



Review Article

Lack of Consensus Across Clinical Guidelines Regarding the Role of Psychosocial Factors Within Low Back Pain Care: A Systematic Review

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Abstract: It is widely accepted that psychosocial prognostic factors should be addressed by clinicians in their assessment and management of patient suffering from low back pain (LBP). On the other hand, an overview is missing how these factors are addressed in clinical LBP guidelines. Therefore, our objective was to summarize and compare recommendations regarding the assessment and management of psychosocial prognostic factors for LBP chronicity, as reported in clinical LBP guidelines. We performed a systematic search of clinical LBP guidelines (PROSPERO registration number 154730). This search consisted of a combination of previously published systematic review articles and a new systematic search in medical or guideline-related databases. From the included guidelines, we extracted recommendations regarding the assessment and management of LBP which addressed psychosocial prognostic factors (ie, psychological factors ["yellow flags"], perceptions about the relationship between work and health, ["blue flags"], system or contextual obstacles ["black flags"] and psychiatric symptoms ["orange flags"]). In addition, we evaluated the level or quality of evidence of these recommendations. In total, we included 15 guidelines. Psychosocial prognostic factors were addressed in 13 of 15 guidelines regarding their assessment and in 14 of 15 guidelines regarding their management. Recommendations addressing psychosocial factors almost exclusively concerned "yellow" or "black flags," and varied widely across guidelines. The supporting evidence was generally of very low quality. We conclude that in general, clinical LBP guidelines do not provide clinicians with clear instructions about how to incorporate psychosocial factors in LBP care and should be optimized in this respect. More specifically, clinical guidelines vary widely in whether and how they address psychosocial factors, and recommendations regarding these factors generally require better evidence support. This emphasizes a need for a stronger evidence-base underlying the role of psychosocial risk factors within LBP care, and a need for uniformity in methodology and terminology across guidelines. **Perspective:** *This systematic review summarized clinical guidelines on low back pain (LBP) on how they addressed the identification and management of psychosocial factors. This review revealed a large amount of variety across guidelines in whether and how psychosocial factors were addressed. Moreover, recommendations generally lacked details and were based on low quality evidence.*

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Key words: *Low back pain, guidelines, psychosocial, work, prognostic, yellow flags.*

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Low back pain (LBP) is a common health problem with detrimental consequences for both wellbeing and working capacity, and a leading global cause of disability.¹⁰ Moreover, the financial burden of LBP is enormous and for the larger part caused by costs associated with work absenteeism, presenteeism, wage replacement and more permanent incapacity for work.^{12,19} Over 90% of the LBP cases is considered a-specific, which means that there is no recognized pathoanatomical cause.²² Although the course of LBP is often favorable and self-limiting, recurrences are common²² and about 50% of all LBP patients develop persisting LBP.⁴⁶ It is in particular these individuals that are responsible for the vast majority of the social burden.¹⁸ Early identification of patients most likely to develop chronic pain and disability is therefore considered a crucial step in LBP management.⁸ If LBP patients with 1 or more psychosocial and other risk factors for chronicity can be identified as soon as possible, they can receive an intervention targeting these risk factors, thereby aiming to reduce the risk of chronicity.

Since the introduction of the so-called biopsychosocial model 30 years ago, much emphasis has been put on identifying psychosocial risk factors for chronic LBP.⁵⁰ It is widely believed, that psychosocial risk factors need to be addressed by clinicians in their assessment and management of patient suffering from LBP.²⁹ A categorization has been proposed^{23,24,29} in which psychosocial risk factors are subdivided into psychological factors ("yellow flags"), perceptions about the relationship between work and health ("blue flags"), system or contextual obstacles ("black flags") and psychiatric symptoms ("orange flags"), next to the widely accepted "red flags" for indicators of specific pathology.

Multiple systematic reviews summarized the available evidence between individual psychosocial factors and the risk of LBP chronicity and, in general, they found evidence supporting this association for depression,³⁴ catastrophizing,⁵² maladaptive pain coping,⁷ fear-avoidance beliefs,^{7,51} recovery expectations⁴⁰ and presence of psychiatric comorbidities.⁸ When using sick leave as an outcome, some work-related factors (ie, heavier work and higher compensation) play a prognostic role, while others do not (ie, job satisfaction, occupation, shift of more than 8 hours).⁴¹ Based on this evidence, screening instruments for LBP chronicity have been developed,^{13,20,44} consisting mainly of items from the psychosocial domain. On the other hand, despite all the prognostic research that has been done,^{7,8,34,40,41,51,52} the overall empirical evidence supporting the prognostic value of psychosocial factors in LBP chronicity is in general not very strong.^{11,36} In addition, the use of different predictor variables, cut-off scores, outcomes and follow-up periods hampers interpretation of study results.³⁴ Publication bias may also be a real threat in prognostic research.¹⁴ To optimize clinical practice for persons with LBP, current evidence on the relevant, psychosocial, prognostic factors should be adequately adopted in clinical guidelines. Many clinical LBP guidelines have been developed and implemented throughout the world over the last years, which have

Role of Psychosocial Factors Within Low Back Pain Care also resulted in helpful overviews.^{25,32,49} However, no such overview exist that specifically focuses on psychosocial prognostic factors addressed in current LBP guidelines. Therefore, we aim to summarize and compare recommendations regarding assessment and management of psychosocial prognostic factors for LBP chronicity as described in currently available clinical LBP guidelines.

Methods

Design

A systematic review of clinical guideline recommendations addressing the assessment and/or management of psychosocial prognostic factors for LBP chronicity in available international clinical LBP guidelines. This review was registered in PROSPERO (registration number: 154730), and reported conform the PRISMA checklist (see [Supplementary Table 1](#)).

Search Strategy

Since not all clinical guidelines are published in the peer-reviewed literature and therefore often not listed in available medical databases, we followed an alternative search strategy. Three recent systematic reviews with similar search criteria but different research objectives compared to our study were used as a starting point of the present review. These reviews are respectively focusing on "red flags" in clinical primary care LBP guidelines from the period between 2000 and 2015,⁴⁹ a general overview of clinical primary care LBP guidelines from the period between 2008 and 2017,³² and a general overview of clinical primary care LBP guidelines, but from the period between 2011 and April 2019.²⁵ We checked for eligibility of guidelines included in one of these reviews based on our inclusion criteria (see next paragraph), removed duplicates and replaced included guidelines for updates if available.

Next, we searched for additional guidelines from January 2018 until December 2019, using the following electronic databases: Embase/PubMed/Medline (search terms: "low back pain" and "guideline," both supplemented with applicable synonyms/mesh-terms), PEDro (<https://www.pedro.org.au>; key word: low back pain and guideline), TRIP (<https://www.tripdatabase.com>; key word: low back pain and guideline), National Guideline Clearinghouse (<http://www.guideline.gov>; key word: low back pain), National Institute for Health and Clinical Excellence (<http://www.nice.org.uk>; key word: low back pain) and the guideline library of the Guidelines International Network (<http://www.g-i-n.net/library/international-guidelines-library>; key word: low back pain). We additionally performed searches using Google and Physiopedia, and performed citation tracking and snowballing on relevant publications within the identified publications.

Eligibility Criteria

In order to be included, the guideline should be 1) a clinical, multidisciplinary guideline aimed at the assessment and/or management of LBP in primary care, 2) contain 'systematically developed statements including recommendations intended to optimize patient care and assist physicians and/or other health care practitioners and patients to make decisions about appropriate health care for low back pain'⁴⁹ 3) be produced 'under the auspices of a medical specialty association, relevant professional society, public or private organization'⁴⁹, and 4) written in English, German or Dutch. In case of multiple eligible guidelines from 1 country, we included the most recent one (unless there were separate guidelines for acute and chronic LBP).

Quality Assessment of Recommendations

We extracted data regarding 1) recommendations for the assessment and management of psychosocial risk factors of LBP chronicity (including "yellow," "blue," "black," and "orange flags"); and 2) its level or quality of evidence as reported in the guidelines. Guideline selection and data extraction were performed by 2 review authors. One person (JK) conducted the systematic search (assisted by a librarian), and data extraction. The other person (JBS) checked all steps, and in case of

disagreement, differences were discussed until consensus was reached.

Synthesis

We categorized the identified psychosocial factors into psychological factors ("yellow flags"), perceptions about the relationship between work and health ("blue flags"), system or contextual variables ("black flags") and psychiatric symptoms ("orange flags"), according to a well-accepted framework.^{23,24,29} We descriptively compared the guidelines in which psychosocial factors were described, how recommendations addressing these factors were formulated, and based on which level or quality of evidence.

Results

Search

The search resulted in fifteen LBP guidelines,^{1,4,6,15,26-28,31,33,35,42,43,45,47,48} which were published between 2000 and 2018, as shown by Fig 1. The European^{3,4} and French guideline^{1,2} consisted of 2 parts: 1 part on acute LBP^{1,4} and 1 on chronic LBP.^{2,3} For our review, we considered these parts as 1 European³ and 1 French guideline.¹ Table 1 provides an overview of the included

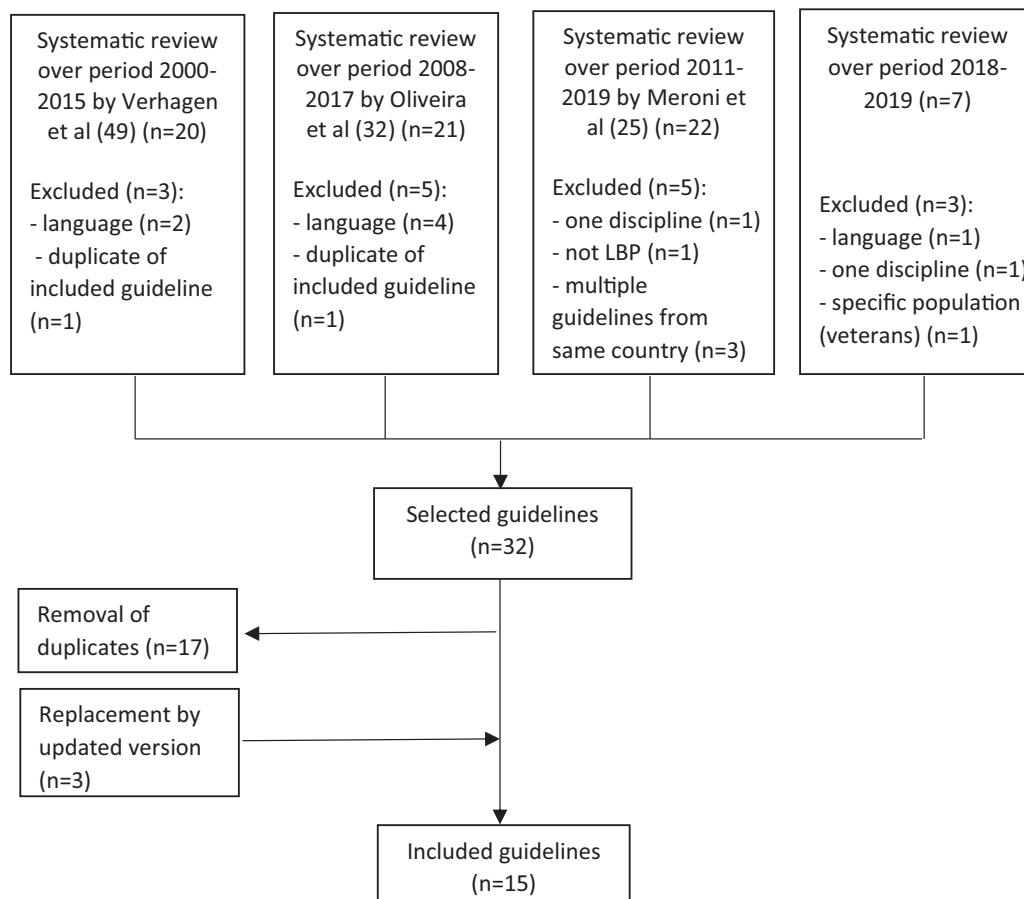


Figure 1. Flow chart of the study selection.

Table 1. Overview of Included Guidelines

COUNTRY, YEAR	GUIDELINE	SCOPE	EVIDENCE GRADING SYSTEM
Australia, 2016 ³¹	Management of people with acute low back pain	Conservative management of acute LBP	None
Austria, 2018 ⁴⁵	Nationale Versorgungs Leitlinie Nicht-spezifischer Kreuzschmerz [in German]	Conservative and invasive management of acute, subacute and chronic non-specific LBP	GRADE system (but only for interventions)
Belgium, 2017 ⁴⁷	Klinische richtlijn rond lage rugpijn en radiculaire pijn [in Dutch]	Conservative management of acute and chronic LBP or radicular pain	Adopted from NICE-guideline (which used GRADE system)
Canada, 2017 ⁴³	Evidence-informed primary care management of low back pain	Conservative management of acute and chronic non-specific LBP in primary care	Based on evidence source (guideline, SR, RCT, case-study, expert opinion)
Denmark, 2017 ⁴²	National clinical guideline for non-surgical treatment of patients with recent onset low back pain	Conservative management of acute LBP or lumbar radiculopathy	GRADE system
Europe, 2006 ^{3,4}	European guidelines for the management of acute nonspecific low back pain	Conservative of acute non-specific LBP	From AHCPR guidelines (1994) and Cochrane Back Review group
	European guidelines for the management of chronic nonspecific low back pain	Conservative and invasive management of acute non-specific LBP	
France, 2000 ^{1,2}	Diagnosis and management of acute low back pain (<3 months) with or without sciatica	Conservative management of acute LBP with or without sciatica	Based on evidence source (guideline, SR, RCT, case-study, expert opinion)
	Diagnosis, management and follow-up of chronic low back pain	Conservative management of chronic LBP with or without sciatica	
Germany, 2017 ⁶	Clinical practice guideline Non-specific low back pain	Conservative and invasive management of acute and chronic non-specific LBP	OCEBM system
Italy, 2006 ²⁷	Italian clinical guideline	Conservative and invasive management of acute, subacute and chronic LBP	Based on level of evidence, practical applicability, ethical and psychological considerations and costs
Malaysia, 2010 ¹⁵	The Malaysian low back pain management guidelines	Conservative management of acute, subacute and chronic LBP	None
Netherlands, 2010 ⁴⁸	Ketenzorgrichtlijn Aspecifieke Lage rugklachten [in Dutch]	Conservative management of acute and chronic nonspecific LBP	Based on Cochrane Back Review Group
New Zealand, 2004 ²⁸	New Zealand Acute Low Back Pain Guide	Conservative and invasive management of acute LBP	SIGN (Scottish Intercollegiate Guidelines Network) grading system
Philippine, 2017 ³³	Clinical Practice Guidelines on the Diagnosis and Management of Low Back Pain (Updated: 2017)	Conservative and invasive management of acute, subacute and chronic LBP	Based on level of evidence
United Kingdom, 2016 ²⁶	NICE guideline Low back pain and sciatica in over 16s: assessment and management	Conservative and invasive management of acute and chronic LBP and sciatica	GRADE system
United States of America, 2017 ³⁵	Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain	Conservative management of acute, subacute and chronic LBP	ACP grading system (adopted from GRADE system)

Abbreviations: ACP, American College of Physicians; AHCPR, Agency for Health Care Policy and Research; GRADE, Grading of Recommendations, Assessment, Development, and Evaluation; OCEBM, Oxford Centre for Evidence-based Medicine.

guidelines, their scope and their grading system for the level or quality of evidence of recommendations. Nine of the fifteen included guidelines are from Europe,^{1,4,6,26,27,42,45,47,48} 4 from Asia/Oceania^{15,28,31,33} and 2 from Northern America.^{35,43} All included guidelines originate from 2000 or later, of which^{7,6,26,31,33,35,42,47} of the fifteen guidelines are published within the past 5 years.

The scope of 6 guidelines concerns LBP care across health care settings (primary and secondary care, conservative and invasive treatment, acute and chronic LBP),^{4,6,26,27,33,45} while the other 9 specifically target our setting of interest (primary care only, conservative treatment only, acute and/or chronic LBP).^{1,15,28,31,35,42,43,47,48} The grading system used for the level or quality of evidence varied across guidelines, with the Grading of

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Recommendations, Assessment, Development, and Evaluation (GRADE) system most commonly used (used in 5 guidelines.^{26,35,42,45,47}

Psychosocial Factors

Table 2 describes for each of the 4 categories ("flags") which psychosocial prognostic factors have been addressed in the included guidelines. Two out of fifteen guidelines did not describe psychosocial factors at all (ie, Denmark⁴² and USA³⁵), whereas all others did to some degree. One guideline (ie, Belgium⁴⁷) described psychosocial factors from all 4 categories, and 2 guidelines described all but psychiatric factors (ie, Austria⁴⁵ and New-Zealand²⁸ whereas the other 10 guidelines^{1,4,6,15,27,31,33,35,43,48} described psychological and/or system/contextual factors only. The guidelines demonstrated some overlap of the described factors, but with many differences as well.

The most commonly reported psychosocial factors in the included guidelines are found to be depressive mood/distress (12/15 guidelines), negative beliefs of pain (11/15 guidelines), and/or passive behavior/coping style (11/15 guidelines), which are all "yellow flags." For the other categories, job dissatisfaction (8/15 guidelines), conflicts at work (7/15 guidelines) and physically heavy work/unsociably (shift) hours (7/15 guidelines), which are all "black flags," were the most commonly reported psychosocial factors. Factors from "blue" and "orange flags" were only rarely described. Supplementary Fig 1 consists of a chart showing the most commonly reported psychosocial factors.

Recommendations

A summary of all recommendations and the quality of evidence is provided in Table 3, while all recommendations are described in Table 4 (regarding assessment) and Table 5 (regarding management). In total, 43 recommendations addressing psychosocial factors were identified regarding the assessment of LBP, whereas 35 recommendations were identified regarding the management of LBP. The level or quality of evidence regarding assessment was provided in 22 recommendations (51%) and regarding management in 12 (34%). Recommendations were generally based on expert opinion, or reached low levels or quality of the evidence.

All but one guideline (USA³⁵ recommend to assess psychosocial prognostic factors at the onset of treatment and in a majority of the guidelines also in case of no recovery. One guideline (Malaysia¹⁵) recommended to assess these factors only in case of no recovery. In 3 guidelines,^{15,28,48} we found more detailed instructions how to assess these factors and by providing examples of assessment questions. Six guidelines^{6,26,28,31,45,47} recommend a specific, standardized tool for this assessment (ie, STarT Back Tool¹³ and Örebro Musculoskeletal Pain Screening Questionnaire²⁰ (also mentioned as Acute Low Back

Table 2. Reported Psychosocial Risk Factors in Clinical LBP Guidelines.

	AUSTRALIA ³¹	AUSTRIA ⁴⁵	BELGIUM ⁴⁷	CANADA ⁴³	DENMARK ⁴²	EUROPE ^{3,4}	FRANCE ^{1,2}	GERMANY ⁶	ITALY ²⁷	MALAYSIA ¹⁵	NETHERLANDS ⁴⁸	N-ZEALAND ²⁸	PHILIPPINES ³³	UK ²⁶	USA ³⁵
"Yellow flags"															
Beliefs, appraisals, and judgments*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emotional responses†	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Pain behavior/coping strategies‡	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
"Blue flags"															
Perceptions about the relationship between work and health§		X	X	X	X	X	X	X	X	X	X	X	X	X	X
"Black flags"															
System or contextual obstacles¶	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
"Orange flags"															
Psychiatric symptoms			X												

*eg, unhelpful beliefs about pain; negative recovery expectations; †eg, distress not meeting criteria for diagnosis of mental disorder; worries, fears, anxiety; ‡eg, fear-avoidance; overreliance on passive treatments; §eg, belief that work is too onerous and likely to cause further injury; belief that workplace supervisor and workmates are unsupportive; ¶eg, legislation restricting options for return to work; conflict with insurance staff over injury; overly solicitous family and health care providers; heavy work, with little opportunity to modify duties; ||eg, clinical depression, personality disorder.

Table 3. Summary of Recommendations Regarding Assessment and Management of Psychosocial Factors as Reported in Clinical LBP Guidelines

	AUSTRALIA ³¹	AUSTRIA ⁴⁵	BELGIUM ⁴⁷	CANADA ⁴³	DENMARK ⁴²	EUROPE ^{3,4}	FRANCE ^{1,2}	GERMANY ⁶	ITALY ²⁷	MALAYSIA ¹⁵	NETHERLANDS ⁴⁸	N-ZEALAND ²⁸	PHILIPPINES ³³	UK ²⁶	USA ³⁵
<i>Assessment of psychosocial factor</i>															
Recommended time-point:															
- at onset	X	X	X*	X	X	X	X	X	X	X	X	X	X	X	X
- if no recovery in few weeks		X		X		X		X	X		X	X**	X		
Recommended tool:															
- STarT Back Tool	X	X	X	X			X	X			X		X		X
- Örebro questionnaire/ALBPSQ	X	X	X					X					X		
- any standardized tool	X	X													
- direct questioning/assessment	X														
<i>Management of psychosocial factor</i>															
Specifically tailored intervention:															
- specific patient education or self-management strategy (in presence of psychological factor)	X	X	X	X	X	X		X	X	X	X	X	X		X
- cognitive behavioral approach (in presence of psychological factor)	X		X	X							X		X		
- referral to psychologist/ psychiatrist, and/or multidisciplinary approach (in presence of psychological and/or psychiatry-related factor)													X		
- workplace-intervention (in presence of work-related factor)															
Recommended tool:															
- STarT Back Tool	X		X	X											X
- Örebro questionnaire/ALBPSQ	X		X												X
- any standardized tool	X		X												

Abbreviation: ALBPSQ, Acute Low Back Pain Screening Questionnaire.

*but not within first 48 hours of onset.

Table 4. Recommendations Addressing Assessment of Psychosocial Factors in Clinical LBP Guidelines (With Recommendations Shortened if Needed)

GUIDELINE	RECOMMENDATIONS	GRADING
Australia ³¹	Yellow flags need to be assessed and their possible impact included in care planning Assessment tools such as STarT Back or Örebro help in identifying risks for poor outcomes but direct questioning might be sufficient as well	not provided not provided
Austria ⁴⁵	If there are significant fears or anxieties, early use of a yellow flag assessment tool is recommended Psychosocial and work-related risk factors should be assessed at onset of LBP episode Within first 4 weeks, psychosocial risk factors should be assessed by the coordinating doctor with a standardized screening instrument, eg, STarT Back Screening Tool or Örebro questionnaire	not provided not provided not provided
Belgium ⁴⁷	If treatment did not result in the intended effect in 4 weeks, yellow flags should be re-assessed Consider risk stratification for chronicity (eg, by STarT Back Screening Tool or short version of Örebro questionnaire) for every new episode of LBP, but not in the first 48 hours after onset of pain	not provided low to very low
Canada ⁴³	The first qualified practitioner with the ability to do a full assessment should assess the patient (including yellow flags) and undertake diagnostic triage Assess for yellow flags and conduct a detailed review if there is no improvement There is insufficient evidence to recommend for or against STarT Back Screening Tool and its stratified care model	2 SRs 2 SRs expert opinion
Denmark ⁴² Europe ^{3,4}	Consider psychosocial aspects of LBP, as it may lead to identification of patients with specific needs Identify psychosocial factors and review them in detail if there is no improvement Reassess those patients who are not resolving within a few weeks or those who are following a worsening course We recommend the assessment of yellow flags in patients with chronic LBP We recommend the assessment of work related and psychological factors in patients with chronic LBP.	expert opinion level A (RCTs) level D (expert opinion) not provided level A (RCTs)
France ^{1,2}	The initial assessment of a patient should include anxiety and/or depression. A number of tools may be used to assess these factors, but their value in this context has not been confirmed It is essential to obtain a picture of the patient's working life and to examine any psychosocial factors	expert opinion expert opinion
Germany ⁶	Psychosocial and workplace-related risk factors should be considered from the beginning After 4 weeks of persistent pain with an inadequate response to treatment, the coordinating physician should assess 'yellow flags' with a standardized screening instrument (eg, the STarT Back Tool or the Örebro Short Questionnaire), and may assess workplace-related factors with a standardized screening instrument Patients at high risk of chronification should undergo multidisciplinary assessment after 6 weeks of persistent pain	expert opinion expert opinion expert opinion
Italy ²⁷	We recommend careful history taking including psychosocial and professional risk factors to establish a significant relationship with the aim of giving behavioral counseling and start secondary prevention If pain persists unchanged for 2 weeks, we recommend further evaluation, including psychosocial chronification risk factors, disability with absenteeism and quality of life reduction ('yellow flags')	level A (RCTs) level A (RCTs)
Malaysia ¹⁵	When taking history, the physician must be constantly vigilant for symptoms of yellow flags. Yellow flags should be addressed early if the patient does not improve within 4-6 weeks. Yellow flags can be identified by asking the following questions (see Appendix for these questions)	not provided not provided not provided
Netherlands ⁴⁸	Assess for psychosocial factors and review them in detail if there is no improvement Evaluate psychosocial factors ('yellow flags') that can influence the course of LBP In patients that do not show any improvement in LBP symptoms in 2-3 weeks, the primary care health professional should evaluate if any psychosocial risk factor for chronicity is present To assess the presence of psychosocial factors, the following questions can be asked (see Appendix for these questions) Despite the abundance of available classification systems, no system has sufficient evidence in order to recommend this for classifying patients into profiles In patients on sick leave due to LBP and presence of severe limitations or other unfavorable prognostic factors, it is recommended not to return to work within 2 weeks, but within 1 month. Advice employer and supervisor to assess the restrictions and solutions at the workplace.	level A not provided not provided not provided not provided not provided
New Zealand ²⁸	The health provider must take a careful and thorough history to identify eg, any factors (including yellow flags) that might limit recovery and an early return to usual activities and work At each follow-up consultation, identify and address any barriers to recovery (including work-related and psychosocial factors) If patients have not regained usual activities at 4 weeks, they should be formally reassessed for both red and yellow flags, and again at 6 weeks if progress is still delayed There are 2 major methods (or a combination) that can be used to identify yellow flags: a structured questionnaire (eg, Acute Low Back Pain Screening Questionnaire) and clinical assessment. The	not provided not provided not provided not provided

(continued on next page)

Table 4. Continued

GUIDELINE	RECOMMENDATIONS	GRADING
	method chosen will depend on the clinical setting, and the treatment provider's personal confidence at assessing these issues	
	Suggested questions (see Appendix for these questions)	not provided
	Assessing the presence of yellow flags should produce 2 key outcomes: decision as to whether more detailed assessment is needed, and identification of any salient factors that can become the subject of specific intervention	not provided
Philippine ³³	There is evidence that the first qualified practitioner with the ability to do a full assessment (including psychosocial yellow flags) should assess the patient and undertake diagnostic triage.	moderate
	There is strong evidence that performing a full patient assessment (including psychosocial yellow flags) are important in the management of LBP.	strong
	There is evidence to assess for yellow flags and conduct a detailed review if there is no improvement.	moderate
	There is insufficient evidence that reevaluation should be done after 1-2 weeks of severe pain or impairment in function, and to start a formal delayed-recovery assessment and consider intervention.	poor
	There is insufficient evidence that functional capacity evaluations (FCEs) are a recommended option for evaluation of disabling chronic LBP where the information may be helpful to objectify worker capability, function, motivation	poor
UK ²⁶	Consider using risk stratification (for example, the STarT Back Screening tool) at first point of contact with a healthcare professional for each new episode of low back pain for stratified management.	not provided
USA ³⁵	None	n/a

Pain Screening Questionnaire [ALBPSQ]). On the other hand, 2 of these guidelines^{28,31} recommend a specific tool, but combine this with a statement that direct questioning can be similarly adequate as that tool. The Canadian guideline⁴³ states that there is insufficient evidence so far to recommend a specific, standardized tool like the STarT Back Tool for the assessment of prognostic factors (see Tables 3 and 4).

In twelve out of fifteen guidelines, a recommendation was included that psychosocial factors should be addressed during treatment, whereas 3 guidelines did not provide any recommendation on this.^{1,33,35} Three guidelines^{28,42,43} recommended to provide specific patient education or self-management focusing on a present psychological factor. Six guidelines^{4,28,31,35,47,48} recommended to apply a cognitive behavioral or psychological approach in the presence of psychological factors. Eight guidelines^{6,15,27,28,31,45,47,48} recommended to refer to a psychologist, psychiatrist or multidisciplinary team in the presence of psychological and/or psychiatry-related factors. Five guidelines^{5,28,31,43,48} recommended to apply a work-place intervention in the presence of work-related factors. Three guidelines^{6,43,48} additionally provided specified, extensive instructions how to manage specific factors (or flags), while all other guidelines only consisted of more generally formulated recommendations. Four guidelines^{26,31,43,47} recommended a standardized tool containing psychosocial factors (ie, STarT Back Tool,¹³ Örebro Musculoskeletal Pain Screening questionnaire²⁰ or another standardized tool) to screen for increased risk of chronic pain and disability, in order to determine a risk profile and to provide guidance for the treatment based on this risk profile (see Tables 3 and 5).

Discussion

Main Findings

This study revealed that, in general, clinical LBP guidelines do not provide clinicians with clear instructions about how to incorporate psychosocial factors in LBP care. Therefore, the guidelines should be optimized in this respect. More specifically, we found that clinical LBP guideline recommendations regarding the role of psychosocial factors in the assessment or management of LBP are generally not supported by firm evidence. Second, our study showed that clinical LBP guideline vary widely in whether and how they address psychosocial factors and sometimes even conflict with each other. Third, we found a large variety in terminology and categorization of psychosocial factors across guidelines. Fourth, although most guidelines do recommend assessing psychosocial factors and managing them if applicable, these recommendations are generally phrased in non-specific terms and lacked specific details about how to apply these recommendations. Fifth and finally, we identified a weak link between psychosocial factors that were identified in patient assessment and psychosocially-oriented interventions that were subsequently recommended.

Comparison With the Literature

Our study demonstrates that currently available clinical LBP guidelines not only fall short in providing clear instructions for how to address psychosocial factors in clinical practice, but they are only supported by low-quality evidence. Recommendations are therefore often based on expert opinions alone. Subsequently, clinicians

Table 5. Recommendations Addressing Management of Psychosocial Factors in Clinical LBP Guidelines (With Recommendations Shortened if Needed)

GUIDELINE	RECOMMENDATIONS	GRADING	
Australia ³¹	Prognostic risk stratification tools, such as the STarT Back Screening tool and Örebro questionnaire, stratify patients into low, medium or high risk groups, determining the amount and type of treatment that they require.	not provided	
	Cognitive behavioral therapy is to ensure the patient is supported to understand the relationship between beliefs and behaviors, and to develop a goal-oriented plan of care (even for those without yellow flags).	not provided	
	When yellow flags are identified or when pain persists past the 14-week review (or earlier if needed), a more complex psychological intervention may be needed.	not provided	
	If there are significant fears or anxieties, earlier application of psychological strategies may be required	not provided	
Austria ⁴⁵	Psychosocial and work-related risk factors should be incorporated in treatment	not provided	
	A multimodal treatment should be provided in patient with chronic LBP and with pain-related psychological comorbidity, if a less intensive evidence-based treatment was ineffective	not provided	
	In case of suspicion of psychosocial risk factors, other disciplines like clinical psychologist and psychotherapist can be considered for further diagnosis and management	not provided	
	In case of psychiatric comorbidities, provide treatment according to the relevant guideline	not provided	
Belgium ⁴⁷	Take into account the occupational setting and consider performing a work place visit	not provided	
	Consider, based on risk stratification, a simple intervention with minimal supervision in patients with high chance of fast recovery and good outcome, and a more complex intervention with intensive supervision in patients with moderate to high risk of poor outcome	low to very low	
	Only consider a psychological intervention with cognitive behavioral therapy (in patients with moderate to high risk) as a component of a multimodal treatment including a supervised exercise program, depending on risk profile	moderate to very low	
	Consider a multidisciplinary rehabilitation program (including cognitive behavioral therapy) that takes into account the specific needs and possibilities of a patients with persisting LBP, in case of psychosocial barriers of recovery and/or failure of previously applied evidence-based treatments	moderate to very low	
Canada ⁴³	Check yellow flags and if present, follow good practice, as follows:	not provided	
	<ul style="list-style-type: none"> ○ educate and consider referral to active rehab including cognitive behavioral therapy, in presence of belief that pain and activity are harmful ○ educate and consider pain clinic referral, in presence of 'sickness behaviors' (like extended rest) ○ assess for psychopathology and treat, in presence of low or negative moods, social withdrawal ○ educate, in presence of treatment beliefs not fitting best practice ○ connect with stakeholders and case manage, in presence of problems with claim and compensation ○ follow-up regularly and refer if recovering slowly, in presence of history of back pain, time-off, other claims ○ engage case management through disability carrier, in presence of problems at work, poor job satisfaction ○ follow-up regularly and refer if recovering slowly, in presence of heavy work, unsociable hours (shifts) ○ educate patient and family, in presence of overprotective family or lack of support 		
	There is insufficient evidence to recommend for or against modified work duties for facilitating return to work	1 RCT	
	Denmark ⁴²	Individual patient education should be offered specifically to patients who are worried about their LBP, show signs of fear-avoidance or passive behavior, and only in those patients who are motivated, are able to change their level of self-efficacy, and be based on a patient-centered dialogue	expert opinion
		Manage psychosocial factors appropriately	expert opinion
	Europe ^{3,4}	Identification of yellow flags should lead to appropriate cognitive and behavioral management. However, there is no evidence on the effectiveness of psychosocial assessment or intervention in acute LBP	level A
		Not provided	n/a
	France ^{1,2}	Not provided	n/a
	Germany ⁶	Care requirements in special situations:	not provided
		- patients with persistent chronification factors and/or psychosocial consequences of the painful condition:	
<ul style="list-style-type: none"> ○ basis psychosomatic care ○ regular screening for chronification factors ○ initiation and coordination of further psychotherapeutic care, if necessary 			

(continued on next page)

Table 5. Continued

GUIDELINE	RECOMMENDATIONS	GRADING
	<ul style="list-style-type: none"> ○ possibly social counseling with respect to disability and compensation, or initiation of such counseling ○ possibly suggestion of measures for occupational reintegration and/or retraining - patients with symptom-maintaining or symptom-reinforcing comorbidities (such as anxiety and depression): ○ regular appointments for treatment; unscheduled visits only in case of an emergency ○ basis psychosomatic care ○ initiation and coordination of disorder-specific treatment - patients with continued inability to work: ○ screening for workplace-related risk factors ○ contact with company physician and, if necessary, with employer or pension insurance company ○ consider and, if necessary, initiate measures to support occupational reintegration 	
<i>Italy</i> ²⁷	<p>In patients at high risk of chronicity, the main aim of treatment is early, specific intervention on bio-psycho-social risk factors of chronicity</p> <p>Multidisciplinary approach is not recommended in case of low-disability and if (i) complex treatment is difficult because of cognitive, psychological or motivational factors, and/or (ii) patient does not believe a solution is possible</p>	<p>level A</p> <p>level C</p>
<i>Malaysia</i> ¹⁵	<p>If the patient does not improve within 4-6 weeks, yellow flags should be addressed</p> <p>Identify and address specifically the patient's worries and anxiety about health matters that they suspect is related to their back pain.</p> <p>Refer to a pain specialist if yellow flags still persist and activity has not returned to normal after 3 months</p> <p>Identification of yellow flags leads to (i) decision whether more detailed assessment is needed, (ii) identification of factors that can be addressed by specific interventions, and (iii) secondary prevention of chronic back pain</p>	<p>not provided</p> <p>multiple studies</p> <p>multiple studies</p> <p>not provided</p>
<i>Netherlands</i> ⁴⁸	<p>Cognitive behavioral therapy is recommended in presence of cognitive behavioral problems</p> <p>Identification of yellow flags should lead to appropriate cognitive and behavioral management</p> <p>If needed, the health care professional should refer the patient to a primary care psychologist for diagnostics or treatment (if no improvement in 2-3 weeks and presence of any psychosocial risk factor for chronicity)</p> <p>Patient in sick leave because of LBP and their supervisor should be advised to perform a workplace assessment to analyze any barriers for return to work and if so, apply necessary adaptations in work(place)</p>	<p>not provided</p> <p>not provided</p> <p>not provided</p> <p>level B (moderate evidence)</p>
<i>New Zealand</i> ²⁸	<p>Address any barrier to recovery such as excessively heavy or prolonged work, problems with treatment, rehabilitation or compensation, or psychosocial yellow flags.</p> <p>Suggested steps to better early behavioral management of low back pain problems, in the presence of yellow flags:</p> <ul style="list-style-type: none"> ○ Provide a positive expectation that the individual will return to work and normal activity, aid if the problem persists beyond 2-4 weeks, provide a reality-based warning of what is going to be the likely outcome ○ Be directive in scheduling regular reviews of progress ○ Keep the individual active and at work if at all possible, even for a small part of the day. Consider reasonable requests for selected duties and modifications to the workplace. After 4-6 weeks, if there has been little improvement, review vocational options, job satisfaction, any barriers to return to work, including psychosocial distress ○ Acknowledge difficulties with activities of daily living, but avoid making the assumption that these indicate all activity or any work must be avoided ○ Help to maintain positive cooperation between the individual, an employer, the compensation system, and health professionals, and encourage collaboration wherever possible ○ Make a concerted effort to communicate that having more time off work will reduce the likelihood of a successful return to work ○ Be alert for the presence of individual beliefs that he or she should stay off work until treatment has provided a 'total cure' ○ Promote self-management and self-responsibility, and encourage the development of self-efficacy to return to work ○ Be prepared to ask for a second opinion, especially if it may help clarify that further diagnostics are unnecessary ○ Avoid confusing the report of symptoms with the presence of emotional distress 	<p>not provided</p> <p>not provided</p>

(continued on next page)

Table 5. Continued

GUIDELINE	RECOMMENDATIONS	GRADING
	<ul style="list-style-type: none"> ○ Avoid suggesting (even inadvertently) that the person from a regular job may be able to work at home, or in their own business because it will be under their own control ○ Encourage people to recognize, from the earliest point, that pain can be controlled and managed so that a normal, active or working life can be maintained ○ If barriers to return to work are identified and the problem is too complex to manage, referral to a multi-disciplinary team as described in the New Zealand Acute Low Back Pain Guide is recommended 	
	Provide your patient, and their employer, with advice on monitoring and managing work activities that cause pain	not provided
	If the physical demands of the patient's job are high, workplace modifications may be needed. You may be able to advise the employer on how to seek specialist occupational health advice about this.	not provided
Philippine ³³	None	n/a
UK ²⁶	Based on risk stratification, consider (i) simpler and less intensive support for people with low back pain with or without sciatica likely to improve quickly and have a good outcome, and (ii) more complex and intensive support for people with low back pain with or without sciatica at higher risk of a poor outcome	not provided
	Consider a combined physical and psychological program, incorporating a cognitive behavioral approach (preferably in a group context that takes into account a person's specific needs and capabilities), for people with persistent low back pain or sciatica when (i) they have significant psychosocial obstacles to recovery or (ii) previous treatments have not been effective	not provided
USA ³⁵	None	n/a

may experience too little guidance and possibly ignore psychosocial factors in their clinical practice, which is highly undesirable. The lack of strong evidence might seem unexpected, considering the large amount of literature on prognostic factors in LBP, which has a strong focus on psychological factors.^{7,8,34,40,41,51,52} As a consequence, existing screening instruments for risk estimation and guidance of treatment (eg, STarT Back tool,¹³ Örebro Musculoskeletal Pain Screening questionnaire²⁰) are dominated by psychological factors. Karran et al¹⁷ summarized the prognostic properties of these screening instruments and concluded that *"these instruments perform poorly at assigning higher risk scores to individuals who develop chronic pain than to those who do not."* Also other reviews^{11,36} concluded that there is a need for better substantiation of the prognostic value of screening tools and individual potential predictors in LBP. Moreover, there is a need for stronger evidence to substantiate psychosocial interventions that specifically target psychosocial factors³⁷ and to substantiate stratified care models that incorporate psychological interventions.^{7,13} Of all the psychosocial interventions used in LBP care, cognitive-behavior therapy⁵³ and multidisciplinary programs with a psychosocial component¹⁶ appear to be the only 2 treatment options for which the effectiveness – although with small effects – could be determined. However, it should be noted that many of the guidelines included in our study were developed at least 10 years ago and therefore did not include evidence from the last decade.

Our study also revealed a weak link between identified psychosocial factors and recommended interventions targeting these factors in LBP guidelines. This finding is in line with Shaw et al,³⁸ who described *"an observed gap between epidemiological and intervention research of back disability prevention."* As a

consequence, clinicians might perform an extensive assessment in order to identify psychosocial and other risk factors for LBP chronicity, but fail to address these factors adequately. Clinicians should therefore not only be better guided how to specifically target their treatment, but also to limit their assessment to those factors influencing their LBP management.

Strength and Limitations

One of the unique aspects of our systematic review is the focus on psychosocial factors within LBP care and the more recent search period (until 2019) compared to previous reviews.^{25,32,49} A number of study limitations should also be addressed. First, we selected English, Dutch and German written guidelines, which implies that we ignored potentially relevant guidelines, eg, Spanish or Chinese written guidelines. However, we feel confident that this only marginally affected our study findings. Second, we reported the quality of evidence of recommendations as reported in the specific guideline, but it appeared that most guidelines do not describe this, or possibly in appendices unavailable to us. Third, we decided not to assess quality of included guidelines, as we were only interested in recommendations regarding 1 topic, while guideline quality assessment tools (eg, AGREE-2 tool⁵) cover a wide spectrum of guideline features. Fourth, for some guidelines, we found that psychosocial factors have not or only minimally been addressed. However, this could have been a deliberate decision by that guideline committee as they decided to focus on other topics in their guideline. Fifth, it should be acknowledged that our main finding (large variety in recommendations regarding psychosocial factors) could at least partly be explained by different methods in guideline development (eg, selection of

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research questions, grading system, formulation of recommendations) as well as different time periods in which the guidelines were developed (ranging from 2000 to 2018). Sixth, we divided psychosocial factors into yellow, blue, black and orange flags (according to the model of Main et al^{23,24,29}), which is a widely used framework for clinicians. Despite its well-recognized value for clinical practice,²³ this framework has some limitations. These include a lack of clarity about the criteria for categorizing factors as “blue” (ie, subjectively perceived impact of work) or “black” (ie, objectively observed barriers for return to work or work adaptations, such as legislation, insurance and physically demanding work tasks) flags. There is also an overlap between factors categorized as “yellow” (ie, psychological factors, including depressive mood) and “orange” (ie, psychiatric symptoms, including depression) flags. Therefore, other models could have been used, for instance the Sherbrooke model,²¹ which is more oriented toward the societal perspective. However, in any model, the borders between domains of risk factor remain somewhat ambiguous. Finally, psychosocial factors that were not included in the model (eg, anger³⁹) also may be relevant to the course of LBP. Future research and guidelines should consider broadening their scope to include other relevant psychosocial factors.

Clinical Implications

This review revealed that, although psychosocial risk factors in general appear to play an important role in LBP prognosis, more consensus is needed on which factors should be identified and by which measurement instrument these factors should be assessed. Moreover, clinicians generally lack guidance on how to address identified psychosocial risk factors in their treatment. Clinicians should therefore aim at optimizing their knowledge and skills regarding psychosocial elements of LBP management.³⁰ For example, interventions targeting unhelpful beliefs about pain are described in a number of guidelines,^{6,43,48} of which some interventions (eg, tailored patient education) might be relatively easy to apply, whereas for other interventions (eg, applying a cognitive-behavioral approach in patients with fear-avoidance beliefs), clinicians may need training or education.

Future Directions

Based on the present study, future research is needed to provide more insights into a potential prognostic or

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effect modifying role of psychosocial and other risk factors for LBP chronicity. Second, more studies are needed to test the added value of tailored treatments targeting specific risk factors in specific subgroups of LBP patients, ideally based on specific risk factors from epidemiological studies. Already 1 decade ago, Main and George suggested that “*treatment programs matched to specific factors that have the potential to enhance clinical outcomes should be evaluated*”²⁴. Fortunately, this research question have been prioritized second on the worldwide list of LBP research priorities,⁹ and will hopefully be addressed intensively in the next years. Third, when evidence on such tailored interventions is provided, specific tools should be developed that helps clinicians to assess and subsequently address psychosocial risk factors for LBP chronicity. After these studies, current LBP guidelines can be updated, preferable with recommendations formulated in a more personalized, specific, and concrete way. Finally, a uniform guideline development methodology across guidelines may result in more consistency in guideline recommendations regarding the role of psychosocial factors.

Conclusions

We conclude that in general, clinical LBP guidelines do not provide clinicians with clear instructions about how to incorporate psychosocial factors in LBP care. Therefore, the guidelines should be optimized in this respect. More specifically, clinical guidelines vary widely in whether and how they address psychosocial factors, and recommendations regarding these factors generally require better evidence support. This emphasizes a need for a stronger evidence-base underlying the role of psychosocial risk factors within LBP care, and a need for uniformity in methodology and terminology across guidelines.

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Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jpain.2021.04.013>.

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