LITERATURE REVIEW

Umbrella Review of Primary Care Treatments for Adults With Chronic Low Back Pain

Filip Gedin, PhD, [a] Tobias Sundberg, PhD, [b] Vibeke Sparring, PhD, [c] Martin Skeppholm, PhD, [d] Emelie Heintz, PhD, [e] and Niklas Zethraeus, PhD [e]

ABSTRACT

Objectives: The purpose of this study was to identify, critically assess, and summarize evidence of the effectiveness of primary care treatments for adults with non-specific chronic low back pain (NSCLBP).

Methods: We conducted an umbrella review of systematic reviews focusing on primary care treatments for NSCLBP. We searched the PubMed and Cochrane library databases for systematic reviews of randomized controlled trials (RCTs) evaluating primary care treatments for adults with NSCLBP published between January 2007 and March 2021. Two reviewers independently assessed the quality of these systematic reviews using the AMSTAR checklist. We selected systematic reviews with a low or moderate risk of bias and graded the evidence based on Grading of GRADE criteria.

Results: Among the initial 66 systematic reviews meeting our inclusion criteria, 19 systematic reviews with low or moderate bias risk were selected for analysis. These reviews included a total of 365 studies involving 62 832 participants. The evidence suggested moderate to high support for the effectiveness of certain primary care treatments in improving pain and function in NSCLBP patients. These treatments included NSAIDs and opioids compared to placebos, spinal manipulation versus exercise/physical therapy, and MBR versus exercise/education/advice/no treatment.

Conclusions: Recommendations for specific primary care treatments for NSCLBP in adults remain inconclusive. Further high-quality systematic reviews and RCTs are needed to better understand the effectiveness of these treatments. Future RCTs should prioritize the assessment of NSAIDs, opioids, spinal manipulation, and MBR, as they appear promising for improving NSCLBP outcomes in certain comparisons. (J Manipulative Physiol Ther 2024;00;1-12)

Key Indexing Terms: *Low Back Pain; Primary Health Care; Spinal Manipulation; Chiropractic; Physical Therapy Modalities*

INTRODUCTION

Nonspecific chronic low back pain (NSCLBP) can be defined as pain in the area below the costal margins and above the gluteal folds that have persisted for at least 3 months without a diagnosed pathology.[1] It is a major health problem worldwide and a leading cause of years lived with disability.[2] In 2015, NSCLBP caused an estimated sixty million disability-adjusted life-years − an increase of 54% since 1990.[1]

A wide range of primary care treatments are used in the treatment of adults with NSCLBP. Options include both

[a] Department of Clinical Neuroscience, Karolinska Institutet, Department of Learning, Informatics, Management and Ethics, Karolinska Institutet, Stockholm, Sweden.
[b] Department of Health Promotion Sciences, Sophiahemmet University, Department of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden.
[c] Department of Learning, Informatics, Management and Ethics, Karolinska Instiutet, Stockholm Sweden.
[d] Stockholm Center for Spine Surgery, Sophiahemmets Hospital, Stockholm, Sweden.
[e] Department of Learning, Informatics, Management and Ethics, Karolinska Instiutet, Stockholm, Sweden.

Corresponding author: Filip Gedin, Department of Clinical Neuroscience, Karolinska Institutet, Department of Learning, Informatics, Management and Ethics, Karolinska Institutet, K8 Klinisk neurovetenskap, K8 Neuro Jensen, 171 77 Stockholm, Sweden.
(e-mail: *filip.gedin@ki.se*).

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pharmacological and nonpharmacological treatments, such as advice to remain active, exercise therapy, spinal manipulation, and cognitive behavioral therapy, which can be applied alone or in combinations in multimodal care.[3] To establish a scientific basis to recommend the use of one treatment over another, systematic reviews have assessed the best available evidence on the effectiveness of different treatments for adults with NSCLBP and needs for future research. Nonetheless, systematic reviews usually only look at one treatment domain at a time. This makes it difficult to get an overview of the evidence and need for research regarding treatment options for adults with NSCLBP. In addition to the lack of overview, a systematic review with a high risk of bias can be potentially misleading. Therefore, systematically assessing the risk of bias of existing systematic reviews is essential in order to further the understanding of the current level of evidence.

Umbrella reviews have been developed to map and assess the evidence in the existing literature on a specific topic, thereby identifying knowledge gaps and the need for further primary and systematic research.[4] Umbrella reviews thus enable the contextualization of in-depth systematic literature reviews within the broader literature. Not surprisingly, umbrella reviews have become more common in recent years,[5-9] especially within health technology assessment, as they can provide valuable support to clinical guidelines and also contribute to identify the need of future research although not providing specific estimates of treatment effects. This study provides information on the effectiveness of treatments for adults with NSCLBP, which is important for clinicians and policymakers as a basis for improving the management of this complex condition. The results also provide insights about knowledge gaps and directions for future research. To our knowledge, this is the first systematic umbrella review of systematic reviews in the field of primary care treatments for adults with NSCLBP.

The objectives of this umbrella review were to identify, critically assess, and summarize existing evidence regarding the effectiveness of primary care treatments for adults with NSCLBP, with a specific focus on the outcomes pain, health-related quality of life (HRQoL), and function.

Research Questions

The research questions for this umbrella review were the following.

1. What is the evidence regarding primary care treatments for adults with NSCLBP based on systematic reviews of RCTs?
2. How does the effectiveness of treatments compare across various modalities, including NSAIDs, spinal manipulation, exercise, and MBR, as well as their comparisons to no treatment, placebo/sham, and other interventions?

Methods

The study design was a systematic umbrella review of systematic reviews.[4] The study process is described below. The extraction of data and the quality (risk of bias) assessments were conducted by two independent reviewers (FG and TS), with a third reviewer (EH) resolving any disagreements.

Identifying Relevant Treatment Domains

To identify relevant domains of primary care treatments for adults with NSCLBP, a convenience sample of a diverse group of licensed health professionals, all with experience working in the Swedish primary care system, was consulted. The "consensus group" consisted of a general practitioner, an orthopedic surgeon, a physiotherapist, and a chiropractor. After an open discussion, the group identified and reached consensus on seven treatment domains that were considered relevant and applicable to licensed health professions in the Swedish primary care setting: pharmacological treatment (analgesics, muscle relaxants, and antidepressants), manual therapy (manual therapies provided to decrease pain and normalize joint and soft tissue functions), home exercise/self-care (activity-based treatments to improve health behavior and health status, as well as to encourage and teach patients to identify and solve health-related problems), rehabilitation training (supervised physical training or exercise in groups or individually), psychology/behavioral therapy (treatments aimed at influencing and changing how an individual thinks, acts, reasons, and manages pain), multimodal care (interventions addressing multiple factors, typically involving a combination of physical, psychological, and educational components, and often delivered by a team of clinicians with different skills), and physical treatment (interventions that use physical modalities or medical devices). Treatments or domains not considered relevant were back surgery and alternative medicine, such as yoga, Pilates, and traditional Chinese medicine, which are typically not offered by licensed health professionals within public funded Swedish primary care.

Literature Search Strategy

Electronic searches for systematic reviews were conducted in PubMed and the Cochrane Database of Systematic Reviews (see Supplemental File Table S1). The search strategy also included screening of reference lists in the identified relevant articles, as well as manual searches (FG and TS) based on either previous knowledge about a paper

relevant to the aim or through the references of other papers. The first literature search was conducted in January 2017 and was followed by a second literature search in September 2019 and a third search in March 2021. The search algorithm was developed by the research group together with a search specialist from the Karolinska Institutet University Library. The first phase of the process was to review the records in accordance with the inclusion and exclusion criteria. Two authors (FG and TS) reviewed all records and full-text articles independently. If at least one of the authors found an abstract relevant, it was ordered in full text. In the second phase, the full-text articles were assessed for eligibility and reasons for inclusion and exclusion. Any disagreements were resolved in discussion with a third reviewer (EH).

Inclusion Criteria

Systematic reviews of randomized controlled trials (RCTs), published in English in peer-reviewed journals between 2007 and 2021 investigating the effectiveness of treatments in one or more of the pre-defined treatment domains, and fulfilling the population, intervention, control, and outcome (PICO) specified below. We did not include systematic reviews published before 2007, as older systematic reviews may become out of date not containing recent and relevant information.[10]

The inclusion criteria for this study encompassed individuals aged 18 years or older presenting with NSCLBP, with or without radiating leg pain. The intervention focused on nonsurgical primary care treatments for adults within specific domains, including pharmacological treatment, manual therapy, home exercise/self-care, rehabilitation training, psychology/behavioral therapy, multimodal care, and physical treatment. Control groups were defined as those receiving no treatment, placebo/sham treatment, or other relevant non-surgical interventions within the specified domains. To be considered for inclusion, systematic reviews had to report at least one of the following outcomes: pain, health-related quality of life (HRQoL), or function. Exclusion criteria were applied to systematic reviews that combined randomized controlled trials (RCTs) with other study designs without reporting RCT results separately and those primarily focused on subgroups based on gender, age, or ethnicity, thereby ensuring the relevance and homogeneity of the included studies.

Data Extraction and Quality Assessment

The A MeaSurement Tool to Assess systematic Reviews (AMSTAR) checklist was used to assess the quality of the systematic reviews, in terms of risk of bias.[11] Based on the checklist and pre-specified criteria, each study was classified as low risk, moderate risk, or high risk of bias using the definitions provided in supplemental file Table S2. This was done by two authors (FG and TS) that each extracted independently. Any disagreements were resolved in discussion with a third reviewer (EH).

If the answer to any of the questions in the AMSTAR checklist was not reported or unclear, a conservative approach was used, and the answer was interpreted as a "No." Any uncertainties regarding questions were discussed among the three reviewers (FG, TS, EH) to reach consensus.

Individual RCTs within each systematic review were not assessed unless there was uncertainty or inconsistency about the characteristics of the study population and the results or conclusions in the systematic reviews. If more than one systematic review of the same treatment and outcomes was identified, the review with the lowest risk of bias was included,[10] and if the risk of bias was the same, the most recent one was included.

Processing of Data and Grading of Evidence

Systematic reviews with a low or moderate risk of bias were used to summarize the existing evidence in the literature. According to Whitlock et al.,[10] excluding reviews with a high risk of bias should not entail any loss of important information and may lead to more valid conclusions. In line with previous research,[5,12] one of the reviewers (FG) used the Grading of Recommendations, Assessment, Development and Evaluation (GRADE)[13,14] in order to obtain a uniform summary of the level of evidence, based on the various expressions used by the authors to describe the level of evidence. The evidence level was graded as one of four GRADE levels: high, moderate, low, or very low (Supplemental File Table S3), and was done by the first author in dialogue with the co-authors.

If applicable, the effectiveness of the interventions was sorted into one of three duration categories, based on how long after baseline the effects were assessed: short term (up to 3 months), medium term (more than 3 months but less than 12 months), and long term (12 months or more).

Results

A total of 68 systematic reviews were identified, covering all treatment domains. Of these, 23 systematic reviews were of high quality (low or moderate risk of bias) and therefore included (Fig 1).

Four systematic reviews[15-18] were subsequently excluded as there were more recent systematic reviews in the search results that assessed the same outcomes, thus only the most recent systematic reviews with the lowest risk of bias were included in the final sample. The distribution of the final sample of 19 systematic reviews with low or moderate risk of bias according to publication year, number

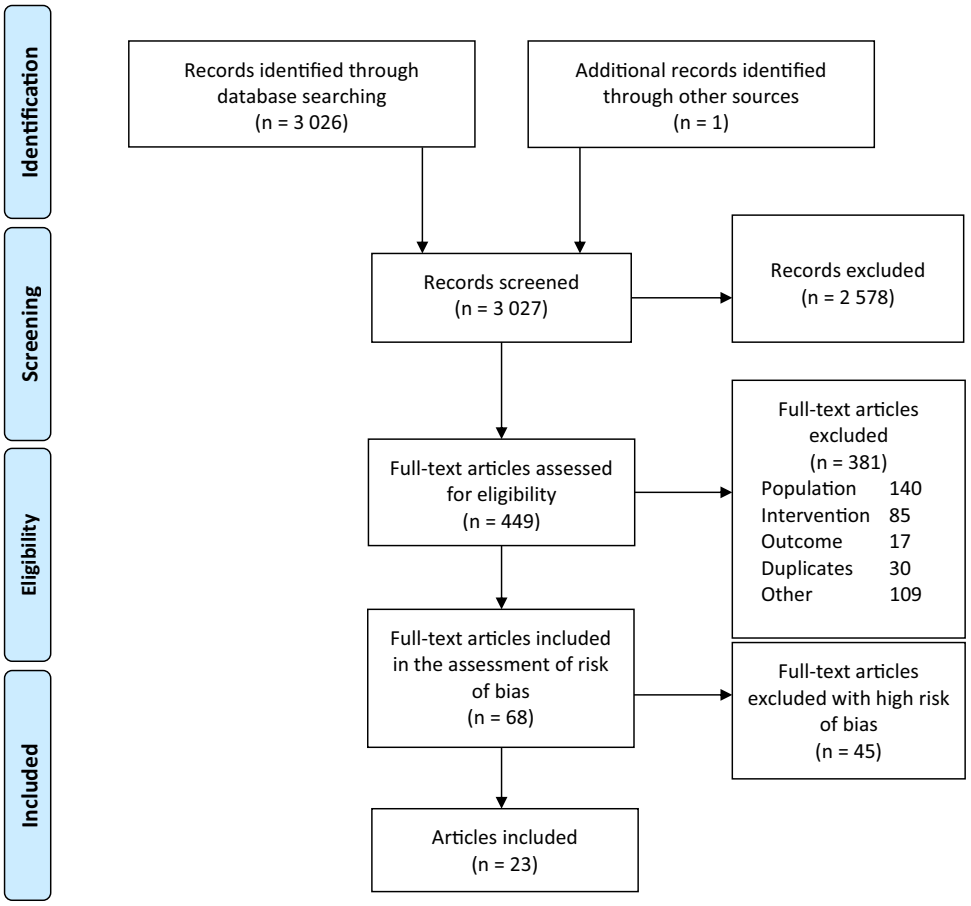

Fig. 1. *Flowchart of the literature search to identify systematic reviews with low or moderate risk of bias.*

of included studies (n = 365) and the total number of included patients (n = 62 832) are presented in Table 1.[19-37]

The treatment effectiveness, risk of bias and GRADE level for the systematic reviews of each domain are presented in Table 2.

The full assessment of risk of bias for the 19 included systematic reviews is presented in the Supplemental File Table S4. The treatments defined in the systematic reviews are presented in Supplemental File Table S5.

Summary of Evidence

Based on the systematic reviews and the seven identified treatment domains relevant for primary care (table 1), the following primary care treatments were seen to be likely to have positive effects on pain and/or function in patients with NSCLBP (moderate to high evidence):

- NSAIDs decrease pain compared with placebo.[20]
- Opioids decrease pain compared with placebo.[19]
- Spinal manipulation decreases pain and improves function compared with exercise and physical therapy.[22]
- MBR improves function compared with education and advice.[31]
- MBR decreases pain compared with exercise and no treatment.[36]
- MBR decreases pain compared with education and advice.[31]

Based on the systematic reviews, the following primary care treatments probably do not reduce pain or increase function in adults with NSCLBP (moderate to high evidence):

- Mobilization has no effect on pain and function compared with exercise or physical therapy.[22]
- Traction has no effect on pain compared with sham.[25]
- Motor control exercise has no effect on pain, function, or HRQoL compared with manual therapy.[29]
- Behavioral treatment has no effect on pain compared with group exercise.[37]
- MBR has no effect on function compared with exercise.[36]

Table 1. *Distribution of Systematic Reviews (n = 19) With Low or Moderate Risk of Bias According to Publication Year, Number of Included Studies and the Total Number of Included Patients*

Treatment Domain First author/Treatment	Publication Year	Studies Included in the Review	Total Number of Patients Included
Pharmacological			
Abdel Shaheed/Opioid analgesics	2016	20	7925
Roelofs/Nonsteroidal anti-inflammatory drugs	2008	65	11 237
Shanthanna/Gabapentinoids	2017	8	1304
Manual therapies			
Coulter/Manipulation and mobilization	2018	9	1176
Furlan/Massage	2015	25	3096
Franke/Muscle energy technique	2015	12	500
Wegner/Traction	2013	32	2762
Walker/Combined chiropractic interventions	2010	12	2887
Home exercises/self-care			
Lawford/ Walking	2016	7	869
Straube/Back schools	2016	31	4883
Rehabilitation exercise			
Saragiotto/Motor control exercise	2016	29	2431
Psychology/Behavioral therapy			
Zhang/Behavioral psychological interventions	2019	13	1619
Henschke/Behavioral treatment	2010	30	3438
Multimodal care			
Erp/Biopsychosocial approach	2019	7	1426
Kamper/Multidisciplinary biopsychosocial rehabilitation	2014	41	6858
Physical treatment			
Ebadi/Therapeutic ultrasound	2020	10	1025
Huang/Low-level laser therapy	2015	7	394
Resende/Transcutaneous electrical nerve stimulation (TENS)	2018	7	655
Middelkoop/Physical and rehabilitation interventions	2011	74*	8 347**
Total			62 832

* Patient education (n = 1), exercise therapy (n = 37), behavioral treatment (n = 21), multidisciplinary biopsychosocial rehabilitation (n = 6), low-level laser therapy (n = 3), TENS (n = 6).

** Patient education (n = 58), exercise studies (n = 3 957), behavioral studies (n = 2 062), multidisciplinary studies (n = 1 229), TENS (n = 614), low level laser therapy (n = 128).

Table 2. *Treatment Effectiveness, Risk of Bias, and GRADE Level*

Treatment Domain	Authors/Years	Treatment	Control	Outcomes[a]			Risk of Bias	GRADE Level
				Pain	Function	HRQoL		
Pharmacological treatment	Roelofs, 2008	Nonsteroidal anti-inflammatory drugs	Placebo	+			Low	Moderate
Pharmacological treatment	Roelofs, 2008	Non-steroidal anti-inflammatory drugs	Simple analgesics, Other drugs	-			Low	Very low-Low
Pharmacological treatment	Abdel Shaheed, 2016	Opioids	Placebo	+			Moderate	Moderate-High
Pharmacological treatment	Shanthanna, 2017	Gabapentinoids	Placebo	0			Moderate	Very low
Pharmacological treatment		Gabapentinoids	Active analgesics	-				Very low
Manual therapy	Coulter, 2018	Spinal manipulation	Exercise, Physical treatment	+	+		Moderate	Moderate
Manual therapy	Coulter, 2018	Mobilization	Exercise, Physical treatment	0	0		Moderate	Moderate
Manual therapy	Furlan, 2015	Massage	Sham therapy, Waiting list, or No treatment	+	+		Low	Very low-Low
Manual therapy	Furlan, 2015	Massage	Spinal manipulation, Mobilization, Transcutaneous electrical nerve stimulation, Acupuncture, Traction, Relaxation, Physical treatment, Exercise, Self-care education	+			Low	Very low-Low
Manual therapy	Furlan, 2015	Massage	Sham, Transcutaneous electrical nerve stimulation, Exercise, Other manual therapy		0		Low	Very low-Low
Manual therapy	Franke, 2015	Muscle energy technique	No treatment, Sham, Transcutaneous electrical nerve stimulation, Exercise, Other manual therapy	0	0		Moderate	Low
Manual therapy	Wegner, 2013	Traction	Sham	0			Moderate	Moderate
Manual therapy	Walker, 2010	Combined chiropractic interventions	Active trunk exercises, Non-steroidal anti-inflammatory drugs, Stretching exercises	0	0		Moderate	Very low
Home exercise/ Self-care	Lawford, 2016	Walking	Usual care, Exercise		0	0	Moderate	Low
Home exercise/ Self-care	Straube, 2016	Back school	No treatment, Waiting list, Sham	+	+		Moderate	Low

(*continued*)

Table 2. (*Continued*)

Treatment Domain	Authors/Years	Treatment	Control	Outcomes[a]			Risk of Bias	GRADE Level
				Pain	Function	HRQoL		
Home exercise/ Self-care	Middelkoop, 2011	Back school	Exercise, Manual therapy, Physiotherapy	0	0		Moderate	Very low-Low
Home exercise/ Self-care	Middelkoop, 2011	Patient education	Exercise treatment	0	0		Moderate	Low
Rehabilitation training	Middelkoop, 2011	Exercise therapy	No treatment, Waiting list, Back school, Behavioral treatment, Manual therapy/Spinal manipulation, Transcutaneous electrical nerve stimulation, Laser, Ultrasound, Massage	0	0		Moderate	Very low-Low
Rehabilitation training	Middelkoop, 2011	Exercise therapy	Usual care, Advice to stay active	+	+	+	Moderate	Low
Rehabilitation training	Saragiotto, 2016	Motor control exercise	Minimal intervention	+	+		Moderate	Very low-moderate
Rehabilitation training	Saragiotto, 2016	Motor control exercise	Exercise plus Electrophysical agents	+	+	+	Moderate	Very low-Low
Rehabilitation training	Saragiotto, 2016	Motor control exercise	Manual therapy	0	0	0	Moderate	Moderate-High
Rehabilitation training	Saragiotto, 2016	Motor control exercise	Other forms of exercise	0	0	0	Moderate	Low-Moderate
Psychology/ Behavioral therapy	Zhang, 2019	Behavioral treatment	Manual therapy, Exercise, Physical treatment	+			Moderate	Low
Psychology/ Behavioral therapy	Middelkoop, 2011	Behavioral treatment	Placebo, No treatment	+	+		Moderate	Low
Psychology/ Behavioral therapy	Middelkoop, 2011	Behavioral treatment	Exercise, Usual care	0	0		Moderate	Low
Psychology/ Behavioral therapy	Zhang, 2019	Behavioral treatment	Waiting list, Usual care	+			Moderate	Low
Psychology/ Behavioral therapy	Middelkoop, 2011	Behavioral treatment	Muscle relaxation, General practitioner, Education	0	0		Moderate	Low-Moderate
Psychology/ Behavioral therapy	Henschke, 2010	Behavioral treatment	Group exercise	0			Moderate	Moderate

(*continued*)

Table 2. (*Continued*)

Treatment Domain	Authors/Years	Treatment	Control	Outcomes[a]			Risk of Bias	GRADE Level
				Pain	Function	HRQoL		
Multimodal care	Kamper, 2015	Multidisciplinary biopsychosocial rehabilitation	Waiting list	+	+		Low	Very low-Low
Multimodal care	Erp, 2018	Multidisciplinary biopsychosocial rehabilitation	Physical activity	+	+		Moderate	Low
Multimodal care	Kamper, 2015	Multidisciplinary biopsychosocial rehabilitation	Physical treatment, Usual care	+	+		Low	Low-Moderate
Multimodal care	Middelkoop, 2011	Multidisciplinary biopsychosocial rehabilitation	Exercise, No treatment	+			Moderate	Moderate
Multimodal care	Erp, 2018	Multidisciplinary biopsychosocial rehabilitation	Education, Advice	+	+		Moderate	Moderate
Multimodal care	Middelkoop, 2011	Multidisciplinary biopsychosocial rehabilitation	Exercise		0		Moderate	Moderate
Physical treatment	Ebadi, 2020	Therapeutic ultrasound	Placebo		+		Moderate	Low
Physical treatment	Ebadi, 2020	Therapeutic ultrasound	Placebo	0			Moderate	Very Low
Physical treatment	Ebadi, 2020	Therapeutic ultrasound	Placebo			0	Moderate	Moderate
Physical treatment	Ebadi, 2020	Therapeutic ultrasound	Exercise program	+	0	0	Moderate	Very Low
Physical treatment	Ebadi, 2020	Therapeutic ultrasound	Spinal manipulation	-	-		Moderate	Low
Physical treatment	Huang, 2015	Low-level laser	Placebo, Sham	+			Moderate	Low-Moderate
Physical treatment	Huang, 2015	Low-level laser	Placebo, Sham		0		Moderate	Low
Physical treatment	Middelkoop, 2011	Low-level laser	Exercise	0	0		Moderate	Very-Low
Physical treatment	Resende, 2018,	Transcutaneous electrical nerve stimulation	Placebo	0	0		Moderate	Very Low
Physical treatment	Middelkoop, 2011	Transcutaneous electrical nerve stimulation	Exercise	0	0		Moderate	Low

[a] Effectiveness of treatment compared with control in terms of improvement expressed as more effective (+), not effective (0), or less effective (-). For example, the first row in Table 4 means that, Non-steroidal anti-inflammatory drugs are likely effective to decrease pain compared with placebo.

Discussion

This systematic umbrella review of systematic reviews has identified, critically assessed and summarized evidence regarding the effectiveness of primary care treatments for adults with NSCLBP. The main findings indicate there are moderate to high evidence that NSAIDs, opioids, spinal manipulation and MBR are likely to have a positive effect on pain and or function in some comparisons. The systematic umbrella review also showed that there were moderate to high evidence that some treatment comparisons assessed in the included systematic reviews did not reduce pain or increase function in adults with NSCLBP.

The results of our umbrella review highlight the importance of the choice of comparator when assessing the effectiveness of specific interventions. For example, our findings suggest that NSAIDs and opioids may reduce pain compared with placebo. However, none of the identified systematic reviews of high quality included any studies on the effectiveness of these pharmacological interventions compared with other, and perhaps more clinically relevant, interventions such as different types of active primary care treatments (eg, exercise, behavioral treatment, MBR, or spinal manipulation). To support evidence-based decision-making in clinical primary care, it is important that future high-quality studies also compare pharmacological treatments with active interventions. Further, non-pharmacological treatments were usually only compared with other active treatments, and not with no treatment or "minimal interventions" (eg, treatment strategies involving only information and/or advice to stay active), which is also important in order to determine if these active treatments are at all effective.

One of the major advantages of this systematic umbrella review was the broad search strategy, which did not focus on specific naming of interventions or procedures, thus allowing broader inclusion and simultaneously limiting the risk of selection bias. Nevertheless, the primary focus was on treatments used for adults with NSCLBP in Swedish primary care, and some treatment alternatives that could be relevant in other countries' health care systems may have been excluded. For example, it was not within the scope of this study to report on the effectiveness of hospital-based treatments, such as surgery, or alternative medicine treatments, such as yoga, that are generally not used by licensed health professions managing adults with NSCLBP in public funded Swedish primary care.

In all, 66% of the systematic reviews were of low quality (high risk of bias) and were excluded. These studies were excluded mainly due to not having at least 2 independent data extractors (AMSTAR question 2), not reporting population characteristics (AMSTAR question 6), or not using the scientific quality of included studies appropriately in formulating conclusions (AMSTAR question 8). In addition, many of these studies failed to include predetermined research questions and inclusion criteria (AMSTAR question 1), providing a list of excluded studies (AMSTAR question 5), and reporting any potential publication bias (AMSTAR question 10). It has been suggested that reviews of low quality do not provide any additional information to an umbrella review.[10] However, we have in this study made an exception for one systematic review by Saragiotto et al.,[29] which was the only systematic review providing information on the effectiveness of motor control exercise, a frequently used form of therapy in Sweden.[38]

The systematic reviews with a moderate risk of bias mostly have problems related to the questions regarding the use of predetermined research questions and inclusion criteria (AMSTAR question 1), providing a list of excluded studies (AMSTAR question 5b), and reporting any potential publication bias (AMSTAR question 10). These questions had in our protocol been defined as "not critical" and did consequently not disqualify the reviews from our analysis. The classification of "not critical" does not mean that a question is not important and there is a substantial difference between systematic reviews with moderate or low risk of bias. However, we would argue that even without a full score on the Amstar checklist, a systematic review can provide valid information. Excluding all systematic reviews with a moderate risk of bias would mean that only four systematic reviews would be left in our analysis and important information would be lost.

Limitation

After the initiation of our study, AMSTAR released a version two of the checklist (AMSTAR 2).[39] However, we believe that a reassessment of the quality of the full-text publications using the second version of the checklist would not have had a major impact on the results of this systematic umbrella review. Rather, the second version of the checklist support the choice of excluding the question about searching for grey literature, which was already done in the current study.

A potential limitation with the umbrella design is that it does not examine the quality of individual RCTs included in the systematic reviews. It is possible that some errors or flaws within the selected reviews have been overlooked. However, spot-checks (assessing the individual RCTs) were performed on systematic reviews that reported unclear study populations or interventions. Thus, this limitation should not have any major impact on the results of this study. A further methodological consideration was that we excluded reviews only focusing on specific subgroup of patients, which might imply that evidence on effectiveness for specific subgroups of patients may have been disregarded.

Clinical Implications and the Need for Future Research

The findings highlight the need for additional comprehensive research focusing on treatments that may be

considered to be first-line or second-line treatments in evidence-based clinical guidelines. The vast majority of the included systematic reviews reported the need for high-quality RCTs with low risk of bias and larger sample sizes. There should also be a call for more research targeting long-term effects and research into HRQoL associated with different primary care treatments. Furthermore, it is important that future studies assess the cost-effectiveness of different treatments, also including potential adverse events, for adults with NSCLBP to inform decisions aimed at optimizing the allocation of limited health care resources to improve health.

Importantly, treatments with emerging (low to moderate) evidence for a positive effect need to be further investigated in high-quality studies, including RCTs and subsequent systematic reviews and meta-analyses, to evaluate their effectiveness. We strongly recommend that future systematic reviews are conducted in line with standard quality criteria for systematic reviews and, specifically, involve two reviewers in the assessment of the studies' relevance and quality, provide clear descriptions of the patient population, and formulate appropriate conclusions based on the scientific evidence.

Conclusions

The scientific basis to recommend one primary care treatment for adults with NSCLBP over another is weak and there is a need for further high-quality systematic reviews and RCTs investigating the effects of primary care treatments in clinical practice for adults with NSCLBP. Future studies should prioritize assessment of the effectiveness of NSAIDs, opioids, spinal manipulation, and MBR, as the results suggest that these interventions are likely to be effective in some comparisons.

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Supplementary materials

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No funding sources or conflicts of interest were reported for this study.

Contributorship Information

Concept development (provided idea for the research): F.G., M.S., E.H., N.Z.
Design (planned the methods to generate the results): F.G., E.H., N.Z.
Supervision (oversight, organization and implementation): F.G., E.H., N.Z.
Data collection/processing (experiments, organization, or reporting data): F.G., T.S., E.H., N.Z.
Analysis/interpretation (analysis, evaluation, presentation of results): F.G., T.S., E.H., N.Z.
Literature search (performed the literature search): F.G., C.G.
Writing (responsible for writing a substantive part of the manuscript): F.G., T.S., E.H., V.S., M.S., N.Z.
Critical review (revised manuscript for intellectual content): T.S., E.H., V.S., N.Z., M.S.

Practical Applications

- The purpose of this study was to identify, critically assess, and summarize evidence of the effectiveness of primary care treatments for adults with non-specific chronic low back pain (NSCLBP).
- The evidence suggested moderate to high support for the effectiveness of certain primary care treatments in improving pain and function in NSCLBP patients.
- These treatments included NSAIDs and opioids compared to placebos, spinal manipulation versus exercise/physical therapy, and MBR versus exercise/education/advice/no treatment.

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