

Editorial Commentary: Defining Improvement After Arthroscopic Meniscal Surgery—How Much of a Difference Does a Difference Make?



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Abstract: Patient-centered metrics including the minimal clinically important difference, substantial clinical benefit, and patient acceptable symptom state have been proposed to determine the clinical significance of patient-reported outcome scores. These values allow clinically meaningful interpretation of changes in scores such that the degree of improvement (minimal clinically important difference and substantial clinical benefit) and satisfaction (patient acceptable symptom state) can be determined. When derived in the same study, these values allow analyses to be approached from the perspective of which patients are likely to respond to treatment and what level of improvement and satisfaction they might attain. Although limited to the sample from which they are derived, these metrics go beyond a mean value of an outcome score to provide a patient-centered perspective that informs the clinical significance of patient-reported outcome scores.

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Patient-centered metrics have become increasingly studied—and for good reason.¹⁻⁷ When well executed, these studies translate raw clinical outcome scores into nicely packaged, easy-to-interpret metrics that indicate just how much a patient has improved. The article “How Should We Define Clinically Significant Improvement on Patient-Reported Outcomes Measurement Information System for Patients Undergoing Knee Meniscal Surgery?” by Okoroha, Lu, Nwachukwu, Beletsky, Patel, Verma, Cole, and Forsythe⁸ is a timely contribution to this growing body of literature. The authors’ thoughtful and thorough methodology allows the question their title asks to be appropriately answered for varying levels of improvement and well-being.

Determining the clinical significance of patient-reported outcome scores should consider a wide spectrum of improvement. Although many metrics have been described, the minimal clinically important

difference (MCID) is arguably the most frequently presented. The MCID grew out of the need to separate clinical significance from statistical significance.⁹ By defining an MCID, studies could be designed to ensure a high likelihood of detecting the smallest difference that is meaningful to patients.

Although valuable, the MCID represents a floor value in terms of defining meaningful clinical improvement. In the 30 years since the MCID was first introduced, the concept of defining meaningful change in a patient-reported outcome score has grown to include thresholds that identify patients who have experienced substantial clinical benefit (SCB) as well as absolute values that indicate the point beyond which patients consider themselves well, that is, the patient acceptable symptom state (PASS).^{2,6} Together, the SCB and PASS metrics extend the concept of the MCID to address what really matters to patients and clinicians: substantial and satisfactory improvement.

Okoroha et al.⁸ use an anchor-based approach to determine the MCID, SCB, and PASS values in patients undergoing arthroscopic meniscal surgery. In contrast to distribution-based methods, this approach uses patient responses to questions regarding improvement (the anchors) to determine threshold scores. The result is a set of values for the Patient-Reported Outcomes Measurement Information System that have been derived from the patients rather

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than the statistical characteristics of the data. With threshold values in hand, Okorooha et al. are able to explore the impact of preoperative scores on attaining MCID and PASS thresholds. This last point is particularly important. When derived in the same study, MCID, SCB, and PASS values as opposed to the raw clinical outcome score can be used in analyses to identify which patients are likely to respond to treatment and what level of improvement and satisfaction they might attain. This type of analysis allows the results to be appreciated from the perspective of meaningful change (MCID and SCB) or satisfactory outcome (PASS) rather than a mean value of an outcome score.

The article by Okorooha et al.⁸ is not without limitations, some of which are inherent to the development of patient-centered metrics. Threshold values are likely to vary from sample to sample based on disease severity, general health, expectations, and sociodemographic characteristics. Specifically, patients undergoing arthroscopic meniscectomy vary in terms of articular damage, arthritis grade, tear type, activity level, and so on. Furthermore, a small percentage of the patients underwent meniscal repair, which creates additional variability. Although these factors limit direct application of the values presented by Okorooha et al. to the general population of patients with meniscal pathology, their research stands as a meaningful contribution to the literature because it highlights the value and utility of patient-centered metrics in determining the clinical significance of patient-reported outcomes.

References

1. Dhawan A, Brand JC, Provencher MT, Rossi MJ, Lubowitz JH. Research pearls: The significance of statistics and perils of pooling. *Arthroscopy* 2017;33:1099-1101.
2. Glassman SD, Copay AG, Berven SH, Polly DW, Subach BR, Carreon LY. Defining substantial clinical benefit following lumbar spine arthrodesis. *J Bone Joint Surg Am* 2008;90:1839-1847.
3. Harris JD, Brand JC, Cote MP, Faucett SC, Dhawan A. Research pearls: The significance of statistics and perils of pooling. Part 1: Clinical versus statistical significance. *Arthroscopy* 2017;33:1102-1112.
4. Lubowitz JH, Brand JC, Rossi MJ. Our measure of medical research should be appreciable benefit to the patient. *Arthroscopy* 2019;35:1943-1944.
5. Rossi MJ, Lubowitz JH, Brand JC, Provencher MT. Making the right treatment decision requires consideration of utility and reconsideration of value. *Arthroscopy* 2017;33:239-241.
6. Wright AA, Hensley CP, Gilbertson J, Leland JM III, Jackson S. Defining patient acceptable symptom state thresholds for commonly used patient reported outcomes measures in general orthopedic practice. *Man Ther* 2015;20:814-819.
7. Gowd AK, Lalehzarian SP, Liu JN, et al. Factors associated with clinically significant patient-reported outcomes after primary arthroscopic partial meniscectomy. *Arthroscopy* 2019;35:1567-1575.e3.
8. Okorooha K, Lu Y, Nwachukwu B, et al. How should we define clinically significant improvement on Patient-Reported Outcomes Measurement Information System for patients undergoing knee meniscal surgery? *Arthroscopy* 2020;36:241-250.
9. Jaeschke R, Singer J, Guyatt GH. Measurement of health status. Ascertaining the minimal clinically important difference. *Control Clin Trials* 1989;10:407-415.