

Low back pain in Pakistan: A scoping review of epidemiology and treatment approaches



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ABSTRACT

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Pakistan, the world's fifth most populous country, faces a growing burden of low back pain (LBP) driven by population aging, occupational risks, and constrained health resources. This scoping review mapped clinical and epidemiological LBP research in Pakistan, summarizing prevalence, risk factors, outcome measures, and treatments, and identifying research gaps. Following JBI guidance and PRISMA-ScR, we searched PubMed, Embase, Scopus, CINAHL, Google Scholar, and PakMediNet for studies on Pakistani populations published up to 10 October 2023. Two reviewers independently screened and charted data. Of 1,176 records identified, 219 studies were included. Rehabilitation-focused research predominated (n=89, 40.6%), followed by correlational/risk-factor work (n=45, 20.5%), prevalence studies (n=41, 18.7%), medical management (n=17, 7.7%), diagnostic testing (n=14, 6.4%), surgical interventions (n=7, 3.2%), and outcome measurement (n=6, 2.7%). Reported LBP prevalence ranged from 36.7% to 87% across settings and definitions. Among intervention studies, manual therapy was most frequently investigated (n=39, 34.5%). Chronic LBP dominated the literature (n=126, 57.5%). Publication volume surged during 2021–2023 (54.3%). Several Urdu-language instruments exist (e.g., disability, fear-avoidance, catastrophising, self-efficacy), but psychological and social dimensions remain sparsely examined. LBP research in Pakistan is expanding yet remains skewed toward biomedical and rehabilitation models with limited attention to psychosocial factors and guideline-concordant, activity-based care. Future work should prioritize biopsychosocial frameworks, nationally representative epidemiology with standardized outcomes, and evaluations of education- and exercise-based interventions. Policymakers and health systems can catalyze progress by supporting balanced research agendas, workforce training in evidence-based practice, and culturally adapted patient education to enable comprehensive, guideline-informed LBP care.

Contribution/ Originality: This study contributes to the existing literature by providing the first comprehensive scoping review of low back pain research in Pakistan. It is among the few investigations into epidemiology, assessment tools, and treatment approaches within this context. The paper offers a logical analysis that documents research gaps and highlights priorities for biopsychosocially informed care.

1. INTRODUCTION

Low back pain (LBP) is the leading cause of functional disability worldwide, with a global prevalence estimated at 38% [1-3]. Its burden, measured in years lived with disability, has increased by 54% in the last three decades, with

the largest rise in low- and middle-income countries (LMICs) [4, 5]. Every year, an approximate collective amount of US\$100–150 billion is spent on direct and indirect medical care for LBP in Australia, the USA, and the UK alone, while societal costs in Western nations are estimated at 1–2% of GDP, largely due to productivity loss [4–7]. The impact of LBP varies considerably across nations, shaped by cultural norms and healthcare approaches [4] and is projected to increase further in South Asian countries, including Pakistan, due to growing and ageing populations [4, 5, 7]. LBP is commonly defined as pain, muscle tension, or stiffness between the costal margin and inferior gluteal folds, with or without leg pain, and the majority (~90%) are classified as non-specific, without an identifiable pathoanatomical cause [8].

Despite some disagreement among experts, LBP is generally classified as acute (<6 weeks), sub-acute (6–12 weeks), or chronic (>12 weeks). Although most episodes improve within 6 weeks, approximately 10% of individuals develop chronic or recurrent LBP [9].

Many people experience moderate to high interference in their functional capacity during episodes of low back pain (LBP) in activities of daily living [10]. Not everyone with LBP seeks clinical care; women and those experiencing high levels of disability are more likely to do so [11]. Many people with non-specific LBP seek a specific diagnosis, cure, and reassurance to validate the personal impact they experience due to pain [12]. For the past 2 decades, international guidelines have shifted away from pharmacological interventions (such as opioids) and bed rest as first-line care for LBP in favor of exercise and pain education [13–15].

The recent WHO guidelines recommend assessment of psychological factors (yellow flags) as part of clinical assessment and use of imaging only if a red flag (serious pathology) is suspected. Advice on maintaining or returning to normal activities, avoiding bed rest and opioid medications, cautious use of non-steroidal anti-inflammatory drugs (NSAIDs), engagement in exercise within the tolerance of pain, and pain education are first-line treatment recommendations [16].

A recent longitudinal study conducted in Australia followed 400 people with CLBP for 1 year. It found that frequent exercise engagement explained the reduction in disability and catastrophizing; however, therapeutic exercise was not ubiquitously used as a treatment [17]. Excessive use of medical imaging, prescription of analgesics, NSAIDs, and opioids, and underutilization of exercise, advice, and education are persistently becoming problems for healthcare systems around the world [18, 19]. Such low-value care wastes healthcare resources and contributes to the LBP global disease burden [19].

Common estimates are that it can take up to 17 years for research and clinical guidelines to be adopted into common practice [20]. However, the inconsistency between clinical guidelines for LBP and clinical practice requires better implementation strategies focusing on barriers such as local cultural and social factors [21].

The interaction of widespread LBP concurrent with resource scarcity in public health settings in LMIC is not well understood, and the burden is predicted to worsen [2, 4, 7]. In populous countries like Pakistan [22], lack of work insurance, limited or overstretched compensation systems and health education, and low options for altering work conditions may proliferate LBP-related disability [23]. Including musculoskeletal pain research within non-communicable diseases as a priority research area in the strategy for health research in Pakistan and exploring biopsychosocial strategies for the management of LBP could perhaps help in understanding and managing the LBP burden in Pakistan [24].

While guideline–practice gaps are a global issue [20, 21] the challenges in Pakistan are compounded by resource limitations, systemic fragmentation [22–24] and cultural factors that may reinforce reliance on biomedical and passive models of care [18, 19]. This underscores the importance of mapping how LBP has been studied locally to identify areas for improvement.

Most LBP research literature comes from more developed parts of the world, using populations from Western countries [25]. Differences in literacy rates, occupational and healthcare structures, and societal structures in low

socioeconomic developing countries make it difficult to generalize the findings from more developed Westernized counterparts [26, 27].

Despite the need for high-quality musculoskeletal pain research in developing countries like Pakistan, local researchers continue to encounter challenges in conducting high-quality research due to a lack of or limited resources [28-31].

The scarcity of resources for conducting research in Pakistan serves as an imperative to ensure that studies are designed to mitigate duplication and research questions are contextualized to ensure impact. Within this context, scoping reviews can serve as an important tool to summarize a wide range of evidence and identify knowledge gaps to guide future clinical practice and research.

A careful search of databases (PubMed, the Cochrane Library, and JBI Evidence Synthesis) suggested that a scoping review to synthesize LBP research in Pakistan has not been pursued yet. Addressing this gap, the scoping review presented in this paper was conducted to (i) summarize the research on LBP epidemiology, diagnostic measures, and treatment options used in Pakistan, in order to (ii) identify research gaps, and (iii) in turn, help inform future research by providing recommendations.

2. METHODS

2.1. Overview

We conducted this systematic scoping review following the Arksey and O'malley [32] methodological framework and the 2020 updated guidelines from the Joanna Briggs Institute [32, 33]. Based on these recommendations, the research questions and methods, including search strategy, identification of relevant databases or sources, inclusion criteria, data extraction, data charting, and result synthesis, were determined *a priori*. PROSPERO does not accept the registration of scoping reviews, so the protocol of this review was registered with Open Science Framework (Registration No.: OSF.io/w8ahp, dated December 7, 2022). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA-ScR) checklist [34] was used for reporting this review (see Figure 1 and Supplementary File 1).

2.2. Identifying the Research Questions

The main question was: "What is the current state of LBP research in Pakistan?" Research questions were formulated based on the PECOS (Population, Exposure, Context, Outcome, Study design) framework [35]. The sub-questions aimed to map the research on LBP epidemiology, diagnostic measures, prognosis, and treatment options used in Pakistan:

- (i) What is the prevalence/ incidence of LBP, associated factors, and related disability in Pakistan?
- (ii) Which patient-reported outcome measures are available to assess LBP and related factors in Pakistan?
- (iii) Which treatment approaches are studied for the management of LBP in Pakistan?

2.3. Study Participants and Eligibility Criteria

We sought chartable, comparable evidence on non-specific LBP in Pakistani populations, including peer-reviewed empirical studies across designs and languages. We excluded non-research items, studies with ambiguous case definitions, and those in which LBP was secondary to a specific pathology; two reviewers applied eligibility independently.

Table 1 presents the operational inclusion and exclusion criteria used during screening.

Table 1. Eligibility criteria for study selection.

Inclusion criteria:		Exclusion criteria:	
(i)	Peer-reviewed articles of studies conducted on Pakistanis.	(i)	Editorial/ opinion papers
(ii)	Studies with participants diagnosed with back pain (acute or chronic)	(ii)	Conference papers, as they lack the depth in reporting of methods and results.
(iii)	Qualitative or quantitative, or mixed methods study design	(iii)	Studies including participants with unclear diagnoses of back pain.
(iv)	Studies conducted in English or other Pakistani languages.	(iv)	Studies including participants with back pain as a secondary symptom of another condition (e.g., pregnancy, malignancy, infection, osteoporosis, fracture, inflammatory disease, or cauda equina syndrome).
(v)	Studies with participants across all age groups		

2.4. Identifying Relevant Studies (Search Strategy)

The search strategy was developed by one of the authors in collaboration with a librarian at the University of Southern Queensland (see Supplementary File 2). An initial pilot search of PubMed and Scopus was undertaken to inform the development of the search strategy. The finalised search strategy was used to search PubMed (Medline), Embase (via Ovid), Scopus, CINAHL (via EBSCOhost) using a combination of terms with the Boolean operators OR/AND, as in ["low back pain" OR disability OR "chronic low back pain" OR lumbago] AND [Pakistan OR Pakistani OR Islamabad OR Lahore OR Karachi] from inception till 10th October 2023 (see Supplementary File 2 for detailed search strategy). For literature from sources not indexed elsewhere, Google Scholar and www.Pakmedinet.com (an index of Pakistani medical and health journals) were searched. The reference list of included studies was examined for potential citations. Duplicates and studies meeting obvious exclusion criteria were deleted manually using EndNote X9 (Clarivate Analytics, PA, USA).

2.5. Screening and Study Selection

The potentially relevant articles were then uploaded into Covidence (an online platform for conducting systematic reviews). Two reviewers independently screened titles and abstracts of all articles found in searches. Full texts of the remaining articles were retrieved and assessed against the inclusion criteria by two reviewers. Reasons for exclusion were reported (see Figure 1). We planned to resolve any disagreement regarding inclusion via discussion; however, this step was not required.

2.6. Data Extraction and Synthesis

Data extraction was conducted using the Covidence platform. One reviewer extracted data, and a second reviewer independently checked to confirm that data extraction was correct. Any discrepancies were discussed and resolved by consensus. The authors of the included studies were not contacted for missing data because it was not required to achieve the aims of this review (i.e., meta-analysis was not anticipated). Where available, we extracted: (i) year of publication, (ii) author, (iii) title, (iv) journal name, (v) language of publication, (vi) study design, (vii) aim of study, (viii) location, (ix) study setting (clinical, community, or mixed), (x) LBP type (acute, sub-acute, or chronic), (xi) population characteristics (age, gender), (xii) outcome measures used, (xiii) interventions used, (xiv) main findings, (xv) limitations of the study, and (xvi) study funding. Included studies were categorised into (i) prevalence and incidence studies, (ii) diagnostic and imaging studies, (iii) descriptive studies exploring correlations, (iv) outcome measurement studies, (v) medical management studies, (vi) surgical management studies, and (vii) rehabilitation studies. We calculated counts and frequencies of extracted data, and reported these results in frequency tables and bar charts.

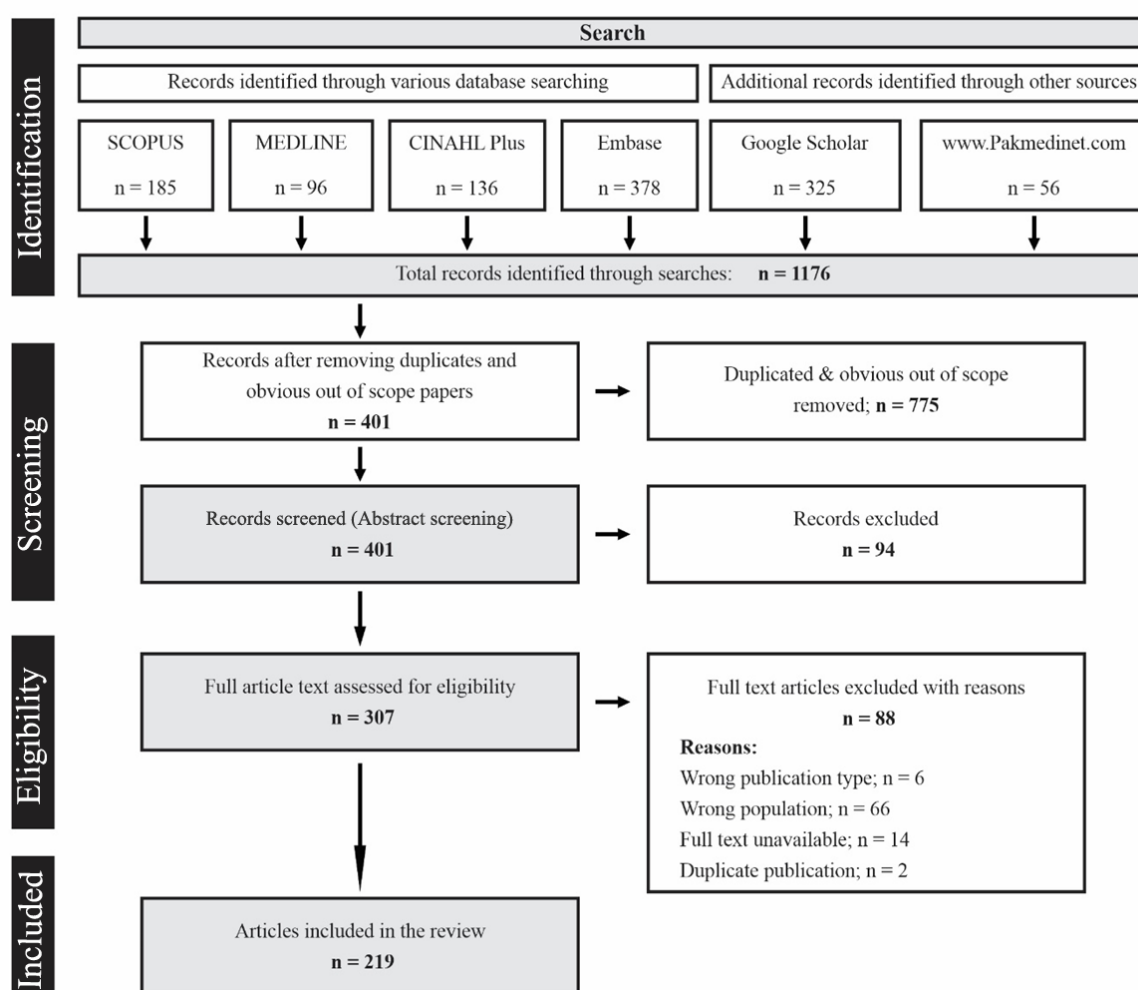


Figure 1. PRISMA-ScR flow chart.

3. RESULTS

Searches returned 1176 citations. After deleting duplicates and obvious out-of-scope articles, 401 studies were screened. In the first screening step, title and abstract screening, we identified 307 potentially relevant studies after exclusion of 94 studies. In the second step, screening of full-text, 88 studies were excluded because they did not meet the inclusion criteria. The remaining 219 articles were included in this review. A complete list of studies included is presented in Supplementary File 2.

Table 2. Characteristics of included studies.

Domains		Frequency (n = 219)	Percentage
Age categories	Adults (18 years and above)	203	92.6 %
	Adolescents & adults (10 years and above)	06	2.73 %
	All ages	1	0.45 %
	Not reported	9	4.1 %
Gender	Female (%)	-	49 %
	Male (%)	-	51 %
	Not reported	43	19.6 %
Population type	Acute LBP	6	2.73 %
	Sub-acute LBP	1	0.45 %
	Chronic LBP	126	57.5 %
	Mixed	81	36.98 %
	Not reported	5	2.28 %
Study designs	Cross-sectional study	104	47.5 %
	Randomized experimental study	60	27.3 %
	Non-randomized or quasi-experimental study	33	15.1 %
	Case study / Case series	11	5 %

Domains		Frequency (n = 219)	Percentage
	Cohort study / Case control studies	2	0.91 %
	Diagnostic accuracy study	1	0.45 %
	Prospective observational study	2	0.91 %
	Retrospective observational study	3	1.36 %
	Longitudinal study	2	0.91 %
	Narrative Review study	1	0.45 %
Study setting	Clinical	179	81.7 %
	Community	38	17.3%
	Mixed	1	0.45 %
	Not reported	1	0.45 %
Source of publication	Local Pakistani journal	186	84.9 %
	International Journal	33	15.1 %

3.1. Characteristics of Included Studies

Characteristics of the included studies are reported in full in Table 2. Most studies (47.5%) were of a cross-sectional study design. Other common study types were randomized controlled trials (RCTs: 27.3%) and quasi-experimental trials (n=33, 15.06%). One hundred and seventy-nine (81.7%) studies recruited participants from clinical settings, and thirty-eight (17.3%) from community settings. Chronic low back pain (LBP) was the most researched condition (57.5%). Collectively, 49% of the populations studied were females. Children and adolescents were included in one study each, and most of the studies (92.6%) recruited adults (18 years and older). According to the publication year, more than half of the included studies (n=119, 54.3%) were published between 2021 and 2023, 67 studies (30.5%) between 2016 and 2020, 31 studies (14.1%) between 2011 and 2015, and only 2 articles (0.91%) between 2005 and 2010 (Figure 3). One hundred and eleven studies (50.7%) were conducted in the two major cities of Pakistan (Lahore: n=69 studies, Karachi: n=42 studies) (Figure 4). Two out of 219 studies received funding to conduct the research. Most of the studies (n=186, 84.9%) were published in local Pakistani journals.

3.2. Identified Themes of Included Studies

Included studies are grouped into seven themes to tabulate, present, and discuss (see Supplementary file 3). LBP rehabilitation was the focus of 40.6% of studies, followed by descriptive studies (20.5%) exploring correlations of various factors with LBP, and prevalence & incidence studies (18.7%). Other themes include LBP medical management studies (7.6%), diagnostic/medical imaging studies (6.4%), surgical management studies (3.2%), and outcome measurement studies (2.7%) (see Figure 2).

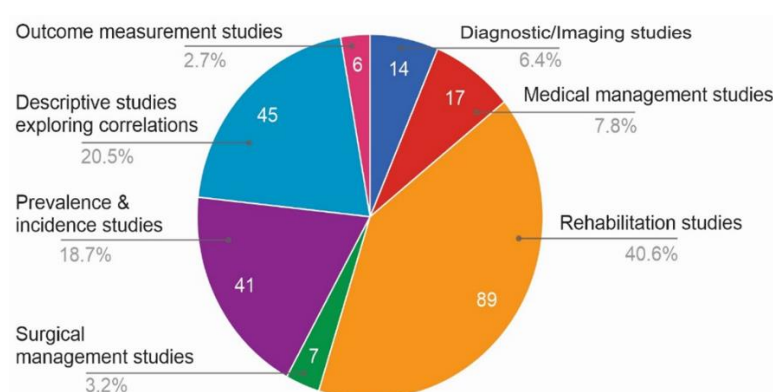


Figure 2. Studies by themes.

3.3. Prevalence of LBP in Pakistan

Out of 41 prevalence studies, one study reported a prevalence of chronic LBP (87%). The prevalence of LBP (acute, sub-acute, and chronic) ranged from 36.7% to 87%. Aggregate percentages and details of prevalence studies are presented in Table 3 and Supplementary file 3.

Table 3. Prevalence of low back pain.

Population	LBP Prevalence (%)
Engineers	36.7
Teachers (School, university, college)	44.1
Students (University, medical, and physiotherapy)	54.2
Office workers	58.8
Nurses	58.9
Physiotherapists	63.2
Bankers	63.7
Children and adolescents	66.1
Barbers, shopkeepers, tailors, bus drivers	66.2
Healthcare professionals (Dentists, medical doctors, surgeons, etc.)	69.0
Bike riders	70.9
Traffic wardens and Guards	73.8
Others (Females)	87.0

3.4. LBP Associated Biological and Psychosocial Factors

Forty-five studies explored correlations of LBP and disability with various biological and psychosocial factors (see Supplementary File 3). Biological factors include gender, BMI, posture, core muscle strength, central sensitization, vitamin D levels, frequency of spondylolisthesis, non-structural scoliosis, bone mineral density, piriformis syndrome, hamstring tightness, quadriceps angle, and use of different mattresses. Psychosocial factors studied were sleep quality, anxiety, depression, working conditions, quality of life, fear-avoidance beliefs, pain catastrophizing, functional self-efficacy, and attitude about exercise for LBP. One study reported on the frequency of usage of electrophysical agents (e.g., TENS, thermotherapy, ultrasound) by physiotherapists while managing LBP. Two studies conducted further analysis (multivariate linear regression and mediation analysis) to assess the direct and indirect effects of fear-avoidance beliefs on disability and exercise capacity [28, 29]. These studies found that fear-avoidance beliefs, catastrophizing, and functional self-efficacy mediate the relationship between LBP, disability, and submaximal exercise capacity.

3.5. Outcome Measures Available in Urdu

Seven studies focused on outcome measurements; however, one of these studies had a dual focus and was placed in another theme (studies exploring relationships between variables) [28]. Five studies translated and examined the psychometric properties of patient-reported outcome measures [36, 37], whereas one study developed a new tool for pain assessment [31]. One study reported on the usage of PROMs by physiotherapists [30]. Urdu translated outcome measures for use in LBP management are summarised in Table 4.

Table 4. Outcome measures available in the Urdu language.

Domain	Factor	Outcome measure
Pain	-	Visual analogue scale (VAS) [28] Pain calculator [30]
Functional disability	-	Rolland Morris Disability Questionnaire (RMDQ) [36, 38] Oswestry disability index (ODI) [28]
Psychosocial factors	Fear avoidance	Fear avoidance beliefs questionnaire (FABQ) [28]
	Pain catastrophizing	Pain catastrophizing scale (PCS) [28]
	Anxiety & depression	Hospital anxiety and depression scale (HADS) [28]
	Functional self-efficacy	Functional self-efficacy scale (FSE) [28]
Quality of life	-	Short Form -36 health survey questionnaire (SF-36) [39]
		Short Form -12 health survey questionnaire (SF-12) [28]

3.6. Interventional Studies

A total of 113 interventional studies were included, which were then divided into three themes: medical management, surgical management, and rehabilitation. Seventeen studies focused on medical management. Of these, thirteen tested the effectiveness of steroid and analgesic injections. Four studies examined oral medications, including NSAIDs, opioids, and anti-epileptic drugs. All seven surgical management studies evaluated outcomes of surgical procedures for low back pain (LBP). A significant number of studies ($n = 89$) investigated the role of rehabilitation therapies for LBP. The most common rehabilitation intervention studied was manual therapy ($n = 39$), followed by exercise ($n = 29$), electrophysical agents ($n = 11$), decompression therapy ($n = 5$), laser therapy ($n = 2$), cupping therapy ($n = 1$), cognitive-behavioral therapy ($n = 1$), and home management ($n = 1$).

3.7. Diagnostic/ Imaging Studies

A total of 10 studies out of 14 diagnostic/medical imaging studies used magnetic resonance imaging, and 4 studies used lumbar radiography for the diagnosis of LBP. Most of these studies were cross-sectional ($n = 11$). The other 3 studies were case-control, case series, and cohort studies.

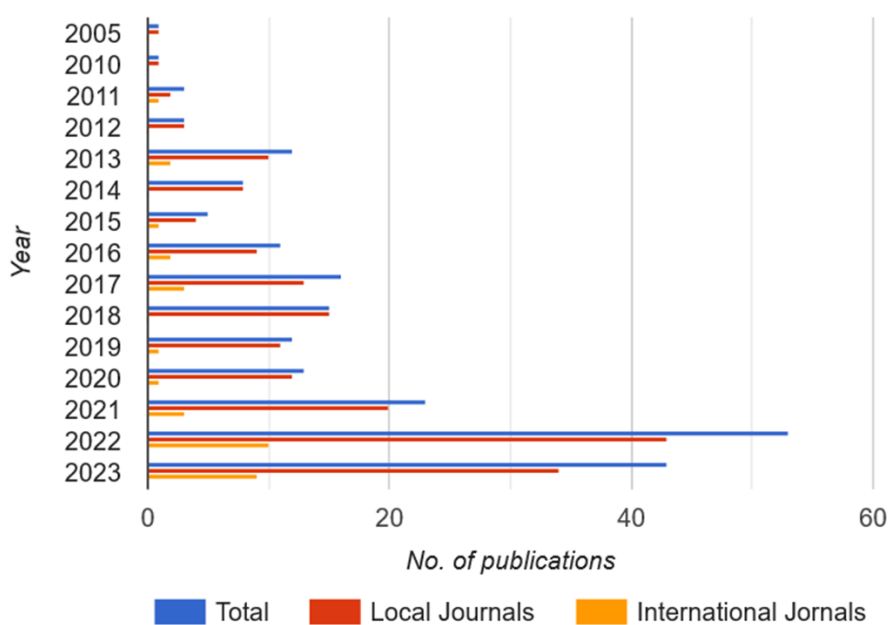


Figure 3. Publications per year.

Figure 3: Number of publications according to the year of publication and source of publication (published in international research journals or local Pakistani journals).

4. DISCUSSION

This scoping review is the first to focus on the breadth of evidence on LBP in Pakistan. 219 articles related to LBP were identified. Publication trends indicate an increase in LBP research output in recent years, with most studies published between 2021 and 2023. This surge in research activity may reflect growing awareness of LBP as a public health concern in Pakistan and increased research opportunities. A large number of included studies estimated LBP prevalence, explored LBP's correlations with various factors, and examined diagnosis and medical management of symptoms. The findings indicate that some significant research areas remain in nascent stages and would benefit from focused endeavors in the future. Such research areas include: (i) psychological and social aspects of LBP, and (ii) exploration of biopsychosocial management approaches for LBP.

The chart displays number of LBP studies conducted (City/ District wise)

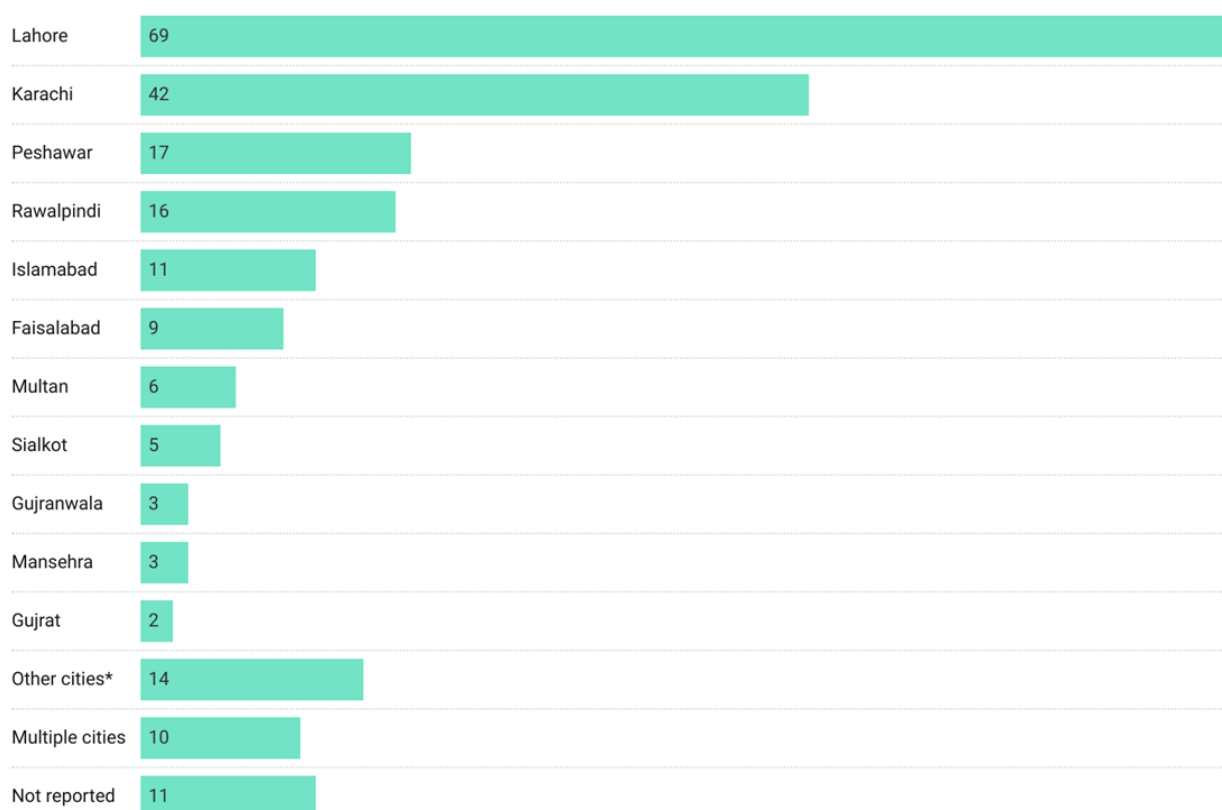


Figure 4. Location of data collection.

***Note:** 1 study was conducted in each of the following cities: Abbottabad, Attock, Bahawalpur, Hyderabad, Jhelum, Khairpur, Khanewal, Mirpur (AJK), Muzaffargarh, Nankana Sahib, Nawab Shah, Nowshera, Okara, and Sargodha.

Most of the studies were cross-sectional designs, suggesting a focus on understanding the current state of LBP and associated factors. The prevalence of LBP in various population groups in Pakistan was examined by forty-one studies; however, none of the included studies explored the prevalence of LBP on a population level and its implications for economic, personal, and social burden. The prevalence rates in Pakistan align with global trends; however, the experience of LBP in certain occupational groups was reported to be as high as 87% in Pakistan, which is higher than the global averages [4, 40]. For instance, a systematic review by Hoy, et al. [3] found that the prevalence of LBP in developed countries ranges from 1.4% to 58%, with variations across different populations and age groups [3]. These findings highlight the need for targeted intervention and prevention strategies tailored to the needs of high-risk groups to reduce the burden of low back pain in Pakistan. Multiple measurement tools were used to collect prevalence data, including ODI, VAS, NPRS, back pain functional scale, Wong Baker FACES rating scale, Nordic musculoskeletal questionnaire, Japanese Orthopaedic Association low back pain questionnaire, and self-constructed non-standardized questionnaires. The use of non-standardized tools makes pooling data difficult for meta-analysis. Moreover, a range of factors were found to be correlated with LBP and disability in the Pakistani population. In addition to biological factors such as gender, body weight, and body composition, psychological factors such as anxiety, depression, and fearlessness appear to be associated with LBP in Pakistanis. These findings capture the rich and diverse nature of LBP and highlight the importance of addressing both biological and psychological factors in its management and prevention.

The current evidence on the availability of outcome measurement tools in Urdu for the assessment of low back pain (LBP) and related domains indicates that VAS, ODI, RMDQ, SF-12, FABQ, PCS, HADS, and FSE are cross-culturally adapted into the Urdu language for use in Pakistan. However, health-related quality of life and psychosocial variables were rarely measured or reported in Pakistani LBP research. The core outcomes set (agreed minimum measurements based on the International Classification of Functioning - ICF) for use in LBP trials was developed to

minimize heterogeneity in measurement, reporting of results, and to improve the feasibility of data pooling for meta-analysis [4, 41, 42]. The recommended instruments are the Numeric Rating Scale (NRS) or Visual Analog Scale (VAS) for pain intensity, the Oswestry Disability Index (ODI) or the Roland-Morris Disability Questionnaire (RMDQ) for disability, SF-12 or PROMIS Global Health form for health-related quality of life. In addition, international clinical guidelines for low back pain (LBP) management recommend assessing psychosocial factors such as fear-avoidance beliefs, pain catastrophizing, anxiety, depression, functional self-efficacy, pain resilience, and pain attitudes [43].

A notable number of diagnostic and medical imaging studies utilizing magnetic resonance imaging (MRI) and lumbar radiography for LBP diagnosis were identified, reflecting the increasing utilization of advanced imaging modalities in clinical practice. Contrarily, the utilization of patient-reported outcome measures was very low [30]. One of the barriers reported in implementing PROMs in clinical practice in Pakistan was the lack of information and training about these tools [30]. Furthermore, our review indicates a relative dearth of studies evaluating the multidisciplinary rehabilitation strategies for low back pain management in the Pakistani context. In contrast, a meta-analysis by Kamper, et al. [44] highlights the growing body of evidence supporting multidisciplinary treatment interventions (interventions involving a combination of physical treatment, psychological, and social/work-related components) for LBP and related disability in comparison to monotherapies [44]. This finding underscores the need for the evaluation of targeted multidisciplinary interventions in the Pakistani population [44].

4.1. Research Gaps

The scoping review alludes to a number of literature gaps in the current LBP research in Pakistan. First, the amount of published research in Pakistan in recent years is growing; however, the published literature lacks standardization in outcomes reporting, making data pooling for meta-analysis difficult. Second, prevalence estimate studies were limited to a specific region or small population group and had small sample sizes. Third, longitudinal studies evaluating the long-term outcomes and trajectories of LBP in the Pakistani population are scarce. Fourth, none of the studies estimated the financial and societal burden of LBP in Pakistan. Fifth, the diagnostic accuracy and clinical utility of medical imaging, along with its contribution to the financial burden of LBP in Pakistan, were not examined. Sixth, the available literature lacks interventional trials assessing the effectiveness of culturally adapted LBP management strategies for improving LBP outcomes in Pakistan. Lastly, studies exploring biopsychosocial approaches for LBP management in Pakistan were very few.

4.2. Recommendations

First, to facilitate standardisation in outcomes reporting in publications, the core domains set of outcome measures for use in LBP trials should be consulted, and psychometrically robust tools for each domain need to be utilised for data collection. Second, a national population survey is needed to accurately understand the prevalence statistics of LBP in Pakistan. Third, no study has explored the clinical and economic burden of LBP in Pakistan, and future research efforts need to provide a better understanding of LBP's impact. Fourth, research studies should be designed to build on previous work and research questions should be contextualised to local priorities, thus mitigating the risk of duplication and facilitating optimised use of scarce resources. Fifth, further research is warranted to elucidate the diagnostic accuracy and clinical utility of diagnostic imaging modalities in the Pakistani population. Sixth, inclusion of low back pain as a priority research topic in future strategies for health research by the Pakistan Health Research Council within the non-communicable diseases group, and exploring biopsychosocial aspects of LBP needs to be considered. Lastly, to help improve clinical care for LBP in Pakistan, exploration of culturally adapted management strategies, including biopsychosocial interventions, is warranted.

4.3. Limitations

This was the first review to comprehensively search the databases for LBP research in Pakistan and report findings as per guidelines [32-34]. However, the search for non-indexed literature was limited to Google Scholar and www.pakmedinet.com, and we may have missed some relevant studies. The methodological quality of the included studies was not critically appraised; quality appraisal should be conducted in future systematic reviews to identify methodological quality-related gaps in low back pain research in Pakistan. Meta-analysis was not possible due to the variation among studies included in this review.

5. CONCLUSIONS

This scoping review provides a comprehensive overview of LBP research in Pakistan, highlighting the prevalence, availability of outcome measures, and treatment modalities for LBP. The findings underscore the need for context-specific approaches to LBP management and research, with a focus on interdisciplinary collaboration, comprehensive biopsychosocial management approaches, and evidence-based interventions. The review therefore, provides an opportunity for future researchers to identify gaps in knowledge and scope of research undertaken to set targeted priorities to enhance the LBP-related knowledge in Pakistan. In addition, the findings may be of value to healthcare policymakers and practitioners by drawing attention to the potential benefits of gradually integrating culturally adapted biopsychosocial principles into care pathways and considering how limited resources can be directed toward approaches consistent with international guidelines.

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REFERENCES

- [1] C. J. L. Murray and A. D. Lopez, "Measuring the global burden of disease," *New England Journal of Medicine*, vol. 369, no. 5, pp. 448-457, 2013. <https://doi.org/10.1056/NEJMra1201534>
- [2] E. L. Hurwitz *et al.*, "The global spine care initiative: A systematic review of individual and community-based burden of spinal disorders in rural populations in low-and middle-income communities," *European Spine Journal*, vol. 27, no. Suppl 6, pp. 802-815, 2018. <https://doi.org/10.1007/s00586-017-5393-z>
- [3] D. Hoy *et al.*, "A systematic review of the global prevalence of low back pain," *Arthritis & Rheumatism*, vol. 64, no. 6, pp. 2028-2037, 2012. <https://doi.org/10.1002/art.34347>
- [4] J. Hartvigsen *et al.*, "What low back pain is and why we need to pay attention," *The Lancet*, vol. 391, no. 10137, pp. 2356-2367, 2018. [https://doi.org/10.1016/S0140-6736\(18\)30480-X](https://doi.org/10.1016/S0140-6736(18)30480-X)
- [5] S. L. James *et al.*, "Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: A systematic analysis for the global burden of disease study 2017," *The Lancet*, vol. 392, no. 10159, pp. 1789-1858, 2018. [https://doi.org/10.1016/S0140-6736\(18\)32279-7](https://doi.org/10.1016/S0140-6736(18)32279-7)
- [6] S. Dagenais, J. Caro, and S. Haldeman, "A systematic review of low back pain cost of illness studies in the United States and internationally," *The Spine Journal*, vol. 8, no. 1, pp. 8-20, 2008. <https://doi.org/10.1016/j.spinee.2007.10.005>

- [7] M. L. Ferreira *et al.*, "Global, regional, and national burden of low back pain, 1990–2020, its attributable risk factors, and projections to 2050: A systematic analysis of the Global Burden of Disease Study 2021," *The Lancet Rheumatology*, vol. 5, no. 6, pp. e316–e329, 2023. [https://doi.org/10.1016/s2665-9913\(23\)00098-x](https://doi.org/10.1016/s2665-9913(23)00098-x)
- [8] C. E. Dionne *et al.*, "A consensus approach toward the standardization of back pain definitions for use in prevalence studies," *Spine*, vol. 33, no. 1, pp. 95–103, 2008. <https://doi.org/10.1097/BRS.0b013e31815e7f94>
- [9] R. D. Meucci, A. G. Fassa, and N. M. X. Faria, "Prevalence of chronic low back pain: Systematic review," *Revista de Saude Publica*, vol. 49, p. 73, 2015. <https://doi.org/10.1590/S0034-8910.2015049005874>
- [10] N. Henschke *et al.*, "Characteristics of patients with acute low back pain presenting to primary care in Australia," *The Clinical Journal of Pain*, vol. 25, no. 1, pp. 5–11, 2009. <https://doi.org/10.1097/AJP.0b013e3181817a8d>
- [11] M. L. Ferreira, G. Machado, J. Latimer, C. Maher, P. H. Ferreira, and R. J. Smeets, "Factors defining care-seeking in low back pain—a meta-analysis of population based surveys," *European Journal of Pain*, vol. 14, no. 7, pp. 747. e1–747. e7, 2010. <https://doi.org/10.1016/j.ejpain.2009.11.005>
- [12] R. Froud *et al.*, "A systematic review and meta-synthesis of the impact of low back pain on people's lives," *BMC Musculoskeletal Disorders*, vol. 15, no. 1, p. 50, 2014. <https://doi.org/10.1186/1471-2474-15-50>
- [13] C. B. Oliveira *et al.*, "Clinical practice guidelines for the management of non-specific low back pain in primary care: An updated overview," *European Spine Journal*, vol. 27, no. 11, pp. 2791–2803, 2018. <https://doi.org/10.1007/s00586-018-5673-2>
- [14] S. Z. George *et al.*, "Interventions for the management of acute and chronic low back pain: Revision 2021: Clinical practice guidelines linked to the international classification of functioning, disability and health from the academy of orthopaedic physical therapy of the American Physical Therapy Association," *Journal of Orthopaedic & Sports Physical Therapy*, vol. 51, no. 11, pp. CPG1–CPG60, 2021. <https://doi.org/10.2519/jospt.2021.0304>
- [15] B. W. Koes, M. Van Tulder, C.-W. C. Lin, L. G. Macedo, J. McAuley, and C. Maher, "An updated overview of clinical guidelines for the management of non-specific low back pain in primary care," *European Spine Journal*, vol. 19, no. 12, pp. 2075–2094, 2010. <https://doi.org/10.1007/s00586-010-1502-y>
- [16] World Health Organization, *WHO guideline for non-surgical management of chronic primary low back pain in adults in primary and community care settings*. Geneva: World Health Organization, 2023.
- [17] P. W. Marshall, N. M. V. Morrison, M. Gibbs, and S. M. Schabrun, "The effect of exercise engagement on low back disability at 12-months is mediated by pain and catastrophizing in a community sample of people with chronic low back pain," *Behaviour Research and Therapy*, vol. 159, p. 104205, 2022. <https://doi.org/10.1016/j.brat.2022.104205>
- [18] A. C. Traeger, R. Buchbinder, A. G. Elshaug, P. R. Croft, and C. G. Maher, "Care for low back pain: Can health systems deliver?," *Bulletin of the World Health Organization*, vol. 97, no. 6, pp. 423–433, 2019. <https://doi.org/10.2471/BLT.18.226050>
- [19] R. Buchbinder, M. Underwood, J. Hartvigsen, and C. G. Maher, "The Lancet series call to action to reduce low value care for low back pain: An update," *Pain*, vol. 161, pp. S57–S64, 2020. <https://doi.org/10.1097/j.pain.0000000000001869>
- [20] M. Beauchemin, E. Cohn, and R. C. Shelton, "Implementation of clinical practice guidelines in the health care setting: A concept analysis," *Advances in Nursing Science*, vol. 42, no. 4, pp. 307–324, 2019. <https://doi.org/10.1097/ANS.0000000000000263>
- [21] J. N. Mafi, E. P. McCarthy, R. B. Davis, and B. E. Landon, "Worsening trends in the management and treatment of back pain," *JAMA Internal Medicine*, vol. 173, no. 17, pp. 1573–1581, 2013. <https://doi.org/10.1001/jamainternmed.2013.8992>
- [22] World Bank, "Population, total - Pakistan," Retrieved: <https://data.worldbank.org/indicator/SP.POP.TOTL?end=2020&locations=PK>, 2022.
- [23] M. A. Malik and M. Wasay, "Economics of health and health care in Pakistan," *Journal of the Pakistan Medical Association*, vol. 63, no. 7, pp. 814–815, 2013.

- [24] Pakistan Health Research Council, *The strategy for health research in Pakistan*. Islamabad: Pakistan Health Research Council, 2022.
- [25] H. Lee *et al.*, "How does pain lead to disability? A systematic review and meta-analysis of mediation studies in people with back and neck pain," *Pain*, vol. 156, no. 6, pp. 988-997, 2015. <https://doi.org/10.1097/j.pain.000000000000146>
- [26] L. Stankov, "Conservative syndrome: Individual and cross-cultural differences," *Journal of Cross-Cultural Psychology*, vol. 48, no. 6, pp. 950-960, 2017. <https://doi.org/10.1177/0022022117709984>
- [27] S. Sharma, A. Ferreira-Valente, A. C. De C. Williams, J. H. Abbott, J. Pais-Ribeiro, and M. P. Jensen, "Group differences between countries and between languages in pain-related beliefs, coping, and catastrophizing in chronic pain: A systematic review," *Pain Medicine*, vol. 21, no. 9, pp. 1847-1862, 2020. <https://doi.org/10.1093/pm/pnz373>
- [28] M. N. U. Khan, N. M. V. Morrison, and P. W. Marshall, "The role of fear-avoidance beliefs on low back pain-related disability in a developing socioeconomic and conservative culture: A cross-sectional study of a Pakistani population," *Journal of Pain Research*, vol. 13, pp. 2377-2387, 2020. <https://doi.org/10.2147/JPR.S258314>
- [29] S. N. B. Nazir, F. A. Pereira, A. Muhammad, I. I. Shamsi, and M. U. Khan, "The relationship between fear-avoidance beliefs, disability, and physical capacity in patients with chronic low back pain," *Mediterranean Journal of Rheumatology*, vol. 33, no. 3, pp. 305-310, 2022. <https://doi.org/10.31138/mjr.33.3.305>
- [30] A. A. M. Baig, S. A. Wajid, S. I. H. Naqvi, M. Nooruddin, and S. S. Ali, "Current Physiotherapy practices of outcome measures in the management of low back pain: A cross-sectional study," *Pakistan Journal of Medical Research*, vol. 62, no. 2, pp. 77-81, 2023.
- [31] R. Ul Hasanat, S. A. Syed, F. A. Rathore, and S. Iftikhar, "Development of a tool for objectively measuring somatic pain in the low back region based on a longitudinal diagnostic study conducted in Karachi, Pakistan," *BMJ Open*, vol. 13, no. 3, p. e067129, 2023. <https://doi.org/10.1136/bmjopen-2022-067129>
- [32] H. Arksey and L. O'malley, "Scoping studies: Towards a methodological framework," *International Journal of Social Research Methodology*, vol. 8, no. 1, pp. 19-32, 2005. <https://doi.org/10.1080/1364557032000119616>
- [33] M. D. J. Peters *et al.*, "Updated methodological guidance for the conduct of scoping reviews," *JBIM Evidence Synthesis*, vol. 18, no. 10, pp. 2119-2126, 2020. <https://doi.org/10.11124/JBIES-20-00167>
- [34] A. C. Tricco *et al.*, "PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation," *Annals of Internal Medicine*, vol. 169, no. 7, pp. 467-473, 2018. <https://doi.org/10.7326/M18-0850>
- [35] J. P. T. Higgins and S. Green, *Cochrane handbook for systematic reviews of interventions (Version 5.1.0)*. London: The Cochrane Collaboration, 2011.
- [36] A. Shabbir *et al.*, "Linguistic reliability & validity of urdu version of Roland-Morris disability questionnaire in patients with chronic non-specific low back pain: Roland-Morris disability questionnaire in patients with chronic non-Specific low back pain," *Pakistan Biomedical Journal*, vol. 5, no. 7, pp. 79-84, 2022. <https://doi.org/10.54393/pbmj.v5i7.627>
- [37] M. Sohail, I. Ishtiaq, Z. Sharif, and A. Asjad, "Translation, cultural adaptation and validation of the urdu version of Ronald Morris low back pain and disability questionnaire in Pakistani population," *Pakistan Journal of Physical Therapy*, vol. 6, no. 1, pp. 1-9, 2023. <https://doi.org/10.52229/pjpt.v6i1.2590>
- [38] F. Amjad, M. A. Mohseni-Bandpei, S. A. Gilani, A. Ahmad, and A. Zaheer, "Translation, cross-cultural adaptation, and psychometric properties of the urdu version of rand short form 36-item survey (SF-36) among patients with lumbar radiculopathy," *Journal of Bodywork and Movement Therapies*, vol. 32, pp. 176-182, 2022. <https://doi.org/10.1016/j.jbmt.2022.05.003>
- [39] F. Amjad, M. A. Mohseni-Bandpei, S. A. Gilani, A. Ahmad, M. Waqas, and A. Hanif, "Urdu version of Oswestry disability index; a reliability and validity study," *BMC Musculoskeletal Disorders*, vol. 22, no. 1, p. 311, 2021. <https://doi.org/10.1186/s12891-021-04173-0>
- [40] B. Rezaei, E. Mousavi, B. Heshmati, and S. Asadi, "Low back pain and its related risk factors in health care providers at hospitals: A systematic review," *Annals of Medicine and Surgery*, vol. 70, p. 102903, 2021. <https://doi.org/10.1016/j.amsu.2021.102903>

- [41] A. Chiarotto *et al.*, "Core outcome measurement instruments for clinical trials in nonspecific low back pain," *Pain*, vol. 159, no. 3, pp. 481-495, 2018. <https://doi.org/10.1097/j.pain.0000000000001117>
- [42] A. Chiarotto *et al.*, "Core outcome domains for clinical trials in non-specific low back pain," *European Spine Journal*, vol. 24, no. 6, pp. 1127-1142, 2015. <https://doi.org/10.1007/s00586-015-3892-3>
- [43] C. G. Maher, A. Archambeau, R. Buchbinder, S. D. French, J. Morphet, and M. K. Nicholas, "Introducing Australia's clinical care standard for low back pain," *Emergency Medicine Australasia*, vol. 35, no. 3, pp. 370-373, 2023.
- [44] S. J. Kamper *et al.*, "Multidisciplinary biopsychosocial rehabilitation for chronic low back pain: Cochrane systematic review and meta-analysis," *BMJ*, vol. 350, p. h444, 2015. <https://doi.org/10.1136/bmj.h444>

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