Quality improvement in degenerative spinal surgery: A systematic review of quality indicators and guideline recommendations

R. Bouttelgier[1,2], D. Vanhauwaert[3,4,5], J. Vandersteene[1], A. Buizer[6], O. Van Damme[3], W. Maenhoudt[3,4], J. Van Lerbeirghe[3,4], D. Britton[2]

(1) Department of Neurosurgery, University Hospital Ghent, Ghent, Belgium; (2) Department of surgical sciences, University of Oxford, Oxford, United Kingdom;
(3) Department of Neurosurgery, AZ Delta Hospital, Roeselare, Belgium; (4) Department of Neurosurgery, Jan Yperman Hospital, Ieper, Belgium;
(5) Academic Consultant, Department of Human Structure and Repair, Faculty of Medicine and Health Sciences, Ghent University, Ghent, Belgium;
(6) Department of orthopedic surgery, University Hospital Ghent, Ghent, Belgium

Background

Degenerative spinal diseases are among the leading causes of disability worldwide, with a rising prevalence and corresponding increase in treatment demand. Despite this burden, there is a significant variability and uncertainty in surgical decision-making and outcome assessment. There is a growing and compelling need to ensure that care in degenerative spinal surgery is delivered in a patient-centred and value-based manner – and that reliable data is available to prove it. This dissertation constitutes the first systematic review of both existing quality indicators and guideline recommendations in degenerative spinal surgery.

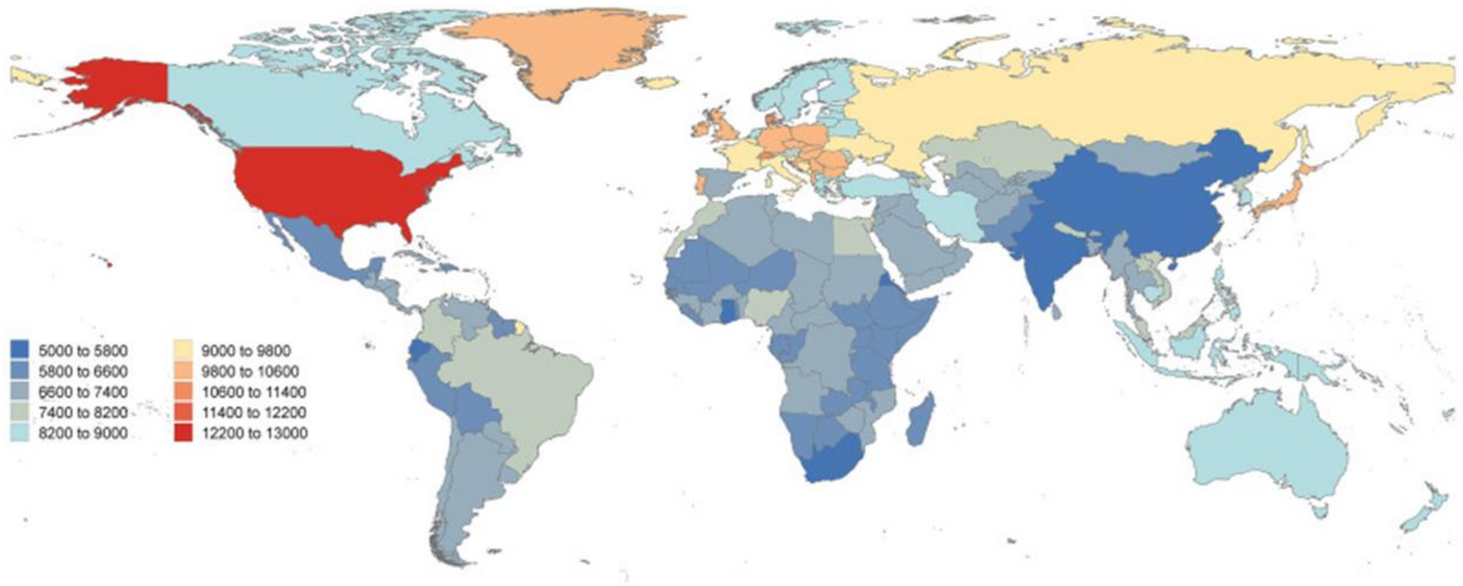


Figure 1. Age-standardised prevalence estimates of low back pain per 100,000 population by country in 2019. Adapted from 'Global Burden of Disease study 2021, The Lancet. 2021;403(10440): 2100-32.'

Methods

The methodology of this systematic review was developed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline, supported by expert guidance from the Bodleian Healthcare Libraries and prospectively registered in the International Prospective Register of Systematic Reviews (PROSPERO). The retrieved guidelines were appraised using the Appraisal of Guidelines for Research and Evaluation Global Rating Scale (AGREE GRS), while the recommendations were categorised according to Donabedian's framework and appraised using the AGREE Recommendation Excellence (AGREE REX) scale.

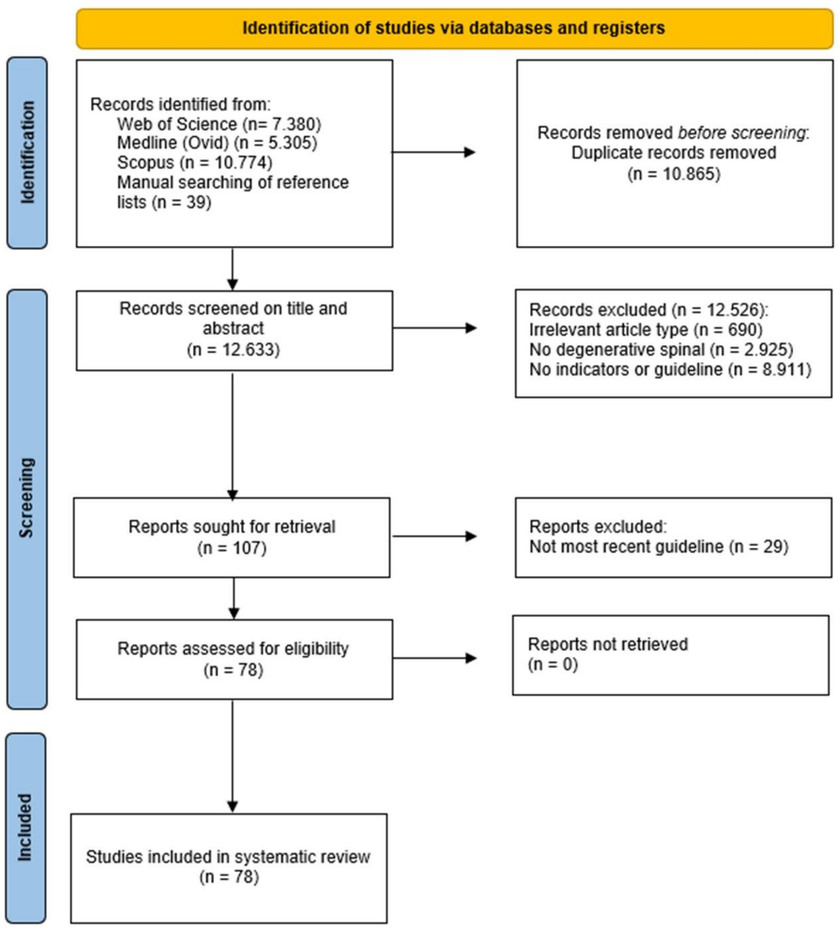


Figure 2. PRISMA flow diagram depicting the steps of study selection. The final number of included papers is shown at the bottom of the diagram.

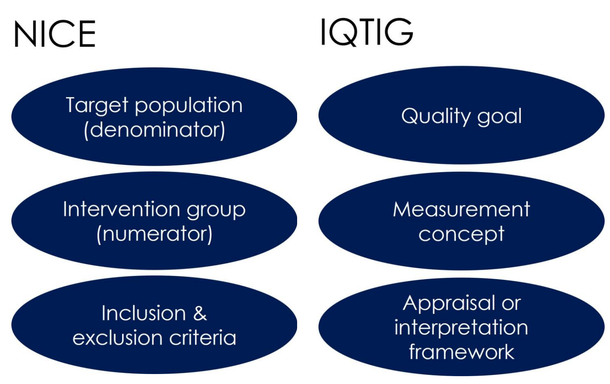
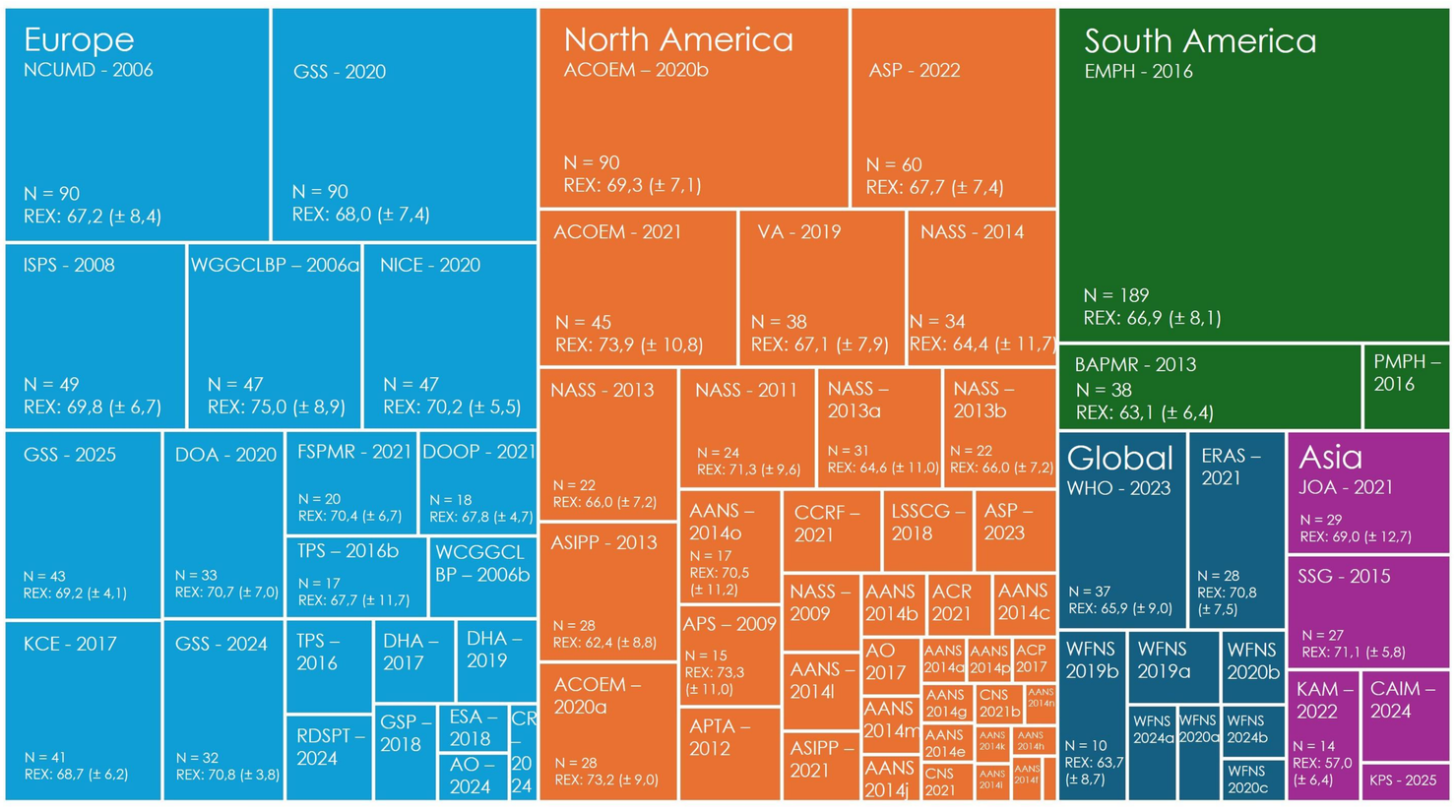


Figure 3. Quality indicator criteria according to the National Institute for Health and Care Excellence (NICE) and German Institute for Quality Assurance and Transparency in Health Care (IQTIG). Despite the comprehensive search, no studies were identified that reported quality indicators in accordance with these definitions.

Results

A total of 23,498 records were screened on title and abstracts. A total of 78 guidelines and 1,641 recommendations were extracted. Despite the comprehensive search strategy and inclusive eligibility criteria, no studies were identified that reported the development, evaluation or use of quality indicators in degenerative spinal surgery. All guidelines and their recommendations were scored individually.

Figure 4. Treemap representing the retrieved guidelines per continent. The size of each block represents the relative number of recommendations in comparison to the total dataset. The number of recommendations along with the average AGREE REX score and standard deviation (%) is reported per guideline. The average normalised score for all recommendations was 68.4% (95% CI [68.2 – 68.6]), with values ranging from 37% to 93%. The highest scores were given to recommendations with a strong evidence base, clear consideration of patient and clinician values, and high clinical applicability.



Conclusion

The insights derived from this systematic review are intended to serve as a foundation for the translation of guideline recommendations into quality indicators. Ideally, this should be performed by a multidisciplinary expert panel to ensure methodological rigour and clinical relevance. The findings of this review may inform spinal registries and help harmonise data collection.