Minimal clinical datasets for spine-related musculoskeletal disorders in primary and outpatient care settings: a scoping review

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Abstract: OBJECTIVES Effective measurement and monitoring of health status in patients with spine-related musculoskeletal (MSK) disorders are essential for providing appropriate care and improving outcomes. Minimal clinical datasets are standardized sets of key data elements and patient-centered outcomes that can be measured and recorded during routine clinical care. Our scoping review aimed to identify and map current evidence on minimal clinical datasets for measuring and monitoring health status in patients with spine-related MSK disorders in primary and outpatient healthcare settings. STUDY DESIGN AND SETTING We followed the JBI (formerly Joanna Briggs Institute) methodology for scoping reviews. MEDLINE, CINAHL, Cochrane Library, Index to Chiropractic Literature, MANTIS, ProQuest Dissertations and Theses Global, and medRxiv preprint repository were searched from database inception to August 1, 2021. Two reviewers independently screened titles and abstracts, full-text articles, and charted the evidence. Findings were synthesized and summarized descriptively. RESULTS After screening 5,583 citations and 301 full-text articles, 104 studies about 32 individual minimal clinical datasets were included. Most minimal clinical datasets were developed for patient populations with spine-involving inflammatory arthritis, nonspecific or degenerative spinal pain, and MSK disorders in general. The minimal clinical datasets varied substantially in terms of the author-reported time-to-complete (1-48 minutes) and the number of items (5-100 items). Fifty percent of the datasets involved healthcare professionals in their development process, and only 28% involved patients. Health domain items were most frequently linked to the components of activities and participation (43.9%) and body functions (28.6%), according to the International Classification of Functioning, Disability, and Health. There is no standardized definition of minimal clinical datasets to measure and monitor health status of patients with spine-related MSK disorders in routine clinical practice. Common core elements identified were practicality, feasibility in a busy routine practice, time efficiency, and the capability to be used across different healthcare settings. CONCLUSION Due to the absence of a standard definition for minimal clinical datasets for patients with spine-related MSK disorders, there is a lack of consistency in the selection of key data elements and patient-centered outcomes that should be included. More research on the implementation and feasibility of minimal clinical datasets in routine care settings is warranted and needed. It is essential to involve all relevant partners in the development process of minimal clinical datasets to ensure successful implementation and adoption in routine primary care.

DOI: https://doi.org/10.1016/j.jclinepi.2023.11.007

Originally published at:
Hofstetter, Léonie; Mikhail, Jérémie; Lalji, Rahim; Kurmann, Astrid; Rabold, Lorene; Côté, Pierre; Tricco, Andrea C; Pagé, Isabelle; Hincapié, Cesar A (2024). Minimal clinical datasets for spine-related musculoskeletal disorders in primary and outpatient care settings: a scoping review. Journal of Clinical Epidemiology, 165:111217.
DOI: https://doi.org/10.1016/j.jclinepi.2023.11.007

Journal of Clinical Epidemiology 165 (2024) 111217

Journal of Clinical Epidemiology

REVIEW ARTICLE

Minimal clinical datasets for spine-related musculoskeletal disorders in primary and outpatient care settings: a scoping review

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Accepted 7 November 2023; Published online 11 November 2023

Abstract

Objectives: Effective measurement and monitoring of health status in patients with spine-related musculoskeletal (MSK) disorders are essential for providing appropriate care and improving outcomes. Minimal clinical datasets are standardized sets of key data elements and patient-centered outcomes that can be measured and recorded during routine clinical care. Our scoping review aimed to identify and map current evidence on minimal clinical datasets for measuring and monitoring health status in patients with spine-related MSK disorders in primary and outpatient healthcare settings.

Study Design and Setting: We followed the JBI (formerly Joanna Briggs Institute) methodology for scoping reviews. MEDLINE, CINAHL, Cochrane Library, Index to Chiropractic Literature, MANTIS, ProQuest Dissertations and Theses Global, and medRxiv preprint repository were searched from database inception to August 1, 2021. Two reviewers independently screened titles and abstracts, full-text articles, and charted the evidence. Findings were synthesized and summarized descriptively.

Results: After screening 5,583 citations and 301 full-text articles, 104 studies about 32 individual minimal clinical datasets were included. Most minimal clinical datasets were developed for patient populations with spine-involving inflammatory arthritis, nonspecific or degenerative spinal pain, and MSK disorders in general. The minimal clinical datasets varied substantially in terms of the author-reported time-to-complete (1−48 minutes) and the number of items (5−100 items). Fifty percent of the datasets involved healthcare professionals in their development process, and only 28% involved patients. Health domain items were most frequently linked to the components of activities and participation (43.9%) and body functions (28.6%), according to the International Classification of Functioning, Disability, and Health. There is no standardized definition of minimal clinical datasets to measure and monitor health status of patients with

Funding: A.C.T. is funded by a Tier 2 Canada Research Chair in Knowledge Synthesis. P.C. is supported by a Canada Research Chair in Disability Prevention and Rehabilitation (grant number: 950-231891). C.A.H. reports grants from the Swiss National Science Foundation (SNSF) and the European Centre for Chiropractic Research Excellence (ECCRE) outside the submitted work. All other authors report no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years. All authors report no other relationships or activities that could appear to have influenced the submitted work.

Summary: We conducted a scoping review to better understand how healthcare providers measure and monitor the health of patients with spine-related musculoskeletal disorders. We looked at "minimal clinical datasets," which are standardized sets of key health information routinely recorded during patient care. We found 104 studies discussing 32 different datasets. These datasets were mainly made for patients with different spine problems like arthritis, general back pain, and other musculoskeletal disorders. The datasets varied widely, with some taking just a minute to complete and others up to 48 minutes. There is no set definition for what these datasets should include, and this causes inconsistency in how healthcare providers use them. More research is needed to figure out how to use minimal clinical datasets effectively in routine patient care, and it is crucial to involve patients in their development to ensure successful adoption.

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https://doi.org/10.1016/j.jclinepi.2023.11.007

spine-related MSK disorders in routine clinical practice. Common core elements identified were practicality, feasibility in a busy routine practice, time efficiency, and the capability to be used across different healthcare settings.

Conclusion: Due to the absence of a standard definition for minimal clinical datasets for patients with spine-related MSK disorders, there is a lack of consistency in the selection of key data elements and patient-centered outcomes that should be included. More research on the implementation and feasibility of minimal clinical datasets in routine care settings is warranted and needed. It is essential to involve all relevant partners in the development process of minimal clinical datasets to ensure successful implementation and adoption in routine primary care.

Keywords: Minimal clinical dataset; Core outcome set; Musculoskeletal pain; Neck pain; Back pain; Primary care; Outpatient care; Routine care; Scoping review

1. Introduction

Musculoskeletal (MSK) disorders are a major problem of the global burden of disease [1,2] and are associated with decreased general physical [3] and mental health [4], high healthcare utilization, and costs [5]. Specifically, neck and low back pain accounted for 88 million years lived with disability in 2019 [1]. Spine-related MSK conditions can have a substantial impact on the quality of life of affected individuals, and their management can be complex and challenging for healthcare professionals [6]. High-quality routine data collection is key to assess and optimize patient-centered care and healthcare quality [7]. Information on effectiveness, efficiency, appropriateness, safety, and patient experience of the different managing strategies is needed to monitor health service performance [8]. In real-world clinical practice, standardized data collection is often limited due to unstructured and incomplete data sources [9], fear of additional clinical work load, and absence of clear recommendations on key data elements and the data collection process [10]. Also, the lack of uniformity in outcome assessment diminishes the potential for data aggregation and comparison across different clinical settings, registries, and studies [11]. Efforts have been made to implement standardized core outcome sets for clinical research purposes [12]; however, the field of MSK disorders healthcare has not yet developed a universal set of outcome measures for MSK spine pain in clinical practice.

How to measure and monitor patient health status and outcomes in daily practice is challenging. Many different patient-reported outcome measures (PROMs), patient-reported experience measures, and clinical tests exist. A minimal clinical dataset combines measures relevant to patients and healthcare professionals to facilitate communication, shared clinical decision-making, and evaluation of treatment outcomes [13]. Such a dataset should be developed to collect and compare data across different treatment pathways and bridge the gap between outcomes feasible for use in routine clinical practice, quality improvement, benchmarking, and feedback initiatives [14,15]. Engagement of patients, clinicians, and other end-users in the development process is crucial for successful implementation of minimal clinical datasets and to ensure its relevance and acceptability [16]. To be practical and to minimize response burden, they should be as brief as possible and easy to interpret [17].

We undertook a scoping review to map the currently existing literature on minimal clinical datasets for measuring and monitoring health status in patients with spine-related MSK disorders in primary and outpatient healthcare settings. According to the prespecified research questions outlined in our published protocol [18], we aimed to describe the (1) general characteristics of minimal clinical datasets for spine-related MSK disorders in primary and outpatient care settings; (2) definition(s) of the minimal clinical datasets; (3) development of the minimal clinical datasets, including the involvement of end-users in the development process; (4) psychometric properties, implementation, acceptability, and usability of the minimal clinical datasets; and (5) use in routine primary and outpatient healthcare settings, if the minimal clinical dataset was primarily designed for clinical research.

2. Methods

2.1. Protocol and registration

The protocol for this scoping review was developed in accordance with the 2020 JBI (formerly Joanna Briggs Institute) methodology for scoping reviews [19,20], registered on the Center for Open Science Framework [21] (https://osf.io/fkw5b) and published previously [18]. We used the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews checklist to structure our report [22]. Because our full methods are available in our protocol [18], they are briefly outlined below.

2.2. Eligibility criteria

2.2.1. Participants

We included studies describing or investigating minimal clinical datasets for patients with spine-related MSK disorders, including patients of all ages and genders. A list of relevant MSK spine-related disorders was prespecified

What is new?

Key findings

- Minimal clinical datasets varied in terms of the author-reported time-to-complete and the number of items for the most common patient populations with spine-involving inflammatory arthritis, nonspecific or degenerative spinal pain, and MSK disorders in general.
- Fifty percent of the datasets involved healthcare professionals in their development process, although only 28% involved patients.

What this adds to what was known?

- Common terms identified in the definitions of included minimal clinical datasets were generalizability across different health professions and settings, feasibility in busy routine clinical practice, relevance and acceptance by patients and end-users, and robust psychometric properties.

What is the implication and what should change now?

- End-users are encouraged to work together to establish consensus-based standardized conceptualizations for minimal clinical datasets that will enable consistent high-quality data collection in routine clinical practice.

using the International Classification of Diseases 11th Revision [23] and presented in online supplementary appendix eTable 1. Studies investigating patients with spine-related pathologies of non-MSK origin (e.g., infection, malignancy, spinal cord injury, osteoporotic spinal fractures) were excluded [24].

2.2.2. Concept

We focused on minimal clinical datasets that are intended to be used in real-world primary care and outpatient clinical practice settings for spine-related MSK disorders. According to our definition, a minimal clinical dataset (1) is a standardized set of key data elements and patient-centered outcomes that should be reported and measured; (2) is practical, feasible, and time-efficient to use during routine clinical care; and (3) can include demographic information, questionnaires, clinical examination, and laboratory or imaging findings.

2.2.3. Context

Our context was limited to routine clinical practice in primary care and outpatient settings. If a minimal clinical dataset was developed for clinical research contexts, we deemed it eligible if the report suggested that it could also be used in routine clinical practice.

2.2.4. Types of evidence sources

Eligible study designs included consensus-based studies, all types of reviews of the literature, experimental, observational, feasibility, and validation studies. Case reports, case series, editorials, commentaries, and letters to the editor were excluded. Studies published in English, German, French, Italian, and Spanish were considered as there was fluency for these languages on our review team.

2.3. Search strategy

The search strategy was developed through collaboration between the research team and an experienced librarian, and then peer-reviewed by an independent librarian using the Peer Review of Electronic Search Strategies checklist [25]. MEDLINE, CINAHL, Cochrane Library, Index to chiropractic literature, MANTIS, ProQuest Dissertations and Theses Global, and medRxiv preprint repository were searched from inception until August 1, 2021. In addition, potentially relevant clinical trials investigating minimal clinical datasets for spine-related MSK disorders were searched on ClinicalTrials.gov and a supplemental search of the gray literature was done via a Google search for ".org" and ".gov" domains and spine organizations (North American Spine Association, EUROSPINE, and the Canadian Spine Society). Reference lists of included studies and relevant reviews were mined for any additional relevant reports. If needed, authors of primary sources were contacted for further information. The search strategis for each data source were published in the protocol [18].

2.4. Study selection

Pairs of independent reviewers (L.H., J.M., A.K., L.R.) screened titles and abstracts for relevance and eligibility for the review. Similarly, full texts of potentially eligible reports were screened and reasons for exclusion documented. Any discrepancies between reviewers that arose at each stage of the study selection process were resolved through consensus and arbitration by a third reviewer (C.A.H.), if needed. Before both steps of the study selection process, we pilot-tested using random samples of 25 citations and 12 full-text articles, respectively. Discrepancies were discussed in the review team and the full study selection process started once $\geq$75% agreement on record eligibility and selection was achieved.

2.5. Data charting

Standardized data charting forms including all relevant data and information addressing our research questions were prespecified and presented in the protocol [18]. The forms were pilot-tested on three studies by two reviewers (L.H. and J.M.) and refined through an iterative process

to improve the relevance and information value of data charting. One reviewer performed extraction of general publication information (A.K. and L.R.) and of detailed characteristics of the minimal clinical dataset (L.H. and J.M.) and then a second reviewer (L.H. and J.M.) independently verified charted data. Discrepancies were resolved by consensus or a third reviewer (C.H.), as needed.

2.5.1. Classification of health domains

As prespecified in our protocol [18], each item of the included minimal clinical datasets was classified in health and health-related domains using the World Health Organization's International Classification of Functioning, Disability, and Health (ICF) [26]. The ICF framework includes the following four main constructs: body functions, body structures, activities and participation, and environment factors with a hierarchy of up to four levels within each construct. Each item of the minimal clinical datasets was linked using the ICF linking rules developed and refined by Cieza et al. [27]. We also followed the specific rules, adapted from Nicol et al. [28]. To acquire a thorough understanding of the ICF structure and concepts, the e-Learning tool developed by the World Health Organization was used [29]. Every item was linked independently by two reviewers (L.H. and R.L.) and discrepancies resolved through consensus. To increase feasibility due to limited resources, we decided to link to the first level of the ICF hierarchy instead of the granular levels. If consensus with the linking was not reached, remaining discrepancies were resolved through consensus and arbitration by a third reviewer (C.A.H.).

Before the linking process, three pilot tests were conducted. Discrepancies were discussed in the review team and the full linking process started once $\geq$75% agreement on item linking was achieved. Some items were already linked by another research group according to the same refined linking rules and could be adopted in agreement with the authors [28].

3. Results

3.1. Literature search

After screening 5,488 citations from the database search, 95 citations from the Google advanced search, 12 citations from reference mining, and 301 full-text articles were screened for eligibility and inclusion. Subsequently, 104 studies about 32 individual minimal clinical datasets were included (Fig. 1). One included report was only available as a conference abstract [30]. During full-text review, articles were most often excluded based on wrong concept (e.g., simple PROM questionnaire not defined as minimal set of key data, $n = 151$), wrong context (e.g., inpatient hospital setting; $n = 33$), and wrong publication type ($n = 6$). The list of excluded full-text citations with exclusion reasons is provided in online supplementary appendix eTable 2.

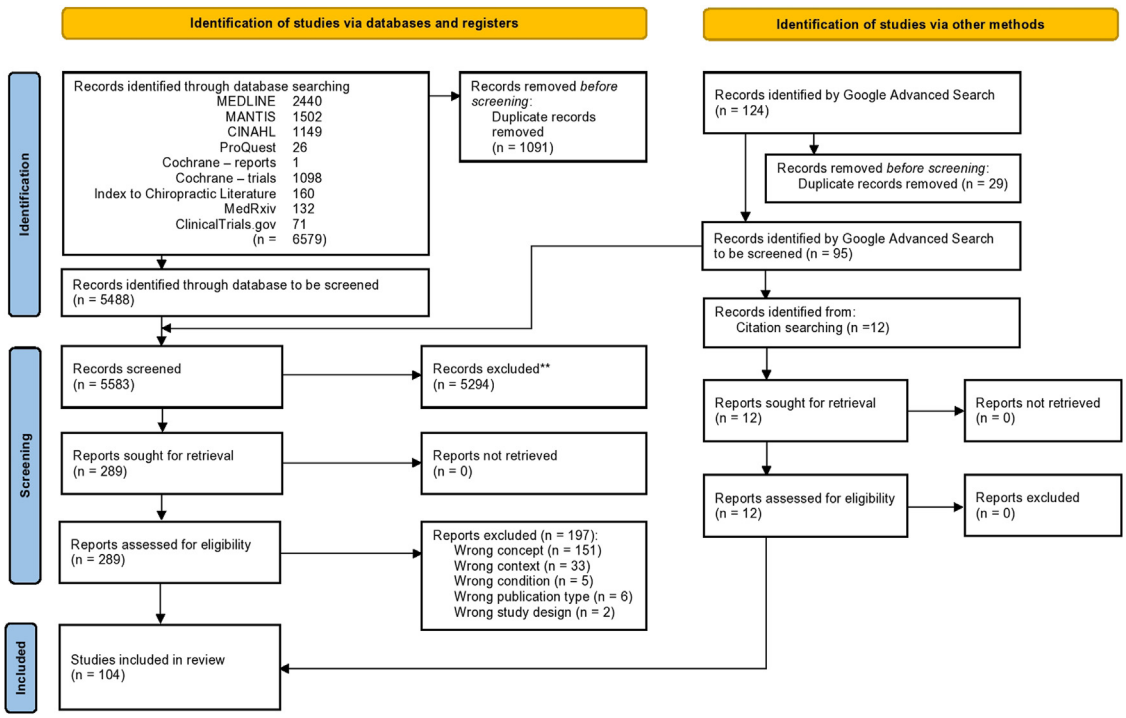

Fig. 1. PRISMA study flow diagram. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

3.2. Report characteristics

The 104 included reports were published between 1987 and 2021. More than half (51%) of the reports were published after 2015, suggesting that minimal clinical datasets are increasingly gaining relevance and interest in the more recent literature. Most of the reports (n = 62, 58%) were validation or linguistic validation studies. Four included reports were knowledge synthesis studies not involving the development or validation of a new minimal clinical dataset [31−34]. Full study and patient characteristic details for each report are presented in online supplemental appendix eTable 3.

3.3. Characteristics of minimal clinical datasets

Table 1 presents a brief summary of the 32 individual minimal clinical datasets (see fully detailed table of characteristics in online supplemental appendix eTable 4). Eleven (34%) of the minimal clinical datasets were developed for primary and outpatient care and research purposes. Most commonly, the intended use of the minimal clinical dataset was for patients with spine-involving inflammatory arthritis (12 datasets), followed by nonspecific or degenerative spinal pain (10 datasets), MSK disorders in general (seven datasets), patients with whiplash or spine trauma (three datasets), and spinal deformities (three datasets). Fourteen minimal clinical datasets required information gathering from both the patient and healthcare professional, whereas 13 datasets gather information only from the patient, and five used only the healthcare professional as data provider. Fifteen datasets consisted of questionnaires alone (either a single or a set of questionnaires), 11 consisted of a combination of questionnaires, clinical examination findings, laboratory tests and/or x-ray, and six were based on the framework of the ICF. The number of items per minimal clinical dataset ranged from 5 to 100 items, with author-reported time-to-complete ranging from 1 to 48 minutes.

Stratified by condition, we found 5−80 items and 2−45 minutes for spine-involving inflammatory arthritis datasets, 7−100 items and 2−48 minutes for nonspecific or degenerative spinal pain datasets, and 6−55 items and 2−35 minutes for MSK disorder datasets. Only 41% (n = 13) of the minimal clinical datasets had available information on time-to-complete statistics. All available information on psychometric properties and interpretability for each minimal clinical dataset are detailed in online supplementary appendix eTable 5. Sixteen of the 32 individual minimal clinical datasets did not have any information on their psychometric properties available. Test-retest reliability of the remaining datasets ranged from intraclass correlation coefficient 0.63−0.99. Thirty four (91.9%) of 37 studies reporting intraclass correlation coefficient had a value $\geq$ 0.75 indicating good reliability, and 8 (21.6%) studies a value $>$ 0.90 indicating excellent reliability [132].

3.4. Linking of minimal clinical dataset items to ICF categories

One minimal clinical dataset could not be linked because it was not possible to retrieve the questionnaire from the authors after three requests [94], and another one was only available as a conference abstract [101]. Two hundred thirty two of 801 items were already linked by another research group and could be adopted without duplicate linking [28]. Eighty five items were linked to a main concept and an additional concept. Fifty four unique ICF categories were identified, and the 20 most common categories presented in Table 2. The items were most frequently linked to the components of activities and participation (389 items, 43.9%), followed by body functions (253 items, 28.6%), environmental factors (29 items, 3.3%), and body structures (17 items, 1.9%). A majority of the concepts that we linked to the personal factors domain were related to management of condition and beliefs about health. One hundred forty one of 886 concepts (15.9%) were not defined or were not concepts that are covered by the ICF.

3.4.1. Inter-rater reliability

The inter-rater agreement on the linking of the concepts to the ICF at level 1 was κ = 0.72, although simple observer agreement was 75.2%. This demonstrated ‘‘substantial’’ agreement.

3.5. Definition and core elements of minimal clinical datasets

Currently there is no universally accepted definition for a minimal clinical dataset. Several common terms and characteristics that are often included in the definitions of the minimal clinical datasets could be identified. One common aspect found in the definitions is the emphasis on standardization and generalizability across different health professions, settings, and treatment pathways [14,35,45,47,94,97,102,104,120,124,131]. Feasibility in busy routine clinical practice is another key consideration, which requires the minimal clinical dataset to be simple and easily interpretable [35,81,92,98,129], brief [47,81,97,126], and relevant to and acceptable by patients and end-users [14,15,45,94,102]. Another aspect highlighted in the definitions is the importance of robust psychometric properties ensuring good reliability, validity, and responsiveness [14,35,76,81,88,94,102,122,126].

3.6. Development and implementation of minimal clinical datasets

Sixty nine percent (22/32) of the minimal clinical datasets involved end-users in the development process. Most commonly, healthcare professionals (n = 16 datasets), patients (n = 9 datasets), or other end-users (i.e., service and healthcare managers, insurance companies; n = 7

Table 1. Summary table of minimal clinical datasets for spine-related MSK disorders

Minimal clinical dataset[e]	Setting	*n* items	Stakeholders	Minimal clinical dataset	Setting	*n* items	Stakeholders
MSK-HQ [35–44]	RC, Rehab	13	P, C, R, O	SRS adult spinal deformity CS [45]	RC, Res	58	C, R
COMI [17,46–74]	RC, Rehab, Res	7	O	AS CS [75]	RC, Res	≥5	O
Nordic MSK Q [76–79]	Occup, OutC	52	NR	ASAS AS CS [80]	RC	25	NR
MSK-PROM [81]	OutC	6	P, C, R, O	ASAS biologic registry CS [82]	Reg	26	O
Spinal disorders CS [83]	RC, Res	100	NR	ASDAS [84–89]	RC, Res	5	O
Ext Aberdeen Back Pain Scale [90,91]	RC, Rehab, CA, Res	29	NR	SASDAS [92,93]	RC	5	NR
CSOQ [94,95]	RC, Rehab, Res	35	C	AS – Multidimensional PROM [96]	RC	39	NR
Rehab MSK CS-NO [97]	Rehab	55	P, C, R	RAPID3 [98]	RC	15	NR
Rehab MSK CS-GE [99]	Rehab	24[a]; 77[b]	P, O	Psoriatic arthritis - bio effect CS [100]	RC	17	P, C, O
nsLBP CS [15]	RC, QI	38	P, C, O	Pediatric rheuma MSK CS [101]	RC	NR	C
ICHOM LBP [102,103]	RC	64	P, C	ICF CS LBP [33,34,104–119]	RC, Rehab	78[c]; 12[d]	C
ICHOM IA [120,121]	RC	19	P, C, O	ICF CS LBP self-report checklist [122,123]	RC	34	NR
Deg lumbar spondylolisthesis CS [14]	RC, Reg, Res, QI	30–34	C, O	ICF CS MSK [124,125]	RC	39	NR
CWOM [126]	RC, Ins	5	NR	ICF CS vocational rehabilitation [127]	Rehab	18	C
SROM spine trauma [128]	RC, Res	21	C	ICF CS spine trauma [129]	RC, Res	25	P, C, R
Adol/YounAd spinal deformity CS [130]	Reg, QI	28	O	ICF CS AS [131]	RC, Res	80	C

Abbreviations: Adol/YounAd, adolescent and young adults; AS, ankylosing spondylitis; ASAS, assessment of spondyloarthritis international society; ASDAS, ankylosing spondylitis disease activity score; Bio, biologic; C, clinicians; CA, clinical audits; COMI, core outcome measures index; CS, core set; CSOQ, cervical spine outcomes questionnaire; CWOM, core whiplash outcome measure; Deg, degenerative; Ext, extended; GE, German; ICHOM, international consortium for health outcomes; IA, inflammatory arthritis; Ins, insurance population; MSK, musculoskeletal; MSK-HQ, musculoskeletal health questionnaire; MSK-PROM, musculoskeletal patient-reported outcome measure; NO, Norwegian; NR, not reported; nsLBP, nonspecific low back pain; O, other stakeholders; Occup, occupational; OutC, outpatient care; P, patients; PROM, patient-reported outcome measure; Q, questionnaire; QI, quality improvement; R, researchers; RAPID3, routine assessment of patient index data 3; RC, routine care; Reg, registry; Rehab, rehabilitation; Res, research; Rheuma, rheumatology; SASDAS, simplified version of ASDAS; SROM, surgeon-reported outcome measure; SRS, scoliosis research society.

[a] LBP and ankylosing spondylitis sets.
[b] Rheumatoid arthritis set.
[c] Full core set.
[d] Revised brief core set.
[e] See fully detailed table of characteristics of minimal clinical datasets in online supplemental appendix eTable 4.

datasets) were involved. Less than half of the minimal clinical datasets ($n = 15$, 47%) provided information on implementation or feasibility in routine care. Summarized information can be found in Table 1; more detailed information is presented in supplementary appendix eTable 6.

4. Discussion

We identified 104 studies about 32 individual minimal clinical datasets for measuring and monitoring health status and outcomes in patients with spine-related MSK disorders in primary and outpatient care settings. Most of them were developed for patients with spine-involving inflammatory arthritis, nonspecific or degenerative spinal pain, and MSK disorders in general, whereas only a few minimal clinical datasets exist for spine trauma and spinal deformities. Our results identified several gaps in the literature. First, there is currently no universally accepted definition for a minimal clinical dataset. The minimal clinical datasets varied in terms of the author-reported time-to-complete and the number of items. Stratified by condition, we found the following values: 5–80 items and 2–45 minutes for spine-involving inflammatory arthritis datasets, 7–100 items and 2–48 minutes for nonspecific or degenerative spinal pain datasets, and 6–55 items and 2–35 minutes for MSK disorder datasets.

Table 2. Frequency of the 20 most common concepts appearing in minimal clinical datasets

ICF category	Description	*n*	%
d4	Mobility	163	18.4%
b2	Sensory functions and pain	123	13.9%
Nc	Not covered by the ICF framework	92	10.4%
b1	Mental functions	74	8.4%
d5	Self-care	51	5.8%
d6, d8	Work-related (domestic life and major life areas)	51	5.8%
b7	Neuromusculoskeletal and movement-related functions	42	4.7%
D	Activities and participation	33	3.7%
d6	Domestic life	31	3.5%
pf_management of condition	Personal factor – management of condition	27	3%
d9	Community, social, and civic life	23	2.6%
e1	Products and technology	22	2.5%
d8	Major life areas	15	1.7%
s7	Structures related to movement	14	1.6%
b4	Functions of the cardiovascular, hematological, immunological, and respiratory system	13	1.5%
nc-hc	Not covered – health condition	13	1.5%
nd	Not defined	12	1.4%
nd-gh	Not defined – general health	9	1%
d7	Interpersonal interactions and relationships	8	0.9%
pf_beliefs about health	Personal factor – beliefs about health	6	0.7%

These findings suggest that there is no consensus on the optimal number of items or maximum amount of time-to-complete a so called ''minimal'' clinical dataset. Also, half of the minimal clinical datasets lack information on their psychometric properties. The most common ICF categories covered by the minimal clinical datasets were mobility (18.4%), sensory functions and pain (13.9%), mental functions (8.4%), self-care (5.8%), and work-related concepts (5.8%).

Feasibility of use of a minimal clinical dataset in busy routine clinical practice is a key consideration, but less than half (47%) of the datasets provided information on their implementation or feasibility in routine clinical care. To ensure the effective adoption of minimal clinical datasets for patients with spine-related MSK disorders in routine clinical practice, it is essential to involve all relevant stakeholders in the development process [16]. We found that 69% of the datasets engaged end-users, but healthcare professionals and patients were only involved in 50% and 28%, respectively. This finding is similar to the results of a recent systematic review, which showed that less than 50% of core outcome sets for use in routine care involved patient stakeholders [133].

Due to the amount and variety of validated and frequently used questionnaires in the field of MSK healthcare, the selection of PROMs and other key data elements can be challenging [134]. They are usually developed for different conditions or patient populations by independent working research groups, but typically focus on a limited number of generic concepts [135]. Minimal clinical datasets are an ideal concept to overcome this challenge; a progress has been made with the International Consortium for Health Outcomes Measurement group providing an internationally agreed set of PROMs and case-mix variables for common MSK conditions [103,121].

4.1. Strengths and limitations

The strengths of our scoping review include a comprehensive literature search of multiple electronic databases as well as gray literature and inclusion of records in several languages. We also followed the rigorous scoping review methods suggested by the JBI methodology and classified health domains of minimal clinical datasets according to ICF. There were also several limitations. The identification and selection of minimal clinical datasets proved to be challenging due to the absence of a clear definition and variations in nomenclature. Despite our efforts to minimize this limitation through a broad search strategy, it is possible that some datasets may have been missed. In addition, minimal clinical datasets are a young and evolving substantive area, and new datasets may have emerged since our systematic search in August 2021. In October 2023, we ran a last focused update search for highly relevant key papers and identified a dataset for community and primary care MSK services [136], recommendations for a pelvic girdle pain core outcome set [137], and linguistic validation studies for MSK health questionnaire [138–140], core outcome

measures index [141], and the Nordic MSK questionnaire [142].

4.2. Future implications

Due to the absence of a standard definition for minimal clinical datasets for patients with spine-related MSK disorders, there is a lack of consistency in the selection of key data elements and patient-centered outcomes that should be included in such datasets. This inconsistency hinders the comparability and interoperability of data, limiting the ability to derive meaningful insights and perform robust analyses across different healthcare settings. To address this gap, stakeholders, including healthcare professionals, researchers, policymakers, and patient representatives, should work together to establish a standardized definition for a minimal clinical dataset. Such a definition should encompass key characteristics, such as practicality, feasibility in busy routine practice, time efficiency, relevance to patient expectations of treatment outcome, and the ability to be used across different healthcare settings. The existence or adoption of a minimal clinical dataset does not imply that data and outcome collection in a specific context must be limited to those in the set. Rather, the key data elements are expected to be consistently gathered and reported as a minimum requirement. This standardization simplifies data collection and comparison across various healthcare pathways, although clinicians and other stakeholders might also include other outcomes of particular relevance to their specific setting [12].

5. Conclusion

Routine collection of high-quality real-world data using minimal clinical datasets is crucial for improving the quality of healthcare provided to patients with spine-related MSK disorders in primary and outpatient settings. Due to the absence of a standard definition for minimal clinical datasets for patients with spine-related MSK disorders, there is a lack of consistency in the selection of key data elements and patient-centered outcomes that should be included. Common terms identified in the definitions of included minimal clinical datasets were generalizability across different health professions and settings, feasibility in busy routine clinical practice, relevance and acceptance by patients and end-users, and robust psychometric properties. It is essential to involve all relevant partners in the development process of minimal clinical datasets to ensure successful implementation and adoption in routine primary care.

CRediT authorship contribution statement

Léonie Hofstetter: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Writing − original draft, Visualization, Project administration. **Jérémie Mikhail:** Conceptualization, Methodology, Validation, Investigation. **Rahim Lalji:** Validation, Investigation, Visualization. **Astrid Kurmann:** Validation, Investigation. **Lorene Rabold:** Validation, Investigation. **Pierre Côté:** Conceptualization, Methodology, Writing − review & editing. **Andrea C. Tricco:** Conceptualization, Methodology, Writing − review & editing. **Isabelle Pagé:** Conceptualization, Methodology. **Cesar A. Hincapié:** Conceptualization, Methodology, Resources, Writing − review & editing, Project administration, Supervision.

Data availability

Data will be made available on request.

Declaration of competing interest

A.C.T. is an editor of Journal of Clinical Epidemiology. She had no part in the editorial or peer-review process of this manuscript.

Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jclinepi.2023.11.007.

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