Individual Patient Education for Managing Acute and/or Subacute Low Back Pain: Little Additional Benefit for Pain and Function Compared to Placebo. A Systematic Review With Meta-analysis of Randomized Controlled Trials

At least 8 in every 10 people in the world will experience low back pain (LBP) at some time in their lives. LBP imposes high direct costs due to medical consultations, examinations (ie, x-rays, magnetic resonance imaging), and drugs as well as indirect costs from work compensation and absence. Acute LBP refers to symptoms lasting up to 4 weeks, subacute LBP refers to symptoms lasting 4 to 12 weeks, and chronic LBP refers to symptoms lasting more than 3 months. While approximately 40% of patients with an acute LBP episode recover within 2 to 4 weeks, the rest tend to develop a chronic disorder with long-lasting symptoms.

Physical and psychosocial factors such as anxiety, depression, and coping strategies are associated with poor prognosis. Patient information and education are often recommended in treatment guidelines to improve self-efficacy and coping strategies. Individual patient education emphasizes a structured approach drawing on providing information and behavior change techniques to influence the way patients experience and understand their pain. Many studies have focused on providing individual patient education for patients with chronic LBP, as misguided beliefs and attitudes about prognosis and tissue-damage theory may influence whether LBP symptoms and

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**OBJECTIVE:** To evaluate the effects of individual patient education for managing acute and/or subacute low back pain (LBP), compared to no intervention/placebo education, noneducational interventions, or other type of education.

**DESIGN:** Systematic review with meta-analysis of randomized trials.

**LITERATURE SEARCH:** PubMed, CINAHL, PEDro, Embase, Scopus, and CENTRAL (up to September 30, 2020); reference lists of previous systematic reviews.

**STUDY SELECTION CRITERIA:** Randomized controlled trials (RCTs) evaluating individual education for patients with acute and/or subacute LBP.

**DATA SYNTHESIS:** Random-effects meta-analysis for clinically homogeneous RCTs. Certainty of evidence was assessed using the Grading of Recommendations Assessment, Development and Evaluation approach.

**RESULTS:** We included 13 RCTs. There was moderate certainty evidence that individual patient education was more effective than placebo education for pain at medium term (mean difference [MD], −0.79; 95% confidence interval [CI]: −1.52, −0.07) and physical function at short term (standardized mean difference [SMD], −0.25; 95% CI: −0.47, −0.02) and medium term (SMD, −0.26; 95% CI: −0.48, −0.04), but with no clinically relevant effects. There was low-to-moderate certainty evidence that individual patient education was superior to noneducational interventions on short-term quality of life (MD, −12.00; 95% CI: −20.05, −3.95) and medium-term sick leave (odds ratio = 0.32; 95% CI: 0.11, 0.88). We found no clinically relevant between-group effects for any other comparison (low-to-high certainty of evidence) at any follow-up.

**CONCLUSION:** One or 2 hours of individual patient education probably makes little to no difference in pain and functional outcomes compared with placebo for patients with acute and/or subacute LBP. Considering its effects on other outcomes (eg, reassurance) and patients’ desire for information about their condition, it is reasonable to retain patient education as part of a first-line approach when managing acute and subacute LBP.

**KEY WORDS:** low back/lumbar spine, pain, systematic review/meta-analysis
disability persist. Although most clinical practice guidelines recommend advice and education for managing acute LBP, few studies are available on the acute and subacute stages of LBP.\textsuperscript{9,30}

A Cochrane systematic review published in 2008 explored the role of individual patient education for patients with LBP, classifying patients into acute, subacute, or chronic LBP. There was strong evidence of the effectiveness of an intensive individual patient education program (at least 2.5 hours) on return to work at the short and long term compared to no intervention for acute and/or subacute LBP.\textsuperscript{1,3,11} Since 2008, 4 other systematic reviews published on this topic have focused on different outcomes and/or populations: Traeger et al\textsuperscript{19} focused on reassurance as an outcome; Ainpradub et al\textsuperscript{1} focused on the treatment of multiple stages of LBP; Zahari et al\textsuperscript{57} focused on an older population with LBP; and Jones et al\textsuperscript{27} focused on mixed population (neck/back pain) as well as on pain, disability, and adverse events as outcomes. As new trials on individual patient education for patients with acute and/or subacute LBP have been published since the 2008 Cochrane review, an updated synthesis was warranted.\textsuperscript{15}

We aimed to review the effects of individual patient education compared to no intervention, placebo, other interventions (eg, exercise, manual therapy), or other modes of patient education (ie, group-based education) for adults with acute and/or subacute LBP.

METHODS

We registered a protocol for this systematic review on PROSPERO (https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42020136461). This manuscript is reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.\textsuperscript{34}

Identification and Selection of Studies
We searched PubMed, CINAHL, PEDro, Embase, Scopus, and Cochrane Central Register of Controlled Trials (CENTRAL) databases from inception to September 30, 2020 (search strategies available in APPENDIX A). References of previous systematic reviews on individual patient education for LBP were screened to identify additional trials.\textsuperscript{1,11,49}

Two reviewers (V.R. and I.V.) independently screened titles and abstracts to find all potentially relevant studies using the Rayyan platform.\textsuperscript{39} Full texts were screened by the same 2 reviewers to determine inclusion or exclusion. Discrepancies were discussed among the research group. If there was lack of information to determine inclusion, we contacted authors for more information.

Selection Criteria

Population We included randomized controlled trials (RCTs) recruiting adult patients with acute and/or subacute non-specific LBP with or without referred pain—defined as “pain below the 12th rib and above the gluteus.”\textsuperscript{29} Acute LBP was defined as back pain lasting less than 6 weeks, whereas subacute LBP was defined as back pain lasting between 6 and 12 weeks.\textsuperscript{16} For studies with mixed populations (eg, lumbar radiculopathy or chronic pain in other body areas), we only included studies where 75% or more of the sample had acute or subacute LBP, to have a more homogeneous population; if results were presented separately for the LBP group, the trial was included even if less than 75% of patients had LBP.\textsuperscript{28} RCTs including participants who were suffering from LBP with a serious specific cause (eg, infection, cancer, rheumatoid arthritis, fracture, cauda equina syndrome) were excluded. Only studies in English or Italian were included.

Intervention Individual patient education was defined as a structured approach drawing on providing information and behavior change techniques to influence the way patients experience and understand their pain.\textsuperscript{31} Education for patients with LBP was operationalized as any advice or information (verbal, written, or audiovisual) provided by a health care professional with the aim of improving the patients’ understanding of their back problem and what they should do about it. Any form of individual patient education was accepted: “on-site” or remote interventions. We included trials of advice to stay active and excluded trials of instructions on how to perform specific exercises. We included trials with combined interventions (eg, education plus exercise) if they compared the same intervention program without the individual patient education component.

Comparator We focused on the following comparators: (1) no intervention (eg, waiting list) or placebo education, (2) noneducational interventions (eg, exercise, manual therapy, usual care), and (3) other type of patient education (eg, group-based patient education).

Outcomes We included RCTs if they reported at least 1 of the following outcomes:
- pain intensity (eg, visual analog scale, numeric rating scale, McGill Pain Questionnaire)
- physical function (eg, Oswestry Disability Index, Roland-Morris Disability Questionnaire [RMDQ], Aberdeen Low Back Pain Scale)
- return to work (eg, number of sick days, percentage of patients on sick leave)
- health-related quality of life (HRQoL) (eg, 36-Item Short-Form Health Survey, Euro Quality of Life, activities of daily living)

We collected outcomes at the following time points:
- short term (ST) – (2-6 weeks after randomization)
- medium term (MT) – (6 weeks to 6 months)
- long term (LT) – (6-12 months)

Assessing Risk of Bias
Two authors (V.R. and I.V.) independently assessed risk of bias (RoB) using the 13-item RoB checklist included in the guidelines of the Cochrane Back and Neck Group.\textsuperscript{16} Biases were divided into 5 domains: selection bias (criteria 1, 2, and 9), performance bias (criteria 3, 4, 10, and 11), attrition bias (criteria 6 and...
7), detection bias (criteria 5 and 12), and publication bias (criterion 8). Consensus was reached by discussion between the 2 review authors (V.R. and I.V.). A third review author (L.P.) was consulted if disagreement persisted.

**Data Extraction and Analysis**

We used a data-extraction form to collect data on trial population and types of interventions as well as quantitative data from the outcome measures. We extracted the following information: first author, year of publication, type of population (ie, acute and/or subacute LBP), number of participants allocated to each group, and patient characteristics (eg, age, sex, education, baseline pain intensity, and duration of symptoms).

Two independent reviewers (V.R. and I.V.) independently extracted mean scores and standard deviations (SDs) for continuous outcomes as well as odds ratio (OR) or relative risk for dichotomous outcomes. When necessary, data from graphs were extracted through the WebPlotDigitizer software.36

If variance in outcomes was reported as confidence intervals (CIs), interquartile ranges, or standard errors, we converted them into SDs using the formulas in the *Cochrane Handbook for Systematic Reviews of Interventions*.29 When data were not fully available, corresponding authors were contacted to obtain missing data. If SDs were not reported in the original RCT, its imputation was done through the pooled weighted mean of SD available for that specific meta-analysis.17 Consistent with previous work on this topic, aggregated results were presented by pooling data from acute and subacute LBP populations.11,41,49

**Data Synthesis**

We used inverse variance and random-effects meta-analyses to combine results from trials that we considered clinically homogeneous with respect to the population, intervention, types of comparators, and outcomes (eg, pain, functioning, HRQoL). We used the Review Manager Version 5.3 software to calculate the pooled mean difference (MD), standardized mean difference (SMD), or pooled OR, each reported with 95% CIs.42 We calculated the MD if the same measurement instruments were used for the same outcome and the SMD if different instruments were used for the same outcome (eg, RMDQ and Oswestry Disability Index for physical function).

We calculated the SMD as the difference between the mean in the intervention and control groups divided by the pooled SD. To aid clinical interpretation of results, the SMD was back-transformed into MD by multiplying it by the pooled SD of the most used and recommended instruments for the core outcomes for LBP (ie, 2 for the 0- to 10-point pain numeric rating scale and 5 for the 24-item RMDQ).6 We then transformed this value into a percentage by calculating the proportion of improvement from the pooled baseline values of the most used and recommended instruments. We considered a between-group MD greater than or equal to 20% as a clinically relevant effect.24 We reported dichotomous outcomes as ORs with 95% CIs.

Heterogeneity was examined as between-study variation and calculated as the I² statistic measuring the proportion of variation in the combined estimates due to between-study variance. An I² value of 0% indicates that none of the variance in the pooled estimate can be attributed to between-study variance, and an I² value of 100% indicates that all of the variance in the pooled estimates is attributable to between-study variance.

![Flow of trials through the review](image-url)
### TABLE 1
Characteristics of the Included Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Stage of LBP</th>
<th>Sample Characteristics</th>
<th>Type of Intervention</th>
<th>Sample Characteristics</th>
<th>Type of Intervention</th>
<th>Outcomes</th>
<th>Follow-up</th>
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</thead>
<tbody>
<tr>
<td>Burton</td>
<td>Mixed</td>
<td>n = 83; Age = 42.6 (10.9); M/F = 42/41</td>
<td>Biopsychosocial education booklet (how to cope with LBP; patient empowerment)</td>
<td>n = 79; Age = 44.7 (12.2); M/F = 31/48</td>
<td>Usual education booklet (traditional biomedical information)</td>
<td>• Pain = NRS (0-100)</td>
<td>Short term = 1 week</td>
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<td></td>
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<td></td>
<td>n sessions = NR; Duration = NR</td>
<td>n sessions = NR; Duration = NR</td>
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<td>Medium term = 3 months</td>
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<tr>
<td>Cherkin</td>
<td>Mixed</td>
<td>n = 66; Age = 40.1 (11.2); M/F = 38/28</td>
<td>Educational booklet (biopsychosocial information about prevention and management of LBP; role of diagnostic imaging)</td>
<td>n = 122; Age = 39.7 (9.4); M/F = 59/65</td>
<td>Control 1: Chiropractic manipulation n sessions = 6-9; Duration = 145'/s</td>
<td>• Pain = bothersomeness of symptoms (0-10)</td>
<td>Short term = 1-4 weeks</td>
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<td>n sessions = NR; Duration = NR</td>
<td>Control 2: McKenzie Therapy + Treat Your Own Back book + lumbar support cushion</td>
<td>n = 133; Age = 41.8 (11.5); M/F = 70/63</td>
<td>Function = RMDQ (0-24)</td>
<td>Medium term = 12 months</td>
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<tr>
<td>Hay</td>
<td>Mixed</td>
<td>n = 201; Age = 40.4 (12.0); M/F = 101/100</td>
<td>Brief pain management (explanation of pain mechanisms, role of psychosocial factors, self-management of LBP)</td>
<td>n = 201; Age = 40.9 (11.6); M/F = 91/110</td>
<td>Manual therapy n sessions = up to 7; Duration = 20-40'</td>
<td>• Pain = VAS (0-100)</td>
<td>Medium term = 3 months</td>
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<td>n sessions = up to 7; Duration = 20-40'</td>
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<td>• Function = RMDQ (0-24)</td>
<td>Medium term = 12 months</td>
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<td>• Return to work = patients (%)</td>
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<td>Returning to work = participants not working (%), days of work lost (n)</td>
<td>Medium term = 3 months</td>
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<td>Medium term = 6 months</td>
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<tr>
<td>Hazard</td>
<td>Acute</td>
<td>n = 244; Age = 38.3 (9.2); M/F = 133/96</td>
<td>“Good News About Back Pain” booklet (self-management, return to work, and physical activity)</td>
<td>n = 245; Age = 39.7 (9.4); M/F = 141/60</td>
<td>No intervention n sessions = NR; Duration = NR</td>
<td>• Pain = NRS (0-10)</td>
<td>Short term = 6 weeks</td>
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<td></td>
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<td></td>
<td>n sessions = NR; Duration = NR</td>
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<td></td>
<td>• Function = RMDQ (0-24)</td>
<td>Medium term = 3 months</td>
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<td></td>
<td>• Return to work = patients (%)</td>
<td>Medium term = 26 weeks</td>
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<td>• Quality of life = SF-36 (0-100)</td>
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<td></td>
<td></td>
<td>• Pain = average pain (0-10), worst pain (0-10)</td>
<td>Long term = 12 months</td>
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<td>• Function = ADL (0-60)</td>
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<td>• Return to work = days of work lost (0-184)</td>
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<td>Jellema</td>
<td>Mixed</td>
<td>n = 143; Age = 43.4 (11.1); M/F = 65/68</td>
<td>Educational booklet (psychosocial factors) + GP consultation</td>
<td>n = 171; Age = 42.0 (12.0); M/F = 90/81</td>
<td>Usual care n sessions = NR; Duration = NR</td>
<td>• Pain = NRS (0-10)</td>
<td>Short term = 1 month</td>
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<td></td>
<td>n sessions = &gt;1; Duration = 20'</td>
<td></td>
<td></td>
<td>• Function = RMDQ (0-24)</td>
<td>Medium term = 3 months</td>
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<td>• Return to work = patients (%)</td>
<td>Medium term = 26 weeks</td>
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<td>• Quality of life = SF-36 (0-100)</td>
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<td>• Pain = average pain (0-10), worst pain (0-10)</td>
<td>Long term = 12 months</td>
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<td>• Function = ADL (0-60)</td>
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<td>• Return to work = days of work lost (0-184)</td>
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<tr>
<td>Linton</td>
<td>Mixed</td>
<td>n = 70; Age = 45; M/F = 20/50</td>
<td>“Back Pain – Don’t Suffer Needlessly” booklet (biopsychosocial information, “stay active” advice, avoid fear-avoidance behavior)</td>
<td>n = 107; Age = 44; M/F = 37/75</td>
<td>Group-based cognitive-behavioral intervention + usual care n sessions = 6; Duration = 2 h</td>
<td>• Pain = average pain (0-10), worst pain (0-10)</td>
<td>Long term = 12 months</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>n sessions = 6; Duration = NR</td>
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<td></td>
<td>• Function = ADL (0-60)</td>
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<td>• Return to work = days of work lost (0-184)</td>
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</table>

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<table>
<thead>
<tr>
<th>Study</th>
<th>Stage of LBP</th>
<th>Sample Characteristics*</th>
<th>Type of Intervention</th>
<th>Sample Characteristics*</th>
<th>Type of Intervention</th>
<th>Outcomes</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mayer 2005</td>
<td>Mixed</td>
<td>n = 26</td>
<td>Age = 31.3 (10.9)</td>
<td>M/F = 2/24</td>
<td>“Acute Low Back Problems in Adults, Patient Guide” booklet</td>
<td>n = 25</td>
<td>Age = 29.3 (9.9)</td>
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<td></td>
<td></td>
<td>n = 25</td>
<td>Age = 32.6 (10.3)</td>
<td>M/F = 10/15</td>
<td>Control 2</td>
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<td></td>
<td></td>
<td>n = 24</td>
<td>Age = 31.8 (11.8)</td>
<td>M/F = 9/15</td>
<td>Control 3</td>
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<tr>
<td>Newcomer 2008</td>
<td>Mixed</td>
<td>n = 110</td>
<td>Age = 40.4 (10.9)</td>
<td>M/F = 24/46</td>
<td>Cognitive-behavioral videotape (focus on physical activity and its role on LBP management)</td>
<td>n = 110</td>
<td>Age = 37.9 (11.8)</td>
</tr>
<tr>
<td>Pengel 2007</td>
<td>Subacute</td>
<td>n = 63</td>
<td>Age = 50.1 (15.4)</td>
<td>M/F = 34/29</td>
<td>Education (how to cope with LBP, information about prognosis and self-management) + placebo exercise</td>
<td>n = 68</td>
<td>Age = 50.0 (15.6)</td>
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<td></td>
<td></td>
<td>n = 29</td>
<td>Age = 39.3 (9.7)</td>
<td>M/F = 19/9</td>
<td>Duration = 20'</td>
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<tr>
<td>Roberts 2002</td>
<td>Acute</td>
<td>n = 35</td>
<td>Age = 39.2 (10.9)</td>
<td>M/F = 22/13</td>
<td>“Back Home” leaflet (biopsychosocial information) + GP advice</td>
<td>n = 28</td>
<td>Age = 39.3 (9.7)</td>
</tr>
<tr>
<td>Storheim 2003</td>
<td>Subacute</td>
<td>n = 34</td>
<td>Age = 41.3 (9.4)</td>
<td>M/F = 19/16</td>
<td>“Cognitive intervention” (pain mechanism, ergonomic advice to perform, stay active)</td>
<td>n = 30</td>
<td>Age = 42.3 (9.2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>n = 29</td>
<td>Age = 38.9 (11.9)</td>
<td>M/F = 13/16</td>
<td>Duration = 30-60’</td>
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<tr>
<td>Traeger 2019</td>
<td>Acute</td>
<td>n = 101</td>
<td>Age = 46.5 (14.7)</td>
<td>M/F = 48/53</td>
<td>Intensive patient education (biopsychosocial education aimed to improve wrong beliefs)</td>
<td>n = 101</td>
<td>Age = 43.8 (14.1)</td>
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<td></td>
<td></td>
<td>n = 25</td>
<td>Age = 51.1 (13.9)</td>
<td>M/F = 22/13</td>
<td>Duration = 1 h</td>
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</tbody>
</table>

Table continues on next page.
The overall certainty of evidence was evaluated according to the Grading of Recommendations Assessment, Development and Evaluation (GRADE) guidelines (and GRADEpro software39), judging the evidence based on the following domains: RoB, inconsistency, imprecision, indirectness, and publication bias.45 Certainty was downgraded by 1 level if we identified a serious flaw in any of the domains. The certainty of evidence was classified as high, moderate, low, or very low. High certainty indicates we have a lot of confidence that the true effect is similar to the estimated effect. Moderate certainty means we believe that the true effect is probably close to the estimated effect. Low certainty means that the true effect might be markedly different from the estimated effect. Very low certainty means that the true effect is probably markedly different from the estimated effect.39 The results were presented in “summary of findings” tables.

RESULTS

The study selection process is illustrated in FIGURE 1. We excluded 2 trials after contacting the corresponding authors.8,48 We detailed reasons for which all potentially relevant trials were not included in our review in APPENDIX B.

Thirteen trials were included, and their characteristics are summarized in TABLE 1. Four trials focused only on patients with acute LBP;21,44,50,55 7 trials focused on mixed conditions (ie, acute or subacute LBP);4,5,21,25,30,36,37 and 2 trials focused on subacute LBP.41,47 Individual patient education varied among trials, ranging from a booklet to a face-to-face education session administered from a general practitioner or a physiotherapist (TABLE 1): 6 trials used verbal education,21,25,44,47,50,55 7 trials used written education resources,4,5,22,25,30,31,44 and 1 trial used an education video.27

Overall, 4 trials were conducted in the United States;4,22,31,37 4 trials were conducted in the United Kingdom;4,21,44,55 2 trials were conducted in Australia and/or New Zealand;41,50 and 1 trial was conducted in the Netherlands,25 Norway,47 and Sweden.20 Short-term follow-up ranged from 2 days to 6 weeks, medium-term follow-up ranged from 3 to 18 weeks, and long-term follow-up ranged from 6 to 24 months. The mean age of participants ranged from 29.3 to 50.1 years (TABLE 1).

Risk of Bias Assessment

Eleven trials were at high risk of performance bias due to the lack of blinded clinicians (FIGURE 2).5,21,25,30,31,44,47,55 Four trials were at high risk of selection bias due to differences between groups at baseline.5,31,44,47 Five trials were at high risk of attrition bias due to dropout rate.4,21,37,47,50 “Summary of findings” tables are presented in APPENDIX C.

Effect of Individual Education Versus No Intervention or Placebo Education

Individual patient education was superior to placebo education for pain intensity at medium-term follow-up (3 months; MD, −0.79; 95% CI: −1.52, −0.07; 2 trials, n = 314; moderate certainty) (FIGURE 3).41,50 The effect size was not clinically relevant, corresponding to 0.79 points on a 0-10 pain scale. No effect for individual patient education was found at short- and long-term follow-up, with low certainty of evidence due to inconsistency and imprecision (FIGURE 3). No trials comparing individual education to no intervention on pain intensity were found.

Physical Function Two trials with acute LBP45 or subacute LBP41 tested the effect of individual patient education compared to placebo education on physical functioning measured with the RMDQ.41,50 Individual patient education was superior at short term (6 weeks; SMD, −0.25; 95% CI: −0.47, −0.02; 2 trials, n = 308; moderate certainty) (FIGURE 3) and medium term (3 months; SMD, −0.26; 95% CI: −0.48, −0.04; 2 trials, n = 313; moderate certainty).
to no intervention on physical functioning were found.

Work Status and HRQoL Individual patient education was not superior to no intervention on work domains (% of patients not working and workdays lost due to LBP) at the medium and long term, based on moderate certainty of evidence (due to high RoB) derived from 1 study involving 450 subjects. No trials evaluated HRQoL outcomes.

Effect of Individual Education Versus Noneducational Intervention

Pain Intensity Six trials investigated the role of individual patient education compared to noneducational intervention on pain, specifically physiotherapy approaches (eg, manual therapy, exercise therapy) or usual care. Individual patient education was not superior to noneducational intervention at any follow-up, based on moderate certainty of evidence due to inconsistency or imprecision (FIGURE 4).

Physical Functioning Eight trials investigated the role of individual patient education compared to noneducational intervention on physical functioning. Individual patient education was not superior at short-, medium-, or long-term follow-up, based on low, moderate, or high certainty of evidence, respectively (FIGURE 4).

HRQoL Individual patient education was superior to noneducational intervention at short term in improving HRQoL domains (6 weeks; MD, −12.00; 95% CI: −20.05, −3.95; 1 trial, n = 65; low certainty) (FIGURE 5). No differences were reported at medium- or long-term follow-up, based on low certainty of evidence from 3 trials and 2 trials, respectively (FIGURE 5).

Work Absence/Sick Leave Individual patient education was superior to noneducational intervention for sick leave at medium term (3 months; OR = 0.32; 95% CI: 0.11, 0.88; 1 trial, n = 248; moderate certainty). No differences were found at short- or long-term follow-up, based on moderate certainty of evidence due to imprecision. One trial (n =

(FIGURE 3); the effect was not clinically relevant as corresponding to approximately 1 point on the 0- to 24-point RMDQ. No statistically significant effect was found at long-term follow-up (FIGURE 3). No trials comparing individual education
155) exhibited no effect of individual patient education on return to work, based on low certainty of evidence due to high RoB and imprecision.

**Effect of Individual Education Versus Other Types of Patient Education**

Three trials explored the effect of individual patient education compared to other types of educational interventions. Two trials compared individual patient education to providing biomedical information (ie, pain is linked to damage, do not lift

![Figure 3](image-url)

**Table 1**

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Experimental</th>
<th>Control</th>
<th>Mean Difference IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain - short term</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pengel 2007</td>
<td>2.1</td>
<td>3.5</td>
<td>3.8 3.7 59 44.4% -1.70 [-3.02, -0.38]</td>
</tr>
<tr>
<td>Traeger 2019</td>
<td>2.3</td>
<td>2.1</td>
<td>2.2 2.1 96 55.6% 0.10 [-0.49, 0.69]</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>153</td>
<td>155</td>
<td>100.0% -0.70 [-2.45, 1.05]</td>
</tr>
<tr>
<td>Heterogeneity: Tau² = 1.35, Chi² = 5.94, df = 1 (P = .01); I² = 83% Test for overall effect: Z = 0.78 (P = .43)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Pain - medium term | | | |
| Pengel 2007       | 2.2          | 4.3     | 3.7 3.8 61 21.4% -1.50 [-2.95, -0.05] |
| Traeger 2019      | 1.5          | 2       | 2.1 2.1 97 78.6% -0.60 [-1.18, -0.02] |
| Subtotal (95% CI) | 156          | 158     | 100.0% -0.79 [-1.52, -0.07] |
| Heterogeneity: Tau² = 0.09, Chi² = 1.27, df = 1 (P = .26); I² = 21% Test for overall effect: Z = 2.15 (P = .03) |

| Pain - long term | | | |
| Pengel 2007       | 2.1          | 4.4     | 3.3 3.9 56 32.4% -1.20 [-2.73, 0.33] |
| Traeger 2019      | 1.8          | 2.5     | 1.8 1.9 95 67.6% 0.00 [-0.63, 0.63] |
| Subtotal (95% CI) | 153          | 151     | 100.0% -0.39 [-1.48, 0.71] |
| Heterogeneity: Tau² = 0.36, Chi² = 2.02, df = 1 (P = .18); I² = 50% Test for overall effect: Z = 0.69 (P = .49) |

![Figure 3](image-url)

**Figure 3**

Mean difference (95% confidence interval) of the effect of individual patient education versus placebo education at short-term (n = 308), medium-term (n = 314), or long-term (n = 304) follow-up on pain by pooling data from 2 trials as well as standardized mean difference (95% confidence interval) at short-term (n = 308), medium-term (n = 313), or long-term (n = 306) follow-up on physical functioning by pooling data from 2 trials. Abbreviations: CI, confidence interval; SD, standard deviation; Std, standardized.
FIGURE 4. Standardized mean difference (95% confidence interval) of the effect of individual patient education versus noneducational intervention at short-term (n = 472), medium-term (n = 759), or long-term (n = 218) follow-up on pain by pooling data from 6 trials5,21,30,31,47,55 as well as standardized mean difference (95% confidence interval) at short-term (n = 720), medium-term (n = 1090), or long-term (n = 893) follow-up on physical functioning by pooling data from 8 trials5,21,25,30,31,44,47,55 Abbreviations: CI, confidence interval; SD, standard deviation; Std, standardized.
weight if you have back pain).\textsuperscript{41,47} One trial compared individual patient education to a standard video educational intervention.\textsuperscript{37}

**Pain Intensity** There was moderate certainty of evidence of no additional benefit of individual patient education compared to standard biomedical information at any follow-up (2 trials, \( n = 247 \)) (FIGURE 6).\textsuperscript{4,30}

**Physical Function** There was moderate certainty of evidence of no additional benefit of individual patient education when compared to traditional standard information at any follow-up (3 trials, \( n = 358 \)) (FIGURE 6).\textsuperscript{4,30,37}

**Work Status** There was no evidence that individual patient education was superior to other types of education (1 trial, \( n = 121 \); low certainty of evidence due to high RoB and imprecision).\textsuperscript{30}

**DISCUSSION**

We found moderate-certainty evidence that individual patient education was superior to placebo education for improving pain at medium term and for improving physical function at the short and medium term. However, the between-group effect did not exceed the 20% smallest worthwhile effect threshold, and we contend that these results are not clinically relevant.

There were no between-group differences at short- and long-term follow-up (low-to-moderate certainty of evidence) and no differences when education was compared to noneducational interventions (low-to-high certainty of evidence). Low-to-moderate certainty of evidence indicates that individual patient education was superior to noneducational intervention for improving HRQoL up to 6 weeks and for reducing sick leave up to 3 months.

These findings question the clinical relevance of individual patient education as a stand-alone treatment. However, our data may suggest a role for patient education even if no statistical significance was achieved; for example, when patient education is compared to placebo/no intervention, the uncertainty estimates around the short-term effects on pain intensity include the threshold for a smallest worthwhile effect.

Our findings were consistent with a recent review, which found a short-term effect of advice or education on pain and disability for nonspecific spinal pain (ie, neck and back pain).\textsuperscript{27} Our results were more imprecise due to fewer included trials (wider CIs). Our review had a more specific research question and narrowed the eligibility criteria to focus on acute and subacute LBP, individual patient education (vs all types of patient education), and a core outcome set for LBP.

In a previous Cochrane review,\textsuperscript{11} 2.5 hours of verbal education was an effective intervention for people with acute and/or subacute LBP compared to no intervention on short- and long-term return to work.\textsuperscript{11,24,35} The Cochrane review included no meta-analysis and no GRADE approach, which makes direct comparisons to our results challenging. We identified 2 new trials:\textsuperscript{27,30} One trial comparing education to placebo\textsuperscript{49} and one trial comparing education to another type of education (standard educational videotape).\textsuperscript{37} Traeger et al\textsuperscript{50} had a low RoB, contributing to an upgrading of the certainty of evidence on individual patient education for patients with acute and/or subacute LBP. We did not include trials with more than 25% of people suffering from sciatica, meaning that 2 trials on individual patient education deemed effective on return to work by Engers et al\textsuperscript{11} were not included.\textsuperscript{24,35}

Guidelines on back pain management recommend individual patient education as a key component of a multimodal approach.\textsuperscript{15,38,46} Individual patient education...
aims to reassure, promote self-efficacy and adequate coping strategies, and prevent fear avoidance and beliefs that could alter the LBP trajectory. Despite the lack of effect on pain and functioning, individual patient education could be an important intervention within a multimodal approach for patients with subacute LBP. Individual patient education is superior to usual care and other interventions in reassuring patients with LBP, and reassurance is 1 of the main clinical goals. Previous studies emphasized the role of individual preferences to structure a tailored treatment approach: people with LBP want clear and tailored explanations regarding the whole health care process (ie, diagnosis, therapy, and prognosis issues). Information and education are a critical component of the approach to managing musculoskeletal disorders, as is sharing information regarding self-management strategies. Involving the patient in the clinical decision-making process is important to prevent recurrence of LBP.

Future systematic reviews may focus on the effect of individual patient education on outcomes more closely related to developing self-management strategies, such as self-efficacy and coping behavior.

**Implication for Practice**

Individual patient education alone is not superior to other interventions, but it may form part of a multimodal approach to improving pain and function. In the clinical setting, patient education is seldom provided alone, but rather combined with modalities such as exercise and manual therapy. Some guidelines recommend patient education for “selected” people with acute and/or subacute LBP: (1) patients want information and education about their condition; (2) education is effective for reassuring patients, which is a key component of health care. Eventually, individual patient education may have some tangible advantages compared to other interventions: it is usually cheap (especially when delivered through booklets) and may be safer than other interventions (eg, manual therapy, drugs).

**Implication for Research**

Our findings are mainly based on low-to-moderate certainty of evidence. Imprecision was the principal reason to downgrade the certainty of evidence. It is unlikely that the effect sizes will become clinically relevant in favor of patient education, the need for new trials notwithstanding. Investigating the effect of patient education on other outcomes facilitating self-management strategies may be the priority from now on. Trials investigating the role of other variables may also add valuable information to the
body of evidence. None of the included trials performed an economic evaluation. Therefore, future research should aim to investigate cost-effectiveness to better understand the societal and economic benefits of patient education when implemented in health care systems as a first-line management strategy for acute and/or subacute LBP.

**Limitations**
The main limitations of this review may be related to the date of publication of the included trials. All included trials, except Traeger et al., were published more than 10 years ago. We included all the trials focusing on the comparison between individual patient education and other interventions: 2 trials investigated the clinical effect of individual patient education combined with other interventions (ie, usual care and exercise therapy); this issue may be questionable since it introduced a likely clinical heterogeneity when compared to other included trials.

**CONCLUSION**

**INDIVIDUAL PATIENT EDUCATION did not confer clinically meaningful effects on pain and function over placebo education for people with acute and/or subacute LBP.** Individual patient education was not superior to other interventions for improving HRQoL or work status.

**KEY POINTS**

**FINDINGS:** Individual patient education reduced pain and improved physical function compared to no intervention/placebo education at 3 months, but the effect sizes were not clinically relevant. Individual patient education was not superior to other interventions for health-related quality of life and work status.

**IMPLICATIONS:** Patient education should not be recommended as a stand-alone strategy for managing acute and/or subacute low back pain (LBP). Clinicians might consider using patient education as part of a multimodal intervention to reassure patients and foster coping.

**STUDY DETAILS**

**AUTHOR CONTRIBUTIONS:** All authors contributed to the review and preparation of the manuscript. Each of the authors has read and concurs with the content of the final manuscript.

**DATA SHARING:** All relevant data are included in the article or are available as online appendices.

**PATIENT AND PUBLIC INVOLVEMENT:** Patients or public partners were not involved in the design, conduct, or interpretation of this systematic review.

**REFERENCES**

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