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Original Article

Comprehensive Assessment of Specific Patient-Reported Outcome Measures for Hand and Wrist Conditions in Adults: A Scoping Review ☆

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ABSTRACT

Purpose: This scoping review aims to assess the various patient-reported outcome measures (PROMs) specifically developed and validated for patients with hand and wrist conditions. The objective is to provide healthcare professionals with an up-to-date overview of the available PROMs, empowering them to make informed decisions in selecting the most appropriate PROM to support personalized care for their patients.

Methods: The review adhered to the PRISMA-ScR 2018 checklist and involved a systematic literature search of MEDLINE, Embase, and Cochrane CENTRAL Registry of Trials. Inclusion and exclusion criteria were established, and 2 independent reviewers screened and selected relevant articles. Data were extracted from full-text articles to identify the conditions of the hand or wrist and the PROMs used for measurement.

☆ **Reprint request:** None declared.

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Results: A total of 22 PROMs for hand and wrist conditions were identified, with the Disabilities of the Arm, Shoulder, and Hand (DASH) being the most frequently employed, followed by the Patient Rated Wrist Evaluation and QuickDASH. The utilization of these PROMs was prominent in articles focusing on traumatic hand and wrist conditions, nerve conditions, and joint/arthrosis problems. Additionally, 67 articles (19.7%) employed more than one hand/wrist-specific PROM, and 8 generic PROMs were used in conjunction with hand/wrist-specific PROMs.

Conclusion: This review offers a comprehensive overview of the available PROMs to assist healthcare professionals in selecting the most suitable measure for personalized care. The growing use and development of PROMs in this field highlights their increasing relevance in enhancing patient outcomes.

Study design: Scoping Review

Introduction

Hand and wrist conditions can significantly affect the lives of patients, causing pain, deformity, and functional impairment. Traditionally, healthcare assessments have primarily relied on objective measures, such as medical tests, physical exams, and clinical observations. However, in recent literature, there has been a growing recognition of the importance of patient-reported outcome measures (PROMs) as a valuable tool for assessing the impact of these conditions on patients' lives and evaluating the effectiveness of interventions.[1] By allowing patients to report their symptoms, functional limitations, and overall well-being from their own perspective, PROMs provide a comprehensive understanding of the impact of hand and wrist conditions on their lives.[2,3] This patient-centered approach facilitates personalized care, tailored interventions, and better monitoring of treatment effectiveness over time.[3]

PROMs are standardized and validated questionnaires that collect information on health outcomes directly from patients.[1] These measures can be broadly classified into generic and specific categories.[2] Generic PROMs are valuable in their ability to provide a broad perspective and allow for comparisons of health-related quality of life (HR-QoL) across different conditions. However, their utility in capturing precise hand/wrist-specific outcomes can be limited due to their general nature. In contrast, hand/wrist-specific PROMs are measures tailored to align closely with the unique challenges and experiences faced by individuals with hand and wrist conditions.[3] By focusing on the specific symptoms, functional limitations, and effects associated with these conditions, specific PROMs can offer a more accurate and meaningful assessment of treatment outcomes at the individual level.[4] For patients with hand and wrist conditions, numerous specific PROMs have been developed and validated over the past 3 decades, such as the Patient-Rated Wrist Evaluation (PRWE),[5] Boston Carpal Tunnel Questionnaire (BCTQ),[6] and the Disability of the Arm, Shoulder, and Hand questionnaire (DASH).[7] However, with multiple available options, healthcare professionals often face challenges when selecting the most appropriate hand/wrist-specific PROM to use in a clinical setting.

Several systematic reviews have examined the use of specific PROMs in hand surgery, with the most comprehensive search conducted in 2020.[8–12] Since then, the field has seen a substantial increase (over 25%) in published articles on PROMs in hand surgery, reflecting a growing emphasis on patient-centered care. This surge has been driven by advancements in technology, the development of new hand-specific PROMs,[13] and regulatory demands for patient-reported outcomes in clinical re-

search. However, this proliferation has also introduced complexity, as there is currently no standardized guidance to help clinicians and researchers select the most appropriate PROM for specific purposes.

Therefore, our objective was to comprehensively assess the various PROMs specifically developed and validated for patients with hand and wrist conditions. By conducting a scoping review, we aimed to synthesize the latest evidence and provide healthcare professionals with an up-to-date overview of the available hand and wrist-specific PROMs. This will empower them to make informed decisions when selecting the most appropriate PROMs for both clinical and research purposes.

Methods

This scoping review adhered to the PRISMA-ScR 2018 checklist for scoping reviews (Preferred Reporting Items for Systematic Reviews and Meta-Analysis).[14] A review protocol was registered in PROSPERO as CRD42022369752. A systematic literature search of studies on PROMs used in patients suffering various hand and wrist conditions was conducted by an experienced medical librarian in MEDLINE ALL via Ovid (1946-present), Embase via embase.com (1974-present), and Cochrane CENTRAL registry of Trials via Wiley (1992-present). The search terms include patient-reported outcome, quality of life, and hand conditions (Supp. 1). The search was completed on October 31, 2022. Inclusion and exclusion criteria were established prior to the search (Figure 1). All articles using a PROM to measure outcomes of patients with hand and wrist conditions were considered eligible. Articles that solely included patients under the age of 18 years and patients with hand and wrist conditions caused by diseases of the central nervous system (e.g., multiple sclerosis, stroke, and Parkinson's disease) were excluded. In addition, articles using only generic PROMs in a non–hand-related context, PROM development and psychometric analysis articles, translated versions of original PROMs, case reports, conference abstracts, letters to the editor, theses, commentaries, literature reviews, animal studies, and articles not written in English were excluded.

All articles were imported into Rayyan, a web tool designed for screening and selecting studies,[15] and deduplicated using the method described by Bramer et al.[16] Two independent reviewers screened all titles and abstracts of the retrieved articles in a blinded fashion. A discussion with a third reviewer resolved any discrepancies. Subsequently, the reviewers performed full-text screening of all selected articles to determine eligibility.

Data were extracted from full-text articles and recorded in a predesigned standardized table. The variables collected were conditions of the hand or wrist, PROMs used for measurement, country of origin, and year of publication. All PROMs were systematically organized in a comprehensive table. The table included essential information such as the specific dimensions and domains measured, total number of items, scoring system utilized, and the primary objective of each PROM.

Results

A total of 8760 articles were identified. After duplicate removal and abstract review, 465 articles were selected for full-text analysis. Following an additional round of exclusion based on the predetermined criteria, a final database comprising 340 articles was assembled (Figure 1). The included articles exhibited a diverse range of origins, spanning 41 countries, with prominent contributions from the United States (n=58), followed by the Netherlands (n=37) and the United Kingdom (n=21), as illustrated in Table 1. As depicted in Figure 2, the temporal distribution of articles demonstrated an upward trend over time, particularly within the past decade.

A total of 22 specific PROMs for hand and wrist conditions were identified in the literature (Table 2). Among these PROMs, the DASH was the most frequently used, featured in 134 articles, followed by the Patient Rated Wrist (and Hand) Evaluation (PRWE) in 90 articles and the QuickDASH in 75 articles. The utilization of these PROMs was prominent in articles focusing on traumatic hand and wrist conditions (268 articles), nerve conditions (110 articles), and joint/arthrosis (99 articles). Table 3 provides an overview of the various hand and wrist conditions and corresponding PROMs used. Specifically, for trauma patients, the most commonly used PROMs were the DASH, followed by the PRWE and QuickDASH, while for nerve conditions, the BCTQ was most common, followed by the

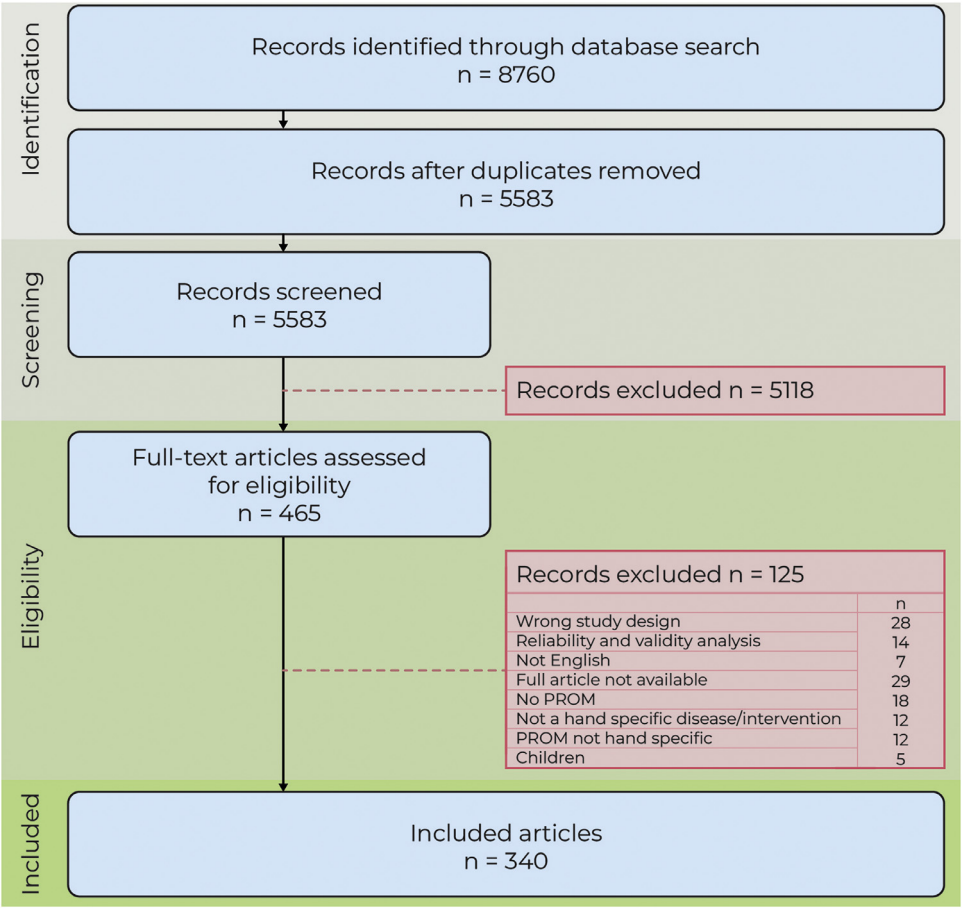

Figure 1. Flowchart of article selection. Abbreviation: PROM, patient-reported outcome measure.

DASH and QuickDASH. In the case of joint/arthrosis patients, the DASH, Michigan Hand Outcomes Questionnaire (MHQ), and PRWE were most frequently utilized. The results showed that 67 articles (19.7%) used more than one hand/wrist-specific PROM, with 6 articles using more than 2 (hand/wrist) specific PROMs. The PRWE was the measure most often combined with another specific PROM (47 times), closely followed by the DASH (42 times).

In addition to the hand/wrist-specific PROMs, 125 articles (36.8%) employed a generic PROM alongside specific PROMs. In these studies, 8 generic PROMs were identified. Among them, the most frequently utilized generic PROM was the Short Form Health Survey 36 (SF-36) (56 times), followed closely by the EuroQol 5 Dimensions (EQ-5D) (51 times). The DASH was most often used in combination with a generic PROM (36 times). The most common combination between a hand/wrist-specific PROM and generic PROM was the PRWE in combination with the SF-36.

General hand and wrist PROMs

Among the 22 hand/wrist-specific PROMs examined, 16 (72.7%) were general hand and/or wrist PROMs. Two of these PROMs, namely the Wrightington wrist score[17] and the PRWE,[5] are specifically designed for wrist disorders only. The PRWE comprises 15 items across 3 dimensions, whereas the Wrightington wrist score includes 10 items in 2 dimensions. Both PROMs utilize a 10-point scale of

Table 1
Article distribution by country.

Country	Articles
USA	58
Netherlands	37
UK	31
Sweden	21
Germany	20
Canada	19
Turkey	14
Australia	12
India	10
Spain	10
France	9
China	8
Japan	8
Austria	7
Brazil	6
Denmark	6
Iran	6
South Korea	6
Switzerland	6
Italy	5
Chile	4
Taiwan	4
Egypt, Finland, Malaysia, Pakistan♯	3
Belgium, Israel, Norway, Poland, South Africa, Thailand^	2
Croatia, Hungary, Ireland, Jordan, Malta, Russia, Scotland, Singapore, Tunisia*	1

Countries with 1*, 2^, or 3♯ articles per country were grouped together for conciseness and are represented as a single entry in the table.

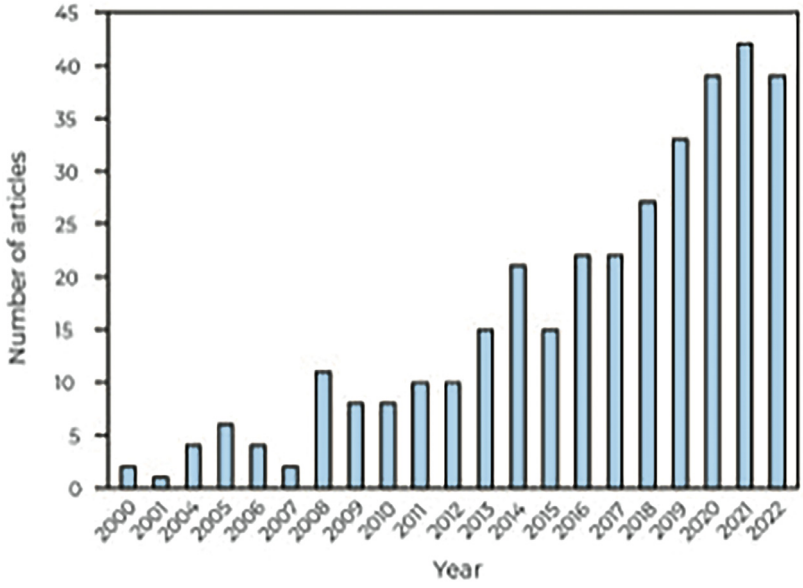

Figure 2. Number of published articles by year.

Table 2
Hand or wrist-specific PROMs.

PROMs	Full name	Aim	Dimensions/Domains (items)	Total items	Items and scoring	Intended for	Total no articles*
DASH	Disabilities of the Arm, Shoulder, and Hand	A self-report questionnaire with which patients can rate difficulty and interference with daily life	1) Ability to perform activities (23) 2) Severity of symptoms (7)	30	5-point Likert scale. Higher scores indicate greater level of disability and severity	Upper extremity disorders	134
PRW(H)E	Patient Rated (Hand and) Wrist Evaluation	To determine level of wrist disability To set treatment goals To determine whether change has occurred To communicate in a meaningful way to payers	1) Pain subscale (5) 2) Function - specific activities (6) 3) Function - usual activities (4)	15	10-point scale. Higher score indicate poorer outcome	(Hand and) Wrist problems	90
QuickDASH	Quick Disabilities of the Arm, Shoulder, and Hand	To measure an individual's ability to complete tasks, absorb forces, and severity of symptoms	1) Ability to perform activities (8) 2) Severity of symptoms (3)	11	5-point Likert scale. Higher scores indicate greater level of disability and severity	Patients with one or more disabilities of the arm, shoulder, and hand	75
BCTQ/CTSI /CTSQ	Boston Carpal Tunnel Syndrome Questionnaire Carpal Tunnel Syndrome Instrument Carpal Tunnel Syndrome Questionnaire	For assessment of the severity of symptoms and functional status in patients who have carpal tunnel syndrome	1) Symptom severity scale (11) 2) Functional status scale (8)	19	5-point Likert scale. Higher scores indicate poorer outcome	Carpal tunnel syndrome	47
MHQ	Michigan Hand Outcomes Questionnaire	To reflect the subjective impression of hand function	1) Satisfaction (6) 2) Work (5) 3) Daily living (12) 4) Function (5) 5) Aesthetics (4) 6) Pain (5)	37	5-point Likert scale. Higher scores indicate better hand performance for scale 1-5, and greater pain for scale 6	Diseases of the hand and upper extremity	44

(*continued on next page*)

Table 2 (*continued*)

PROMs	Full name	Aim	Dimensions/Domains (items)	Total items	Items and scoring	Intended for	Total no articles*
AUSCAN	Australian Canadian Osteoarthritis Hand Index	A disease-specific, tri-dimensional self-administered questionnaire for assessing health status and health outcomes in osteoarthritis of the hand	1) Pain subscale (5) 2) Stiffness subscale (1) 3) Physical function subscale (9)	15	5-point Likert, 100-mm visual analog, or 11-point numerical rating scale. Higher scores indicate greater intensity level	Patients with acute or chronic joint pain in the hands	11
BriefMHQ	Brief Michigan Hand Outcomes Questionnaire	To reflect the subjective impression of hand function	1) Satisfaction (2) 2) Work (2) 3) Daily living (2) 4) Function (2) 5) Aesthetics (2) 6) Pain (2)	12	5-point Likert scale. Higher scores indicate better hand performance for scale 1-5, and greater pain for scale 6	Diseases of the hand and upper extremity	6
Duruoz hand index/CHFS	Duruoz hand index Cochin Hand Functional Disability Scale Cochin Hand Functional Disability Scale	To evaluate activity limitations of the hand	1) In the kitchen (8) 2) Dressing (2) 3) Hygiene 4) In the office (2) 5) Other (4)	18	6-point Likert scale. Higher scores indicate poorer hand functioning	Mild hand impairments	3
PRUNE	Patient rated ulnar nerve evaluation	To assess pain, symptoms, and functional disability in patients with ulnar nerve compression	1) Pain (6) 2) Sensory/motor symptoms (4) 3) Specific activity (6) 4) Usual activity (4)	20	10-point scale. Higher scores indicate poorer outcome	Ulnar nerve compression	2
PEM	Patient evaluation measure	Evaluates the process of treatment and the current state of the hand and provides an overall assessment	1) Treatment (5) 2) Hand health profile (11) 3) Overall assessment (3)	19	7-point scale. Higher scores indicate poorer outcome	Hand	2
Hand20	Hand20 questionnaire	Illustrated questionnaire to assess disorders of the upper limb	Unidimensional (20)	20	10-point scale. Higher scores indicate poorer outcome	Upper limb disorders	2

(*continued on next page*)

Table 2 (*continued*)

PROMs	Full name	Aim	Dimensions/Domains (items)	Total items	Items and scoring	Intended for	Total no articles*
Hand10	Hand10 score	Short measure for upper extremity disorders with attached illustration	Unidimensional (10)	10	10-point scale. Higher scores indicate poorer outcome	Upper extremity disorders	1
Hand-Q	Hand questionnaire	To collect and compare evidence-based outcomes data from patients with any type of congenital or acquired hand conditions	1) Appearance Appearance scale (10) Age-related Appearance scale (10) 2) Health-related Quality of Life Function scale (15) Life Impact scale (8) Psychosocial scale (10) Sexual scale (7) Symptoms scale (10) 3) Experience of Care Clinic scale (10) Doctor scale (10) Hand Therapist scale (10) Information (10) Office staff scale (8) 4) Hand Treatment Outcome scale (7) Splint scale (8)	133	4-point Likert scale. Higher scores indicate higher satisfaction with appearance, greater health-related quality of life, better experience of care, and higher satisfaction with hand treatment	Congenital or acquired hand conditions	1
POS hand/arm	Patient Outcomes of Surgery hand/arm Questionnaire	To investigate the physical activity, symptoms, psychological functioning, and cosmetic appearance of the participants regarding their hands before and after surgery	1) Physical activity (12) 2) Symptoms (12) 3) Psychological functioning and Cosmetic appearance (5)	29 pre-operative 33 post-operative	5 point Likert scale. Higher scores represent the best health	Elective non-malignant hand/arm surgery patients	1

(*continued on next page*)

Table 2 (*continued*)

PROMs	Full name	Aim	Dimensions/Domains (items)	Total items	Items and scoring	Intended for	Total no articles*
FIHOA	Functional Index of Hand Osteoarthritis	To assess hand function in persons with hand osteoarthritis	Unidimensional (10)	10	4-point Likert scale. Higher scores indicate poorer outcome	Osteoarthritis	1
Wrightington wrist score	Wrightington wrist score	To assess pain, range of motion, grip strength, and function of the wrist	1) Pain (3) 2) Problem (10)	13	10-point scale. Higher scores indicate poorer outcome	Wrist problems	1
I-HaND	Impact of hand nerve disorders	To quantify activity intolerance in patients with either traumatic or compressive upper extremity neuropathology	1) Symptoms, physical difficulties, and feelings (9) 2) Pain or discomfort (6) 3) Activities (15) 4) Daily work and recreational activities (2)	32	5-point Likert scale	Hand nerve conditions	1
CTS-6	6-item Carpal Tunnel Syndrome symptom scale	For assessment of severity of symptoms and functional status in patients who have carpal tunnel syndrome	1) Symptom severity scale (2) 2) Functional status scale (4)	6	5-point Likert scale. Higher scores indicate poorer outcome	Carpal tunnel syndrome	1

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Table 2 (*continued*)

PROMs	Full name	Aim	Dimensions/Domains (items)	Total items	Items and scoring	Intended for	Total no articles*
PROMIS-UE	Patient-Reported Outcomes Measurement Information System Upper Extremity	Person-centered measures that evaluate and monitor physical, mental, and social health in adults and children with upper extremity conditions	1) Upper extremity 2) Physical function	Adaptable	Computer Adaptive Testing method. 5-point Likert scale. Higher scores indicate poorer outcome	Upper extremity disorders	1
PROMIS-PF-UE	Patient-Reported Outcomes Measurement Information System, Pain Interference, Upper Extremity	Person-centered measures that evaluate and monitor physical, mental, and social health in adults and children with upper extremity conditions and pain interference	1) Upper extremity 2) Physical function	Adaptable	Computer Adaptive Testing method. 5-point Likert scale. Higher scores indicate poorer outcome	Upper extremity disorders	1
PROMIS-UE-7	Patient-Reported Outcomes Measurement Information System Physical Function Upper Extremity 7	Person-centered measures that evaluate and monitor physical, mental, and social health in adults and children with upper extremity conditions and pain interference. Short version	Unidimensional (7)	7	5-point Likert scale. Higher scores indicate poorer outcome	Upper extremity disorders	1

* Multiple PROMs could be used in the same article; hence, the total number of articles may exceed the total number of articles included in the study.Abbreviations: PROM, patient-reported outcome measure.

Table 3
Hand/wrist-specific PROMs categorized by the hand and wrist condition.

	Trauma	Nerve	Joint/ Arthrosis	Hand disorders general	Tendon	Dupuytren	Ligamentous	Wrist disorders general	Hand burns	Tumors (malignant/benign)	Donor site	Thumb reconstruction
DASH	69	19	21	8	3	4	4	1	2		2	1
PRW(H)E	72		14		1		1	1		1		
QuickDASH	37	18	8	2	7		1	1		1		
BCTQ/ CTSI/ CTSQ		44		1	1			1				
MHQ	8	7	18	1	2	3	1	1	1	1	1	
AUSCAN			11									
BriefMHQ	1		2			1			1			1
Duruoz hand index	1		1							1		
PRUNE		2										
PEM			1			1						
Hand20				1				1				
Hand10						1						
Hand-Q				1								
POS hand/arm				1								
FIHOA			1									
Wrightington wrist score			1									
I-HaND		1										
CTS-6		1										
PROMIS -UE	1											
PROMIS -PF-UE			1									
PROMIS -UE-7		1										

*The same article may include multiple PROMs or conditions, resulting in the total number of articles exceeding the number of articles included in the study.
Abbreviations: AUSCAN, Australian Canadian Osteoarthritis Hand Index; BCTQ, Boston Carpal Tunnel Syndrome Questionnaire; BriefMHQ, Brief Michigan Hand Outcomes Questionnaire; CTS-6, 6-item Carpal Tunnel Syndrome symptom scale; CTSI, Carpal Tunnel Syndrome Instrument; CTSQ, Carpal Tunnel Syndrome Questionnaire; DASH, Disabilities of the Arm, Shoulder, and Hand; FIHOA, Functional Index of Hand Osteoarthritis; HAND-Q, Hand questionnaire; I-HaND, Impact of hand nerve disorders; MHQ, Michigan Hand Outcomes Questionnaire; PEM, Patient evaluation measure; POS, Patient Outcomes of Surgery; PROM, patient-reported outcome measure; PROMIS-PF-UE, Patient-Reported Outcomes Measurement Information System, Pain Interference, Upper Extremity; PROMIS-UE, Patient-Reported Outcomes Measurement Information System Upper Extremity; PROMIS-UE-7, Patient-Reported Outcomes Measurement Information System Physical Function Upper Extremity 7; PRUNE, Patient rated ulnar nerve evaluation; PRW(H)E, Patient Rated (Hand and) Wrist Evaluation; QuickDASH, Quick Disabilities of the Arm, Shoulder, and Hand.

scoring. The Patient Rated Wrist and Hand Evaluation (PRWHE) is intended for assessing hand and wrist conditions and shares the same number of dimensions, items, and scoring system as the PRWE, and the 2 measures were therefore combined in this study.[18] Additionally, there are several multidimensional upper extremity PROMs, including the DASH,[7] MHQ,[19] and HAND-Q,[13] all featuring over 30 items and measured on a 4- or 5-point Likert scale. The HAND-Q also encompasses various domains, including Appearance, HR-QoL, Experience of Care, and Hand Treatment.

To accommodate those seeking shorter PROMs, the DASH and MHQ offer concise versions named the QuickDASH[20] and BriefMHQ.[21] These shorter versions retain the same dimensions while reducing the number of items. Similarly, the Patient Evaluation Measure (PEM) consists of 19 items distributed across 3 dimensions and is scored on a 7-point scale.[22]

To assess difficulties in specific activities, the Duruoz hand index[23] (18 items) and Hand20 (20 items) PROMs are available. The Hand20[24] questionnaire provides illustrations for each activity (e.g., wash your face, squeeze a towel) and also has a shorter version known as the Hand10 questionnaire, comprising 10 items.[25] Additionally, for conditions requiring surgery, the Patient Outcomes of Surgery Hand/Arm (POS hand/arm) PROM was developed, consisting of 3 dimensions with 29 items for the preoperative stage and 33 items for the postoperative stage.[26]

Moreover, there is the Patient-Reported Outcomes Measurement Information System (PROMIS), which is tailored to hand and wrist conditions. The PROMIS Upper Extremity and/or Pain Interference (PROMIS-PF-UE)[27] is a PROM designed using Computer Adaptive Testing methodology.[28] This approach allows adaptability of items based on previous responses. Since PROMIS operates on a web-based platform rather than a free open webspace, a simplified version called the PROMIS-UE-7 was developed.[29] This PROM includes 7 items, is unidimensional, and uses a 5-point Likert scale for scoring.

Hand/wrist-specific PROMs

Of the 22 specific PROMs evaluated, 6 (27.3%) are tailored for the assessment of distinct hand or wrist diseases and conditions. Nerve-related conditions have the highest representation, accounting for 4 of the 6 PROMs. These include the BCTQ,[6] the 6-item Carpal Tunnel Syndrome symptom scale (CTS-6),[30] the Patient Rated Ulnar Nerve Evaluation (PRUNE),[31] and the Impact of Hand Nerve Disorders (I-HaND).[32] The BCTQ and CTS-6 are specifically tailored for carpal tunnel syndrome (CTS) assessment. The BCTQ comprises 19 items across 2 dimensions, while the CTS-6 is a shorter version with 6 items in 2 dimensions. Both of these PROMs use a 5-point Likert scale for rating.

For ulnar nerve conditions, the PRUNE is available, featuring 20 items distributed across 4 dimensions and scored on a 10-point scale. Moreover, the I-HaND serves as a comprehensive PROM suitable for all nerve-related conditions. It consists of 32 items across 4 dimensions, utilizing a 5-point scale for scoring.

The remaining 2 PROMs are specifically crafted for hand or wrist osteoarthritis. The Australian Canadian Osteoarthritis Hand Index (AUSCAN) encompasses 15 items distributed across 3 dimensions, using a 5-point Likert scale for scoring.[33] On the other hand, the Functional Index of Hand Osteoarthritis (FIHOA) is unidimensional, comprising 10 items rated using a 4-point Likert scale, and primarily serves to address challenges related to specific activities associated with hand osteoarthritis.[34]

Psychological and psychosocial evaluation

A total of 6 PROMs include not only hand/wrist-specific questions but also questions to evaluate quality of life as well as the psychological and psychosocial impact of hand/wrist conditions. Both the BriefMHQ and QuickDASH encompass inquiries pertaining to quality of life within their scales. The POS hand/arm questionnaire features a scale addressing psychological functioning and cosmetic appearance. The HAND-Q has a domain comprising 5 scales dedicated explicitly to evaluating HR-QoL. Figure 3 provides an overview of all PROMs, categorized by the number of items, condition or region specificity, and inclusion of psychological inquiries.

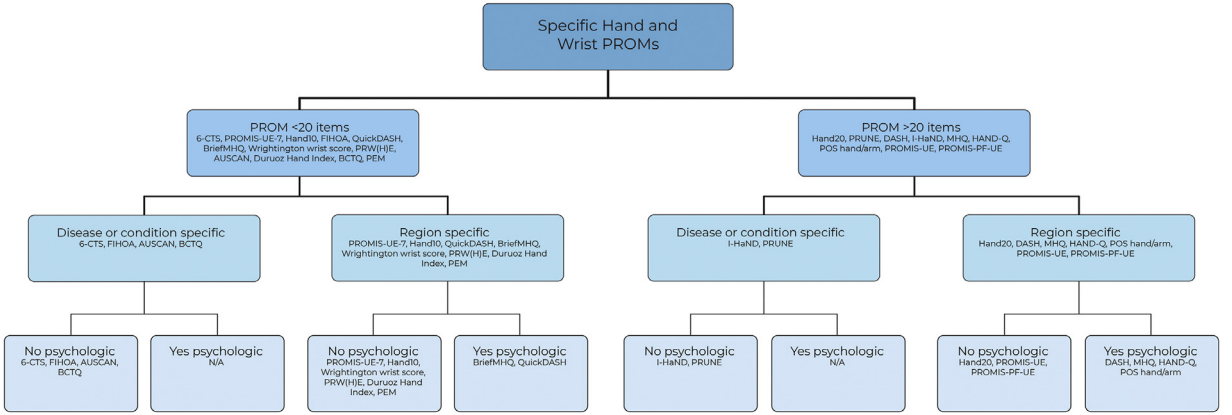

Figure 3. Classification of hand/wrist-specific PROMs based on number of items, specificity, and inclusion of psychological questions.
Abbreviations: 6-CTS, 6-item Carpal Tunnel Syndrome symptom scale; AUSCAN, Australian Canadian Osteoarthritis Hand Index; BCTQ, Boston Carpal Tunnel Syndrome Questionnaire; BriefMHQ, Brief Michigan hand outcome questionnaire; DASH, Disabilities of the Arm, Shoulder, and Hand; FIHOA, Functional Index of Hand Osteoarthritis; HAND-Q, Hand questionnaire; I-HaND, Impact of hand nerve disorders; MHQ, Michigan hand outcome questionnaire; N/A, Not applicable; PEM, Patient evaluation measure; POS, Patient Outcomes of Surgery; PROM, patient-reported outcome measure; PROMIS-PF-UE, Patient-Reported Outcomes Measurement Information System, Pain Interference, Upper Extremity; PROMIS-UE, Patient-Reported Outcomes Measurement Information System Upper Extremity; PROMIS-UE-7, Patient-Reported Outcomes Measurement Information System Physical Function Upper Extremity 7; PRUNE, Patient rated ulnar nerve evaluation; PRW(H)E, Patient Rated (Hand and) Wrist Evaluation; QuickDASH, Quick Disabilities of the Arm, Shoulder, and Hand.

Discussion

In this scoping literature review, we assessed various PROMs that have been developed and validated specifically for hand and wrist conditions. Specific PROMs play a vital role in the evaluation of hand and wrist conditions, as they are designed to capture the unique symptoms, functional limitations, and effects experienced by patients with these conditions. Our objective was to provide healthcare professionals with an up-to-date overview of these PROMs, empowering them to make informed decisions in selecting the most suitable measures to support personalized care in clinical settings. Additionally, our scoping review highlights the increasing use and development of hand/wrist-specific PROMs, reflecting the growing recognition of their significance in assessing patients' outcomes and improving treatment approaches.

The majority of the PROMs identified in this study were used in articles discussing traumatic hand and wrist conditions, nerve conditions, and joint/arthrosis. The number of PROMs available for a given condition may be influenced by the prevalence and clinical impact of the condition. Conditions that are more common and have a significant effect on patients' lives may attract greater research attention. For example, traumatic hand and wrist conditions, nerve-related issues, and joint/arthrosis problems are likely to be more prevalent and have a substantial effect on patients.[35] In addition, certain conditions, such as hand burns or thumb reconstructions, are specific to particular areas of specialization within hand and wrist care. These conditions may not be as prevalent as others, leading to a limited number of hand/wrist-specific PROMs. Interestingly, nerve-related conditions had the highest representation among the hand/wrist-specific PROMs. A reason for this could be that nerve-related conditions often involve unique and specific symptoms, such as tingling, numbness, weakness, or shooting pain. Generalized hand/wrist-specific PROMs may not fully capture these specific symptoms and their impact on patients' well-being.

The distinction between generic and hand/wrist-specific PROMs is crucial as it empowers healthcare professionals to select the most appropriate measure based on their patients' specific needs.[36] While generic PROMs offer a broad perspective and allow for HR-QoL comparison across different conditions, they may not capture precise hand/wrist-specific outcomes that are relevant during clinical follow-up. In contrast, hand/wrist-specific PROMs are tailored to closely align with the unique challenges faced by individuals with hand and wrist disorders. However, it is important to note that not all hand/wrist-specific PROMs include psychological or psychosocial questions, which are essential for understanding the emotional impact of these conditions on patients. Incorporating psychological questions within PROMs is a vital consideration because psychological well-being and emotional aspects significantly influence how patients experience and perceive their hand and wrist conditions.[37–39] Consequently, one-third of the articles in this review used a combination of specific and generic PROMs to gain a more comprehensive understanding of patients' health outcomes. Supplementary file 3 provides a categorization of all generic PROMs used in combination with a specific PROM. Healthcare professionals can refer to this file when they wish to use a specific PROM that lacks psychological questions but still want to incorporate such aspects in their assessment.

The authors believe that an ideal condition-specific PROM should encompass not only specific hand or wrist-related symptoms but also include psychological and psychosocial questions. Several PROMs achieve this ideal combination. The BriefMHQ, QuickDASH, and POS hand/arm questionnaire include inquiries about the effect of hand conditions on quality of life. The HAND-Q takes this one step further by incorporating multiple domains that discuss various aspects, including life impact and psychological well-being. Figure 3 can aid healthcare professionals in choosing the most suitable PROM based on the desired outcomes they want to assess for their patients.

Despite the comprehensive nature of our scoping literature review, there are several limitations that should be acknowledged. First, while we aimed to include all relevant articles on PROMs used in hand and wrist conditions, it is possible that some studies were missed due to variations in terminology and indexing of articles in different databases. Furthermore, the inclusion criteria of our review excluded articles that solely included patients under the age of 18 years and those with hand and wrist conditions caused by diseases of the central nervous system. While this allowed us to focus on PROMs specific to hand and wrist conditions, it also limited the generalizability of our findings to pediatric patients and those with complex nervous system conditions. Moreover, the quality of the

included studies and the psychometric properties of the PROMs were not assessed in this review. Because we aimed to provide a comprehensive overview of the different hand/wrist-specific PROMs available, the lack of a psychometric quality assessment may have led to including PROMs with limited reliability and/or validity. Follow-up studies should evaluate the psychometric values of the identified PROMs to determine the most reliable and valid PROMs for each condition.

Conclusion

This scoping review provides an overview of the specific PROMs available for patients with hand and wrist conditions, empowering healthcare professionals to make informed decisions in selecting the most suitable PROM for clinical as well as research purposes, thus facilitating personalized care and improved treatment outcomes. The growing use and development of PROMs for hand conditions signals their increasing relevance and effectiveness in enhancing patient outcomes. It is crucial to further explore the inclusion of psychological and psychosocial aspects within PROMs to gain a deeper understanding of patients' emotional well-being. Continued research and refinement of PROMs will undoubtedly contribute to improved clinical practice and better HR-QoL for individuals with hand and wrist conditions.

Conflict of interest

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Ethical approval

This study does not involve human participants. No ethical approval was required.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jpra.2024.12.005.

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