

# Clinical Potential of Patient-Reported Outcome Measures in Occupational Therapy

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This column advocates the clinical potential of patient-reported outcome measures (PROMs) to advance value for occupational therapy patients and the profession. It positions PROMs in the context of value-based health care, provides an overview of emerging applications of PROMs for individual patient care, and introduces clinical advantages of the Patient-Reported Outcomes Measurement Information System. Occupational therapy practitioners should leverage the opportunities afforded by regulatory initiatives that include PROMs to meaningfully and equitably amplify the patient's voice in clinical contexts.

**What This Article Adds:** This column highlights why occupational therapy practitioners should consider using patient-reported outcome measures in their everyday clinical practice.

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Patient-reported outcome measures (PROMs) feature prominently in the contemporary dialogue on measurement in health care reform. PROMs are self-report assessments that capture directly from patients<sup>1</sup> their perspective of their health status, such as symptoms, function, and health-related quality of life (Food and Drug Administration, 2009). Although PROMs originated in research contexts, thoughtful applications in clinical care can advance value for occupational therapy patients and the profession.

In this column, I highlight the clinical potential of PROMs to encourage their routine collection and use by occupational therapy practitioners. First, I position PROMs within value-based health care and provide an overview of emerging applications for individual patient care. Next, I introduce

the clinical advantages of a specific measurement system: the Patient-Reported Outcomes Measurement Information System (PROMIS). I then reflect on challenges to meaningful and equitable measurement and conclude with implications for the profession.

## Patient-Reported Outcome Measures in Value-Based Health Care

Value-based health care emphasizes achievement of optimal health outcomes rather than volume of services. To align with value, quality measurement is shifting from process measures focused on clinicians' actions (e.g., percentage of patients receiving a fall risk assessment) to outcome measures focused on results experienced by patients (e.g., percentage of patients with improved physical function). The transition to value has spurred

conversations about what outcomes are most meaningful to capture.

Value has been defined as the health outcomes that matter to patients relative to the costs of care (Porter & Lee, 2013). Patient-centeredness as a fundamental component of health care quality is not new (Committee on Quality of Health Care in America, 2001). However, the Patient Protection and Affordable Care Act of 2010 (Pub. L. 111-148) accelerated its translation into practice (Mroz et al., 2015). To reflect outcomes that matter to patients, regulators are integrating PROMs into quality metrics and alternative payment models (Centers for Medicare & Medicaid Services, 2021; National Quality Forum, 2021). Amplification of the patient's voice in quality measurement aligns with a long-standing tradition of client-centeredness in occupational therapy practice (Mroz et al., 2015). In addition, occupational therapy

<sup>1</sup>The term *patient* is used instead of *client* to align with the language of patient-reported outcome measures.

practitioners can promote patient-centered quality outcome measures that address real-world participation and occupational performance that matter to patients.

Related to integration of PROMs in quality measurement is a call to standardize outcome measures and time points of outcome measurement in routine clinical care (Porter et al., 2016). Standardized collection of PROMs enables data aggregation for outcome-contingent payments and for transparent outcomes reporting to support patients' informed choices (Kaplan et al., 2021). Combined with advances in interoperability (i.e., health information communication), standardization also provides opportunities for quality improvement initiatives and learning health systems research to accelerate and demonstrate the value of rehabilitation services (Doll et al., 2021; Keeney et al., 2021; Kinney et al., 2022).

### **Patient-Reported Outcome Measures for Individual Patient Care**

Despite the potential of PROMs to advance value at the aggregate level, clinicians may view PROMs as an administrative burden disconnected from their patient care priorities. However, PROMs can also be leveraged to measure and improve individual patients' health outcomes and care processes (Damman et al., 2020; Greenhalgh et al., 2018).

Although occupational therapy practitioners may critique self-report measures as subjective compared with performance-based measures (Briggs et al., 2020), both categories of measurement provide valuable information. Self-report is the most meaningful means of assessing symptoms (e.g., pain, fatigue) and can illuminate aspects of participation outside of the clinic. Beyond an occupational profile generated by interviewing, quantifiable patient-generated estimates are advantageous because clinicians may not accurately

estimate patients' perceptions of their health status (Chandwani et al., 2017). In addition, standardized, cross-culturally validated self-report measures can increase health equity by minimizing clinicians' implicit biases that can influence nonstandardized evaluation of domains such as pain interference.

Consistent with a precision rehabilitation approach, in which treatment is matched to patients or patient subgroups on the basis of patient characteristics, PROMs can be used to construct patient profiles for targeted care (National Research Council, 2011). Large-scale data collection and advanced statistical modeling are needed to develop formal prognostic profiles (e.g., George et al., 2021; Kaufmann et al., 2021). However, even informal construction of patient profiles can guide clinical reasoning. For example, on the basis of their baseline PROM scores, the hypothetical patients in Table 1 present with different treatment needs. Mary will require interventions targeting physical, mental, and social health and will likely require more intensive clinician support secondary to low self-efficacy. Erica will likely be able to rapidly progress to an independent self-management program that emphasizes physical health. Combining PROMs with other clinical data enables increasingly precise treatment planning that matches the correct care focus, intensity, and setting to the individual for the most effective, efficient treatment.

In addition, PROMs can facilitate a bidirectional informational flow for patient-centered care. They create a shared language for patients to communicate their perspectives in ways that clinicians understand, and they can encourage discussion of concerns that patients may otherwise perceive as irrelevant (e.g., mental health in musculoskeletal care; Kasturi et al., 2020). Numeric scores also enable explicit incorporation of the patient perspective into formal patient-centered care tools, such as decision aids for shared decision

making (Franklin et al., 2021). Although clinicians may perceive PROMs as at odds with the richness and flexibility of interviewing, the assessment methods are complementary. Beyond the numbers themselves, the maximal power of PROMs for patient-centered care comes from related dialogue. Clinicians can use PROM scores, responses to individual items, and changes in scores as springboards for conversations about patients' preferences and motivations to ensure patient-centered goal setting and treatment planning.

PROMs can also support self-management of complex or chronic conditions beyond the traditional clinical encounter (e.g., oncology, arthritis; Nowell et al., 2021). With appropriate training, patients can use PROMs to monitor their health status and adjust their management behaviors, empowering them to make real-time, data-informed decisions. With increased interoperability, patients can share their PROM data with clinicians who can provide intermittent self-management support via in-person care or tele-rehabilitation as needed on the basis of trends in data.

### **Clinical Potential of the Patient-Reported Outcomes Measurement Information System**

Intentional selection of measures is key to realizing the clinical potential of PROMs. One measurement system that occupational therapy practitioners should consider is PROMIS, whose initial development was funded by the National Institutes of Health. PROMIS is a set of publicly available self-report measures of physical, mental, and social health for adults and children (Cella et al., 2010). Downloadable PROMIS measures and resources are available at <https://www.healthmeasures.net>. PROMIS offers modern, universal, and holistic measurement with advantages for individual-level and aggregate-level clinical value.

**Table 1. Constructing Profiles of Patients With Rheumatoid Arthritis Using Patient-Reported Outcome Measures**

Measure	Mary		Erica	
	Score	Descriptor	Score	Descriptor
PROMIS–29 Profile Version 2.1				
Physical Function	31.3	Moderate	34.9	Moderate
Pain Interference	67.8	Moderate	57.5	Mild
Sleep Disturbance	60.5	Mild	49.4	WNL
Fatigue	71.5	Severe	55.4	WNL
Depression	58.6	Mild	41.0	WNL
Anxiety	66.9	Moderate	40.3	WNL
Ability to Participate in Social Roles and Activities	34.1	Moderate	46.1	WNL
PROMIS Self-Efficacy for Managing Daily Activities 4a Version 1.0	37.7	Low	49.6	Average

*Note.* A score of 50 represents the mean in the reference population with a standard deviation of 10. Higher scores reflect more of the construct (i.e., more physical function, more depression). Descriptors are based on score cutpoints from HealthMeasures (n.d.). PROMIS = Patient-Reported Outcomes Measurement Information System; WNL = within normal limits.

PROMIS measures are developed with sophisticated measurement techniques, including item response theory (IRT), an explanation of which is beyond this column's scope. This modern approach decreases respondent burden by providing more precise estimates of health status with fewer questions than measures developed using classical test theory (Thomas, 2011). IRT-based measures have advantages in estimating extreme scores (e.g., very high or low function), facilitating use of the same measure across a continuum of rehabilitation contexts from acute care to community. IRT also supports flexible administration, enabling pen-and-paper capture in lower resource settings and electronic applications (e.g., computer adaptive tests) in higher resource settings. In addition, PROMIS measures are scored on a common metric, with the ability to compare scores on most measures with those of the general U.S. population, facilitating score interpretation (Cella et al., 2010).

Most PROMIS measures are universally relevant (e.g., PROMIS Physical Function, PROMIS Fatigue) rather than specific to conditions or regions (e.g., stroke, wrist). Universal measures can decrease burden on patients and clinicians by enabling standardized

collection across conditions and settings. The rise in the number of patients with multiple chronic conditions would otherwise require completion of multiple condition-specific measures. In addition, as electronic health records become more interoperable, universal measures can facilitate tracking an individual patient's progress across settings and time. Universal measures also support data aggregation, providing opportunities for the same data to be used for patient care, quality measurement and improvement, and patient-centered research (Keeney et al., 2021).

A specific advantage of PROMIS for occupational therapy is its holistic physical, mental, and social health framework (Carle et al., 2015; Cella et al., 2019). PROMIS measures assess diverse domains, such as sleep disturbance, social participation, anxiety, and cognitive function. They also capture intermediate health outcomes that can be occupational therapy treatment targets, such as self-efficacy for managing daily activities. The variety of available measures can facilitate holistic evaluation, goal setting, and treatment planning that are compatible with occupational therapy practice. When aggregated to measure quality, these holistic measures have the

potential to demonstrate the distinct value of occupational therapy services.

### Meaningful and Equitable Measurement

Even with sophisticated measures such as PROMIS, challenges remain to ensure meaningful and equitable clinical measurement. Measuring what matters to patients is not interchangeable at the aggregate and individual levels because value in individual patient care must explicitly consider personal preferences (Kamal et al., 2018). Patient-specific preferences for outcomes and how they are measured need to be balanced with the benefits of standardized PROM collection (Shapiro et al., 2021). In addition, because PROMs were historically developed for research, interpretation of clinically meaningful change has focused on group-level versus individual-level estimates. Innovative methods are necessary to meaningfully evaluate changes in scores when using PROMs for individual patient care (King et al., 2019).

From an equity perspective, low literacy and numeracy may restrict patients' abilities to complete, interpret, and use PROMs for health management (Long et al., 2021). Routine capture of PROMs without accompanying social

determinants of health may attribute variation in outcomes to a patient's behavior or clinician's skill without acknowledging upstream factors. In addition, although advanced electronic infrastructure can support collection and use of PROMs, alternatives to digital capture are needed to prevent patient-level inequities. Attention is also necessary to avoid disproportionate burdening of occupational therapy practitioners in private practice, community settings, or low-resource facilities with measure licensing fees and information technology costs.

## Conclusion

Occupational therapy practitioners should leverage the opportunities afforded by regulatory initiatives that include PROMs to amplify the patient's voice in clinical contexts. Advances in informatics and measurement science have the potential to exponentially accelerate clinical applications of PROMs by reducing existing challenges related to clinician and patient burden. Looking forward, clinicians should collaborate with multiple stakeholders, from patients to health system leaders, to meaningfully and equitably integrate PROMs into routine clinical care. Researchers should evaluate best practices for selecting, interpreting, implementing, and applying PROMs to maximize both individual-level and aggregate-level value. Educators should support students in building competencies to use patient-reported data in clinical contexts. Finally, all occupational therapy community members should advocate including PROMs that reflect occupational therapy's distinct professional contributions in quality metrics and standardized sets of outcome measures.

Occupational therapy practitioners must be part of shaping the ongoing dialogue on PROMs and value-based health care. Together, we can promote value for our patients and profession through holistic, patient-centered measurement. 

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## References

Briggs, M. S., Rethman, K. K., Crookes, J., Cheek, F., Pottkotter, K., McGrath, S., . . . Quatman-Yates, C. C. (2020). Implementing patient-reported outcome measures in outpatient rehabilitation settings: A systematic review of facilitators and barriers using the consolidated framework for implementation research. *Archives of Physical Medicine and Rehabilitation, 101*, 1796–1812. <https://doi.org/10.1016/j.apmr.2020.04.007>

Carle, A. C., Riley, W., Hays, R. D., & Cella, D. (2015). Confirmatory factor analysis of the Patient Reported Outcomes Measurement Information System (PROMIS) adult domain framework using item response theory scores. *Medical Care, 53*, 894–900. <https://doi.org/10.1097/MLR.0000000000000413>

Cella, D., Choi, S. W., Condon, D. M., Schalet, B., Hays, R. D., Rothrock, N. E., . . . Reeve, B. B. (2019). PROMIS<sup>®</sup> adult health profiles: Efficient short-form measures of seven health domains. *Value in Health, 22*, 537–544. <https://doi.org/10.1016/j.jval.2019.02.004>

Cella, D., Riley, W., Stone, A., Rothrock, N., Reeve, B., Yount, S., . . . Hays, R.; PROMIS Cooperative Group. (2010). The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005–2008. *Journal of Clinical Epidemiology, 63*, 1179–1194. <https://doi.org/10.1016/j.jclinepi.2010.04.011>

Centers for Medicare & Medicaid Services. (2021). *CMS Measures Management System Blueprint Version 17.0*. <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/MMS/MMS-Blueprint>

Chandwani, K. D., Zhao, F., Morrow, G. R., Deshields, T. L., Minasian, L. M., Manola, J., & Fisch, M. J. (2017). Lack of

patient–clinician concordance in cancer patients: Its relation with patient variables. *Journal of Pain and Symptom Management, 53*, 988–998. <https://doi.org/10.1016/j.jpainsymman.2016.12.347>

Committee on Quality of Health Care in America. (2001). *Crossing the quality chasm*. Institute of Medicine. <https://doi.org/10.1037/e317382004-001>

Dammen, O. C., Jani, A., de Jong, B. A., Becker, A., Metz, M. J., de Bruijne, M. C., . . . van El, C. (2020). The use of PROMs and shared decision-making in medical encounters with patients: An opportunity to deliver value-based health care to patients. *Journal of Evaluation in Clinical Practice, 26*, 524–540. <https://doi.org/10.1111/jep.13321>

Doll, J., Malloy, J., & Bland, J. (2021). The promise of interoperability. *American Journal of Occupational Therapy, 75*, 7504090010. <https://doi.org/10.5014/ajot.2021.049002>

Food and Drug Administration. (2009). *Guidance for industry: Patient-reported outcome measures: Use in medical product development to support labeling claims*. <https://www.fda.gov/regulatory-information/search-fda-guidance-documents/patient-reported-outcome-measures-use-medical-product-development-support-labeling-claims>

Franklin, P. D., Zheng, H., Bond, C., & Lavalley, D. C. (2021). Translating clinical and patient-reported data to tailored shared decision reports with predictive analytics for knee and hip arthritis. *Quality of Life Research, 30*, 3171–3178. <https://doi.org/10.1007/s11136-020-02557-8>

George, S. Z., Yan, X., Luo, S., Olson, S. A., Reinke, E. K., Bolognesi, M. P., & Horn, M. E. (2021). Can PROMIS measures be used to create subgroups for patients seeking orthopaedic care? *Bone and Joint Open, 2*, 493–502. <https://doi.org/10.1302/2633-1462.27.BJO-2021-0045.R1>

Greenhalgh, J., Gooding, K., Gibbons, E., Dalkin, S., Wright, J., Valderas, J., & Black, N. (2018). How do patient reported outcome measures (PROMs) support clinician–patient communication and patient care? A realist synthesis. *Journal of Patient-Reported Outcomes, 2*, 42. <https://doi.org/10.1186/s41687-018-0061-6>

HealthMeasures. (n.d.). *PROMIS<sup>®</sup> score cut points*. <http://www.healthmeasures.net/score-and-interpret/interpret-scores/promis/promis-score-cut-points>

Kamal, R. N., Lindsay, S. E., & Eppler, S. L. (2018). Patients should define value in health care: A conceptual framework. *Journal of Hand Surgery, 43*, 1030–1034. <https://doi.org/10.1016/j.jhsa.2018.03.036>

Kaplan, R. S., Jehi, L., Yo, C. K., Pusic, A., & Witkowski, M. (2021). Health care

- measurements that improve patient outcomes. *NEJM Catalyst Innovations in Care Delivery*, 2(2). <https://doi.org/10.1056/CAT.20.0527>
- Kasturi, S., Wong, J. B., Mandl, L. A., McAlindon, T. E., & LeClair, A. (2020). "Unspoken questions": A qualitative study of rheumatologists' perspectives on the clinical implementation of patient-reported outcome measures. *Journal of Rheumatology*, 47, 1822–1830. <https://doi.org/10.3899/jrheum.200232>
- Kaufmann, T. L., Getz, K. D., Hsu, J. Y., Bennett, A. V., Takvorian, S. U., Kamal, A. H., & DeMichele, A. (2021). Identification of patient-reported outcome phenotypes among oncology patients with palliative care needs. *JCO Oncology Practice*, 17, e1473–e1488. <https://doi.org/10.1200/OP.20.00849>
- Keeney, T., Kumar, A., Erler, K. S., & Karmarkar, A. M. (2021). Making the case for patient-reported outcome measures in big-data rehabilitation research: Implications for optimizing patient-centered care. *Archives of Physical Medicine and Rehabilitation*. Advance online publication. <https://doi.org/10.1016/j.apmr.2020.12.028>
- King, M. T., Dueck, A. C., & Revicki, D. A. (2019). Can methods developed for interpreting group-level patient-reported outcome data be applied to individual patient management? *Medical Care*, 57(Suppl.), S38–S45. <https://doi.org/10.1097/MLR.0000000000001111>
- Kinney, A. R., Fields, B., Juckett, L., Read, H., Martino, M. N., & Weaver, J. A. (2022). Learning health systems can promote and sustain high-value occupational therapy. *American Journal of Occupational Therapy*, 76, 7601347020. <https://doi.org/10.5014/ajot.2022.049071>
- Long, C., Beres, L. K., Wu, A. W., & Giladi, A. M. (2021). Patient-level barriers and facilitators to completion of patient-reported outcomes measures. *Quality of Life Research*. Advance online publication. <https://doi.org/10.1007/s11136-021-02999-8>
- Mroz, T. M., Pitonyak, J. S., Fogelberg, D., & Leland, N. E. (2015). Client centeredness and health reform: Key issues for occupational therapy. *American Journal of Occupational Therapy*, 69, 6905090010. <https://doi.org/10.5014/ajot.2015.695001>
- National Quality Forum. (2021). *Building a roadmap from patient-reported outcome measures to patient-reported outcome performance measures*. <https://www.qualityforum.org/ProjectDescription.aspx?projectID=93898>
- National Research Council. (2011). *Toward precision medicine: Building a knowledge network for biomedical research and a new taxonomy of disease*. National Academies Press. <https://doi.org/10.17226/13284>
- Nowell, W. B., Gavigan, K., Kanno, C. L., Cai, Z., Hunter, T., Venkatachalam, S., . . . Curtis, J. R. (2021). Which patient-reported outcomes do rheumatology patients find important to track digitally? A real-world longitudinal study in ArthritisPower. *Arthritis Research and Therapy*, 23, 53. <https://doi.org/10.1186/s13075-021-02430-0>
- Patient Protection and Affordable Care Act, Pub. L. 111-148, 42 U.S.C. §§ 18001–18121 (2010).
- Porter, M. E., Larsson, S., & Lee, T. H. (2016). Standardizing patient outcomes measurement. *New England Journal of Medicine*, 374, 504–506. <https://doi.org/10.1056/NEJMp1511701>
- Porter, M. E., & Lee, T. H. (2013). The strategy that will fix health care. *Harvard Business Review*, 91(10), 50–70. <https://hbr.org/2013/10/the-strategy-that-will-fix-health-care>
- Shapiro, L. M., Eppler, S. L., Roe, A. K., Morris, A., & Kamal, R. N. (2021). The patient perspective on patient-reported outcome measures following elective hand surgery: A convergent mixed-methods analysis. *Journal of Hand Surgery*, 46, 153.e1–153.e11. <https://doi.org/10.1016/j.jhbsa.2020.09.008>
- Thomas, M. L. (2011). The value of item response theory in clinical assessment: A review. *Assessment*, 18, 291–307. <https://doi.org/10.1177/1073191110374797>

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