The evidence mapping and methodological quality of clinical practice guidelines of diagnosis and management for spinal pain: A cross-sectional survey

Spinal pain includes cervical spine pain, low back pain (LBP), and sciatica. It is one of the leading causes of disability and loss of human labor capacity worldwide. Clinical practice guidelines (CPGs) for treating spinal pain can help improve the quality of care. Care following CPG recommendations can result in better outcomes and lower costs. However, various organizations give conflicting CPGs and recommendations. Furthermore, CPGs have potential issues; for example, several CPGs include voluminous documents that are not user-friendly, and there are shortcomings in their quality, which may limit clinical use. Some contemporary spinal pain CPGs are of poor quality and have the same problems as mentioned above. Therefore, we conducted a systematic evaluation and investigation of the quality of different spinal pain CPGs.

1 | METHODS

We defined CPGs as being identified by authors and being consistent with the definition of the Institute of Medicine. We searched for CPGs in PubMed, Embase, and Web of Science using medical subject headings (MeSH) and keywords. The details of the methodology are provided in Supplementary Material S1.

2 | RESULTS

Twenty CPGs met the inclusion criteria (some CPGs contain recommendations for both neck pain and LBP or LBP and sciatica), of which 7 were devoted to neck pain (i.e., Canada, KNGF, APTA, DHA, OPTIMA, Scottish, and SIMFER CPGs), 13 CPGs were devoted to back pain (i.e., ACP, ACI, Belgium, Canada, DHA, Globe et al., NDMG, KNGF, Scottish, Colorado, TOP, VA/DoD, and NICE CPGs), and 3 CPGs were devoted to sciatica (i.e., DHA, NASS, and NICE CPGs). Supplementary Table S1 summarizes the various recommendations of the assessment, diagnosis, and management of spinal pain CPGs.

The highest mean score was 78.91 ± 13.32 for scope and purpose, and the lowest mean score was 41.48 ± 22.42 for applicability. Generally, 9 CPGs had overall scores higher than 60% (these CPGs were deemed as strongly recommended for clinical care), 10 CPGs were defined as recommended with modifications, and 1 CPG was deemed as not recommended. The mean and standard deviation (SD) of the Appraisal of Guidelines Research and Evaluation (AGREE II) scores for each domain and overall scores of various guidelines are shown in Supplementary Table S2 and Supplementary Figure S1A. The brief overall scores of CPGs are shown in Supplementary Table S2.

The reporting Items for Practice Guidelines in Healthcare (RIGHT) checklist contains 22 requirements organized into 7 sections, with a total of 35 items. According to the RIGHT checklist, the CPGs with the largest number of reported items were NICE, DHA and SIGN (RIGHT score = 34, 97.14%), followed by OPTIMA (RIGHT score = 31, 88.57%) and Canada Guideline (RIGHT score = 31, 88.57%). Among the seven domains of the RIGHT checklist, field one (basic information) had the highest reporting rate (87.09%) and field six (funding, declaration, and management of interest) obtained the lowest reporting rate (57.61%). The numbers of reported items are shown in Supplementary Table S3.

3 | DISCUSSION

Spinal pain is a serious public health problem that creates many problems in people’s daily lives. CPGs for managing spinal pain can help improve the quality of care. However, CPGs have potential issues; for example, several CPGs include voluminous documents that are not user-friendly, and there are shortcomings in their quality, which may limit clinical use. Therefore, in our study, we tried to systematically evaluate and summarize the recommendations from various CPGs to provide a simple and clear consensus of the current management of spinal pain for clinicians, researchers, health care managers, and policymakers. Our results could also help improve the quality of clinical care for spinal pain. A total of 20 CPGs were identified in our international review of CPGs on the management of spinal pain. According to the results of the guideline quality assessment, it was obvious that the quality of different CPGs varied considerably. According to a standardized grade system, several organizations summarized their
recommendations for spinal pain care. We found that the recommend-
ations and the strength of the recommendations varied widely among
the CPGs, which may lead to confusion on the part of clinicians and
patients or may even lead to inappropriate management regimes.

CPGs of low methodological quality are still being developed and
published. Previous studies mentioned that recent guidelines failed
to clearly show the selection criteria of the literature, to adequately
describe the strengths and limitations of included literature, and to
specifically describe the methods used to formulate recommendations.
Future high-quality guidelines should focus on providing clear imple-
mentation strategies and their applicability to specific populations. Our
results also indicated that the mean score of the application was the
lowest. Besides, some CPGs included in our study seem to be too com-
plex and long to get points. Readers may end up "giving up" reading
everything and may miss something "important." Therefore, guideline
makers should concentrate more on how to convey the information
quickly and easily and the application of the clinical guidelines.

Evidence-based decision-making was proven to have favorable
health and economic outcomes. However, current real-world prac-
tices differ substantially from recommendations in evidence-based
guidelines. Patient preferences are becoming increasingly important
in health care policy decision-making. However, most included guide-
lines did not consider the views and preferences of patients when
designing guidelines. Previous studies pointed out that consideration
of patient preferences could increase adherence to treatment, satisfac-
tion with treatment, and health outcomes. Therefore, future guideline
development should consider patient preferences as an important
factor.

However, there were still some limitations in our study. First, due to
the variations of reporting and expression of different CPGs, there may
be some inappropriate and inaccurate interpretations of our research
because there is heterogeneity in the way that CPGs are conceptual-
ized and how their evidence and recommendations are presented. This
issue is inherent. Second, for various reasons, we may fail to identify
all relevant and standard-compliant documents. Third, different CPGs
used different grading systems that were based on different coding
systems to classify the quality of evidence and strength of recommen-
dations. Therefore, it is hard to summarize and unify the quality of
evidence for each recommendation and conduct further studies.

To improve the management of spinal pain, we summarized CPG rec-
ommendations to identify the consensuses of management regimes.
However, the recommendations of some CPGs were not very clear and
specific, and they even provided inconsistent recommendations. Evi-
dence mapping is a good tool to reduce research waste and facilitate
the process of knowledge transfer. The results of our study can be used
to optimize the implementation of these recommendations and to pro-
move improvement in the development of reliable CPGs for spinal pain.
We found the mean score of the application included CPGs was the
lowest and most of the CPGs did not consider patient preferences.
Therefore, guideline makers should concentrate on patient prefer-
ence and application in future guidelines. Once these weaknesses are
resolved, a more effective and accurate management regime that will
lead to reduced costs of spinal pain can be established.

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CONFLICT OF INTEREST
No conflict of interest to declare.

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REFERENCES
1. Machado GC, Maher CG, Ferreira PH, Day RO, Pinheiro MB, Ferreira
ML. Non-steroidal anti-inflammatory drugs for spinal pain: a sys-
tematic review and meta-analysis. Ann Rheum Dis. 2017;76(7):1269–
1278.
2. Childs JD, Fritz JM, Wu SS, et al. Implications of early and guideline adherent physical therapy for low back pain on utilization and costs. BMC Health Serv Res. 2015;15:150.

3. Ge L, Tian JH, Li YN, et al. Association between prospective registration and overall reporting and methodological quality of systematic reviews: a meta-epidemiological study. J Clin Epidemiol. 2018;93:45–55.

4. Lin I, Wiles LK, Waller R, et al. Poor overall quality of clinical practice guidelines for musculoskeletal pain: a systematic review. Br J Sports Med. 2018;52(5):337–343.

5. Bryans R, Decina P, Descarreaux M, et al. Evidence-based guidelines for the chiropractic treatment of adults with neck pain. J Manipulative Physiol Ther. 2014;37(1):42–63.

6. Blanpied PR, Gross AR, Elliott JM, et al. Neck pain: revision 2017. J Orthop Sports Phys Ther. 2017;47(7):A1–a83.

7. Kjaer P, Kongsted A, Hartvigsen J, et al. National clinical guidelines for non-surgical treatment of patients with recent onset neck pain or cervical radiculopathy. Eur Spine J. 2017;26(9):2242–2257.

8. Coté P, Wong JJ, Sutton D, et al. Management of neck pain and associated disorders: a clinical practice guideline from the Ontario Protocol for Traffic Injury Management (OPTIMA) Collaboration. Eur Spine J. 2016;25(7):2000–2022.

9. Scottish Intercollegiate Guidelines Network: Management of Chronic Pain. Available from: http://www.wales.nhs.uk/sites3/Documents/490/SuspectedAnginaFullGuidelines.pdf%5Cnhttp://sign.ac.uk/guidelines/fulltext/136/index.html.

10. Monticone M, Ivone R, de Sena G, et al. The Italian Society of Physical and Rehabilitation Medicine (SIMFER) recommendations for neck pain. G Ital Med Lav Ergon. 2013;35(1):36–50.

11. Bier JD, Scholten-Peeters WGM, Staal JB, et al. Clinical practice guideline for physical therapy assessment and treatment in patients with nonspecific neck pain. Phys Ther. 2018;98(3):162–171.

12. Qaseem A, Wilt TJ, McLean RM, et al. Noninvasive treatments for acute, subacute, and chronic low back pain: a clinical practice guideline from the American College of Physicians. Ann Intern Med. 2017;166(7):514–520.

13. NSW Agency for Clinical Innovation (ACI). Management of people with acute low back pain model of care. 2016. Available from: https://www.aci.health.nsw.gov.au/_data/assets/pdf_file/0007/336688/acute-low-back-pain-moc.pdf.

14. van Wambeke P, Desomer A, Jonckheer P, Depreitere B. The Belgian national guideline on low back pain and radicular pain: key roles for rehabilitation, assessment of rehabilitation potential and the PRM specialist. Eur J Phys Rehabil Med. 2020;56(2):220–227.

15. Bussières AE, Stewart G, Al-Zoubi F, et al. Spinal manipulative therapy and other conservative treatments for low back pain: a guideline from the Canadian chiropractic guideline initiative. J Manipulative Physiol Ther. 2018;41(4):265–293.

16. Stochkendahl MJ, Kjaer P, Hartvigsen J, et al. National Clinical Guidelines for non-surgical treatment of patients with recent onset low back pain or lumbar radiculopathy. Eur Spine J. 2018;27(1):60–75.

17. Globe G, Farabaugh RJ, Hawk C, et al. Clinical practice guideline: chiropractic care for low back pain. J Manipulative Physiol Ther. 2016;39(1):1–22.

18. Chenot JF, Greitemann B, Kladny B, Petzke F, Pfingsten M, Schorr SG. Non-specific low back pain. Dtsch Arztebl Int. 2017;114(51-52):883–890.

19. RO Staal JB, Hendriks EJM, Heijmans M, et al. KNGF Clinical Practice Guideline for Physical Therapy in patients with low back pain. 2013. Available from: http://www.ipts.org.il/U_Uploads/dbsAttachedFiles/low_back_pain_practice_guidelines_2013.pdf.

20. State of Colorado Department of Labor and Employment: Division of Worker’s Compensation. Low Back Pain: Medical Treatment Guidelines. 2014:112.

21. Toward Optimized Practice (TOP) Program. Evidence-Informed Primary Care Management of Low Back Pain: Clinical Practice Guidelines. 3rd ed. Institute of Health Economics; 2015:49.

22. Pangarkar SS, Kang DG, Sandbrink F, et al. VA/DoD clinical practice guideline: diagnosis and treatment of low back pain. J Gen Intern Med. 2019;34(11):2620–2629.

23. National Institute for Health and Clinical Excellence (NICE). Low back pain and sciatica in over 16s: assessment and management (NG59). London: National Institute for Health and Clinical Excellence. 2016.

24. Kreiner DS, Hwang SW, Easa JE, et al. An evidence-based clinical guideline for the diagnosis and treatment of lumbar disc herniation with radiculopathy. Spine J. 2014;14(1):180–191.

25. Williams CM, Maher CG, Hancock MJ, et al. Low back pain and best practice care: a survey of general practice physicians. Arch Intern Med. 2010;170(3):271–277.

**SUPPORTING INFORMATION**

Additional supporting information can be found online in the Supporting Information section at the end of this article.