recovery (7 point GPE§ scale – non recovery defined as a score of 'slightly improved' or worse at 2 or more follow-up time points)	6, 13, 26 and 52 wk
Linton *et al*, 1998[6]	142 patients with acute or subacute back or neck pain, presenting to primary health care clinics (Sweden)	Cohort study, with intervention provided by primary health care clinic	Sick leave (during the follow-up period due to spinal pain)	6 mo
Linton *et al*, 2003[13]	122 patients with back or neck pain for <3 mo, consulting general practitioner or physiotherapist (Sweden)	Cohort study, with intervention provided by general practitioner or physiotherapist	Sick leave (during the follow-up period due to spinal pain), function (non-recovery defined as total score of <45 out of 50 on 5 questions of OMPQ¶ which measure activities of daily living), pain (non-recovery defined as score >17 out of 100 on the experienced pain index‖)	6 mo

*Only the acute sample was included in the predictive analyses.
†Numerical Rating Scale.
‡Roland Morris Disability Questionnaire.
§Global Perceived Effect.
¶Orebro Musculoskeletal Pain Questionnaire.
‖This index was created from two items of the Orebro Musculoskeletal Pain Questionnaire by multiplying average pain intensity during the last 3 mo (scored out of 10) by pain frequency (scored out of 10).

up.[13–15] The proportion of subjects who had recovered (as measured by disability levels), ranged from 40% at 6 months[13] to 83% at 12 months.[15] Two studies reported amount of sick leave as a result of pain.[6,13] The proportion of subjects who reported taking more than 30 days sick leave due to pain ranged from 17%[13] to 18%[6] during the 6-month follow-up period.

Predictive Ability of the Orebro Musculoskeletal Pain Questionnaire

Pain. Two studies[13,18] reported the ability of OMPQ scores to predict persistent pain problems (Table 3). Reported AUCs (95% CI) for persistent pain (score of greater than 2 out of 10 on a numerical rating scale) were 0.62 (0.51–0.73) at 6 months and 0.70 (0.60–0.80) at 12 months follow-up, in a cohort of patients with acute low back pain of less than 3 weeks duration.[18] In one study,[13] an experienced pain index was created from 2 items of the OMPQ by multiplying average pain intensity during the last 3 months (scored out of 10) by pain frequency (scored out of 10). The calculated AUC (95% CI) for persistent pain (score of greater than 17 out of 100 on the experienced pain index) was 0.75 (0.66–0.85) at 6 months, in a sample of patients with spinal pain of less than 3 months duration.[13]

Disability. Four studies[13–15,18] (2 data sets) reported the ability of OMPQ scores to predict persisting disability (Table 3). Reported AUCs (95% CI) for disability score of greater than 4 on the Roland Morris Disability Questionnaire (RMDQ) were 0.68 (0.56–0.80) at 6 months and 0.72 (0.60–0.84) at 12 months follow-up, in patients with acute low back pain.[18] The calculated AUC (95% CI) for disability (total score of less than 45 out of 50 on 5 questions of OMPQ which measure activities of daily living) was 0.83 (0.75–0.91) at 6 months, in a sample of patients with acute or subacute spinal pain.[13]

Grotle *et al*[14] reported there was a 4.66 (95% CI, 1.9–11.46) times higher chance of persisting disability (RMDQ score greater than 4) at 3 months follow-up in medium-high risk patients (OMPQ score greater than or equal to 90), compared to low risk patients (OMPQ score less than 90). Also, there was a 6.54 (95% CI, 1.83–23.36) times greater chance of disability (RMDQ score greater than 4) at 12 months follow-up in high risk patients (OMPQ score greater than or equal to 112), compared to low-medium risk patients (OMPQ score less than 112).[15] Though, the 95% CIs for these crude odds ratios were very wide (Table 3).

Sick Leave. Three studies reported the ability of OMPQ scores to predict sick leave (Table 3).[6,13,18] Reported AUCs (95% CI) for identifying a patient who had more than 30 days off work due to pain were 0.80 (0.66–0.93) at 6 months and 0.72 (0.57–0.86) at 12 months follow-up, in patients with acute low back pain.[18] Calculated

Table 3. Predictive Ability of Orebro Musculoskeletal Pain Questionnaire

Study	Follow-up Period	Outcome Measure: Pain	Disability	Sick Leave	Global Recovery
			Area Under the Curve (95% CI)		
Grotle *et al*, 2006[18]	6 mo	0.62 (0.51–0.73)*	0.68 (0.56–0.80)†	0.80 (0.66–0.93)‡	Insufficient data
	12 mo	0.70 (0.60–0.80)*	0.72 (0.60–0.84)†	0.72 (0.57–0.86)‡	Insufficient data
Heneweer *et al*, 2007[16]	12 wk	Insufficient data	Insufficient data	Insufficient data	0.64 (0.50–0.79)§
Jellema *et al*, 2007[17]	6, 13, 26 and 52 wk	Insufficient data	Insufficient data	Insufficient data	0.61 (0.54–0.67)¶
Linton *et al*, 1998[6]	6 mo	Insufficient data	Insufficient data	0.82 (0.74–0.89)‖	Insufficient data
Linton *et al*, 2003[13]	6 mo	0.75 (0.66–0.85)**	0.83 (0.75–0.91)††	0.74 (0.64–0.84)‖	Insufficient data
			Crude Odds Ratios (95% CI)		
Grotle *et al*, 2005[14]	3 mo	Insufficient data	4.66 (1.9–11.46)‡‡	Insufficient data	Insufficient data
Grotle *et al*, 2007[15]	12 mo	Insufficient data	6.54 (1.83–23.36)§§	Insufficient data	Insufficient data

*Non-recovery defined as >2 out of 10 on Numerical Rating Scale.
†Non-recovery defined as >4 on Roland Morris Disability Questionnaire (RMDQ).
‡Non-recovery defined as >30 days of sick leave.
§Self-rated recovery at 12 wk assessed using a dichotomized question (recovered or not).
¶Self-rated recovery assessed using a 7 point global perceived effect scale and non-recovery defined as a score of 'slightly improved' or worse at 2 or more follow-up time points (6, 13, 26 and 52 wk).
‖Sick leave during the follow-up period due to spinal pain.
**Non-recovery defined as score >17 out of 100 on the experienced pain index. This index was created from two items of the Orebro Musculoskeletal Pain Questionnaire (OMPQ) by multiplying average pain intensity during the last 3 mo (scored out of 10) by pain frequency (scored out of 10).
††Non-recovery defined as total score <45 out of 50 on 5 questions of OMPQ which measure activities of daily living.
‡‡Association between non-recovery (RMDQ score >4) and baseline OMPQ scores analyzed as crude OR (95% CI) for medium-high risk (OMPQ score ≥90) compared to low risk group (OMPQ score <90).
§§Association between non-recovery (RMDQ score >4) and baseline OMPQ scores analyzed as crude OR (95% CI) for high risk group (OMPQ score ≥112) compared to low-medium risk group (OMPQ <112).

AUCs (95% CI) for predicting patients who took sick leave due to pain were 0.82 (0.74–0.89)[6] and 0.74 (0.64–0.84)[13] at 6 months, in 2 samples of patients with acute and subacute spinal pain.

Global Recovery. Two studies reported the ability of OMPQ scores to predict self-reported global nonrecovery (Table 3).[16,17] Reported AUC (95% CI) for prediction of self-rated recovery at 12 weeks was 0.64 (0.50–0.79), in a sample of patients with acute and subacute low back pain.[16] The calculated AUC (95% CI) for prediction of nonrecovery as defined by a score of "slightly improved" or worse at 2 or more follow-up time points (6, 13, 26 and 52 weeks) was 0.61 (0.54–0.67), in a sample of patients with low back pain of less than 12 weeks duration.[17]

■ Discussion

This is the first time that the predictive ability of the OMPQ has been systematically reviewed, despite clinical guidelines recommending its use in both patients with acute low back pain[8] and in workers compensation patients with soft tissue injuries.[9] The review located 5 relevant data sets from studies of variable methodologic quality. These data support the view that the OMPQ has moderate predictive ability in determining long-term pain, disability and sick leave in patients with acute or subacute spinal pain. These data also suggest that OMPQ scores have poorer predictive ability in determining self-reported global recovery.

The methodologic shortcomings do raise some questions about the veracity of the results. The main methodologic weaknesses were a failure to enrol a representative sample, lack of recruitment of an inception cohort and lack of blinding. If an inception cohort is not enrolled, patients who recovery quickly are not included and this results in some uncertainty about the OMPQ's ability to correctly predict outcome in such patients. However, we decided to include studies who did not recruit an inception cohort, because of the small number of published studies which provide evidence of the OMPQ's ability to predict outcome in patients with recent onset spinal pain. Also, the lack of blinding is a particular concern, with only one study[14] explicitly mentioned that assessors who measured outcome were blinded to baseline OMPQ scores. Bias could be introduced into the study if personnel measuring outcome are aware of baseline OMPQ scores.

A difficulty we faced was that we could only judge study quality based on the report of the study. While reporting guidelines for clinical trials (the Consort statement[19]) have existed for over a decade, guidelines for reporting observational studies (the STROBE statement[20]) were only released in October 2007. It may be that a failure to report critical study details has meant that we have underestimated study quality.

In 2 studies,[6,13] data for 1 to 30 and greater than 30 days of sick leave were combined to form one cut-off for taking sick leave. While collapsing data in this way loses information, it was the most practical way of allowing calculation of an AUC to establish predictive ability using available data. However, this does not allow for differentiation of the predictive ability of the OMPQ to detect patients who will take a few days *versus* long-term sick leave. This information would be useful, as a patient who recovers well may take a few days sick leave as a result of their injury.

The majority of studies we located were small and provided imprecise estimates of predictive ability. For example, Grotle *et al* reported 95% CIs for odds ratios of 1.9 to 11.46 at 3 months[14] and 1.83 to 23.36 at 12 months[15] follow-up, clearly not as precise as would be preferred. Future studies need to enrol much larger numbers of subjects to provide more precise estimates of the predictive ability of the OMPQ. Alternatively, if authors provided individual subject data, it could be pooled to provide a more accurate estimate of predictive ability of the Orebro.

The included studies were conducted in different parts of Scandinavia[6,13–15,18] and the Netherlands.[16,17] These study populations are probably quite homogenous. However, psychosocial risk factors may operate differently in other social, ethnic and cultural groups. Thus, to determine whether the OMPQ has the same predictive ability in many different settings, studies should be conducted on cohorts from Oceania, Asia, the United States and different parts of Europe. Research of this nature will provide further evidence to allow a more accurate determination of the OMPQ's external validity.

The area under the ROC curve was used where possible, as this statistic provides an overall measure of predictive ability across a range of cut-off points. Previous studies have suggested optimal cut-off points between 90[13,18] and 105[6] for prediction of chronicity. These cut-offs were based on minimizing misclassification error but there are additional considerations in clinical practice. There are a range of clinical scenarios where the consequences of misclassification may be quite different. For example, if the objective is not to miss any patients likely to develop persistent problems, the cut-off score may be reduced. In contrast, if patients at risk of delayed recovery are to be offered an expensive intervention program to assist in preventing chronicity, the score may be increased to reduce false positives.[7] We would encourage authors to report measures of accuracy for each cut-off point, as this would allow practitioners to choose a cut-off point that is relevant to their clinical situation.

Studies report moderate predictive ability of total OMPQ scores to predict delayed recovery. However, there is a paucity of literature available which considers the predictive ability of certain subscales or items of the OMPQ. Heneweer *et al*[16] reported on the predictive ability of the total score and different subscales of the OMPQ in determining self-rated recovery at twelve weeks. As the reported AUC for the total score (0.64 95% CI, 0.50–0.79) was poorer than for the pain subscale (0.82 95% CI, 0.71–0.93) it is possible that some subscales are not as useful in predicting outcome. This result suggests that it may be fruitful to revise the OMPQ by deleting less predictive items or revising the items to improve prediction.

To date only a few studies have attempted to establish which OMPQ items have the highest predictive value in determining future pain, disability and sick leave.[6,13,18] This research assists in determining which items are most useful in predicting future outcomes and whether some items are irrelevant and need to be removed from the OMPQ. However, further research, in the form of large prospective cohort studies, are needed to confirm whether certain items or subscales have greater ability to establish risk of delayed recovery in different patient populations. This will assist in refinement of the questionnaire to improve its predictive ability and usefulness.

In conclusion, the OMPQ has moderate predictive ability in identifying patients with spinal pain at risk of developing chronic pain, disability or taking long-term sick leave. This evidence supports the recommendations of clinical guidelines which suggest its use in identifying patients with psychosocial risk factors who require further clinical assessment and/or early intervention to prevent the development of persistent problems. However, practitioners need to be aware of the OMPQ's limitations and that it will not correctly classify all patients. Also, further research in the form of large high quality cohort studies, is needed to confirm the predictive ability of individual items and total scores in different populations and settings. This will provide direction for improvement of the OMPQ and enhance its usefulness in assisting practitioners to effectively use resources, by only providing preventative intervention strategies to patients truly at risk of delayed recovery.

■ Key Points

- The Orebro Musculoskeletal Pain Questionnaire has been promoted as a tool to screen for psychosocial factors associated with delayed recovery.
- To date no study has systematically reviewed the Orebro questionnaire.
- This systematic review shows the Orebro questionnaire has moderate predictive ability in identifying patients with spinal pain at risk of delayed recovery.
- Further research is needed to confirm the predictive ability of different items of the questionnaire and provide direction for its improvement to enhance its usefulness.

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■ Appendix A

Search Strategy

1. Orebro musculoskeletal pain questionnaire
2. Orebro musculoskeletal pain screening questionnaire
3. Orebro screening questionnaire
4. Orebro questionnaire
5. OMPQ
6. OMPSQ
7. OSQ
8. Acute low back pain screening questionnaire
9. ALBPSQ
10. Yellow flags
11. Psychosocial screening
12. Psychosocial AND screening questionnaire
13. or/1–12