Title Surgeons Underestimate and Patients Overestimate 1-year SANE Score Following Rotator Cuff Repair Surgery

Introduction Patient and surgeon expectations for elective shoulder surgery play an important role in opting in or out of surgical treatment. The decision to proceed with surgery is a result of patient-surgeon communication during consultation. Recent research shows that discrepancies exist between surgeon and patient expectations regarding pain and range of motion following rotator cuff repair (RCR) (Karpinski et al. 2022). Patient-reported outcome measures (PROMs) are increasingly used to quantify the patient perspective and in arthroplasty, have been applied in shared decision making to understand preoperative expectations (Lavallee et al. 2023). This study aims to compare patient and surgeon expectations based on patient-predicted, surgeon-predicted, and actual 1-year outcomes following RCR using the Single-Assessment Numeric Evaluation (SANE).

Materials & Methods Data for this study were collected in a healthcare registry as standard of care for all patients undergoing RCR from January 1 to December 31, 2022 at a single sports medicine orthopaedic surgery center. Surgeries were conducted by six fellowship-trained upper extremity surgeons. The primary outcome was SANE which required a written response by the patient to the question, "How would you rate your affected shoulder today as a percentage of normal (0% to 100% with 100% being normal)?" both preoperatively and at 1-year postoperatively. The surgeon was asked to predict the 1-year SANE immediately following completion of the surgery. A repeated-measures ANOVA compared surgeon-predicted, patient-predicted, and actual mean 1-year post-operative SANE. Tukey's post hoc test was used to adjust for pairwise comparisons. The differences between actual and surgeon predicted SANE and actual and patient predicted SANE were calculated. Frequency distributions were generated to describe these data. "Accurate prediction" was defined a priori as a difference being within +/-5% of the actual SANE. Significance level was set to $p<0.05$.

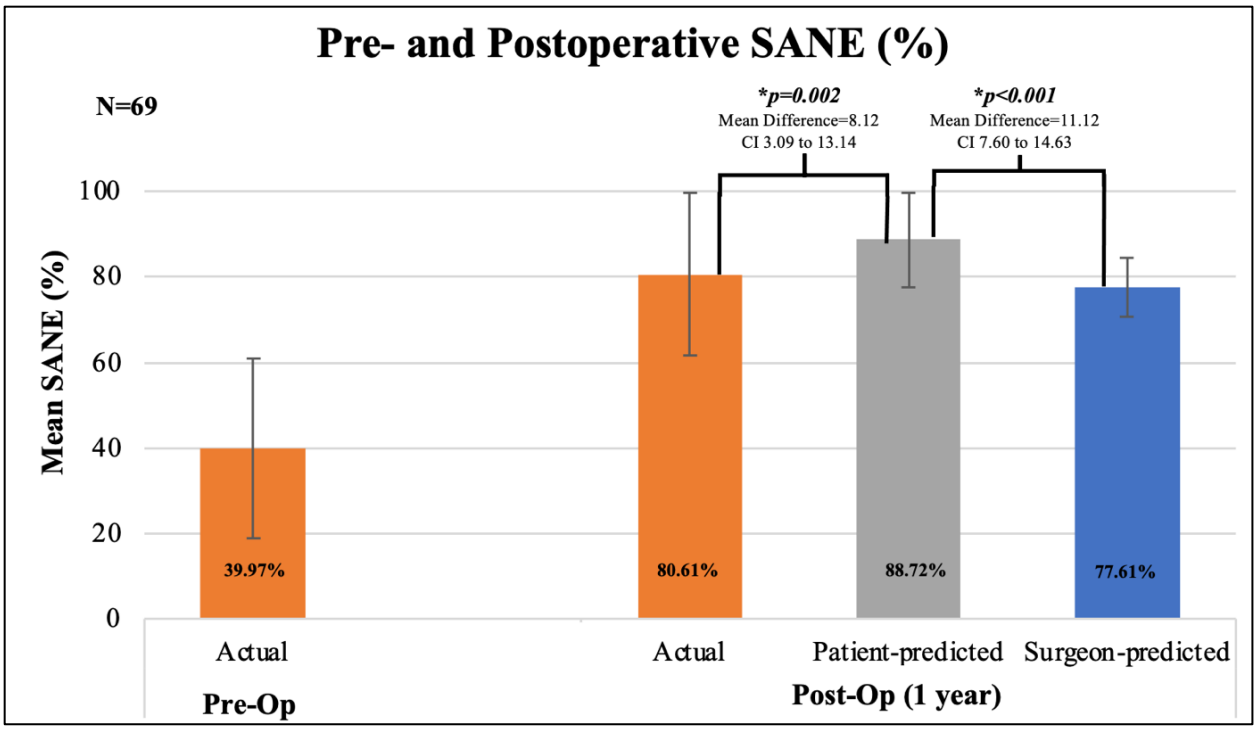
Results & Discussion Sixty-nine patients were included in this study with a mean age of 60.9 (SD=6.9) years and 77% (N=53) were male. Surgeon-predicted 1-year postoperative SANE was 77.6% (Min=60%; Max=95%; SD=6.8%), patient-predicted was 88.7% (Min=50%; Max=100%; SD=11.1%), and actual SANE was 80.6% (Min=8%; Max=100%; SD=19%) ($p<0.001$). It was noted that surgeon-predicted scores had a smaller range of values than patient-predicted and standard deviation was smaller as well. Mean patient-predicted scores were significantly higher than both mean surgeon-predicted ($p<0.001$) and mean actual postoperative SANE ($p=0.002$). There was no statistical difference between mean surgeon-predicted and mean actual postoperative SANE.

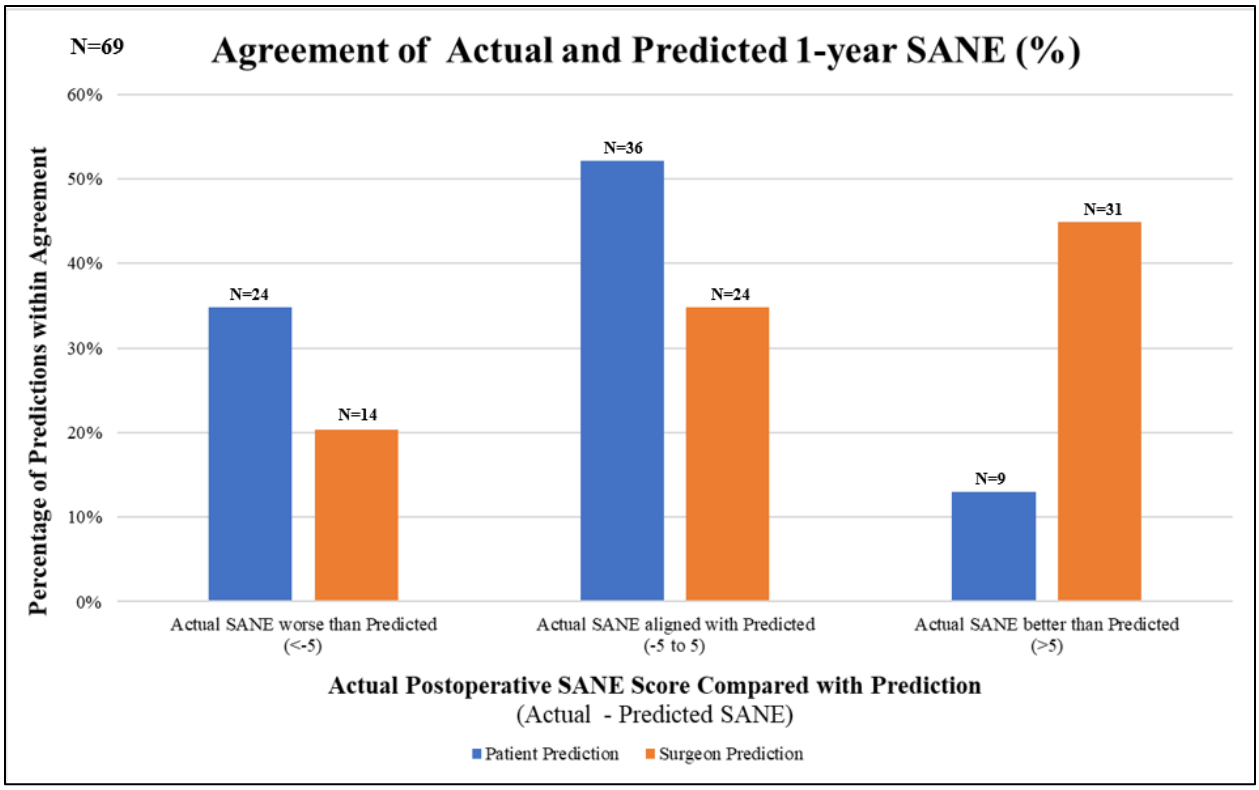
Frequency distributions for the differences between actual and predicted SANE scores are presented in Figure 2. Fifty-two percent (36/69) of patients and 35% (24/69) of surgeons accurately predicted SANE at 1-year. Thirty-five percent (24/69) of patients had a lower actual SANE score than they predicted at 1-year compared to 20% (14/69) that had a lower actual SANE than their surgeon predicted. Thirteen percent (9/69) of patients exceeded their predicted SANE, while 45% (31/69) exceeded their surgeon's prediction. Thus, this study found that more than a third of patients tended to have higher expectations than their actual outcome while the surgeon underestimated almost have of the patients' actual outcomes at 1-year. This is unexpected especially in light of the surgeon predictions occurring after the surgery was performed.

The findings of this study indicate that a gap may exist in many instances between surgeon and patient expectations. This study demonstrates there may be utility in having both surgeon and patient predict their outcomes using SANE. The clinical use of a tool such as the SANE is an opportunity for objective communication between patient and surgeon that may facilitate more realistic expectations for both with respect to potential outcomes and limitations following RCR, thus improving overall patient satisfaction with their surgery.

Karpinski, Katrin, et al. "Different expectations of patients and surgeons with regard to rotator cuff repair." *Journal of Shoulder and Elbow Surgery,* vol.31, no. 1980, 2022, pp. 1096-1105. Elsevier, https://doi.org/10.1016/j.jse.2021.12.043

Lavallee, Danielle, et al. "One report, multiple aims: orthopedic surgeons vary how they use patient-reported outcomes with patients." *Quality of Life Research,* vol. 32, 2023, pp. 425-433. Springer, https://doi.org/10.1007/s11136-022-03251-7


Pre- and Postoperative SANE (%)
N=69
*p=0.002
Mean Difference=8.12
CI 3.09 to 13.14
*p<0.001
Mean Difference=11.12
CI 7.60 to 14.63
Mean SANE (%)
100
80
60
40
20
0
39.97%
80.61%
88.72%
77.61%
Actual
Actual
Patient-predicted
Surgeon-predicted
Pre-Op
Post-Op (1 year)


N=69
Agreement of Actual and Predicted 1-year SANE (%)
Percentage of Predictions within Agreement
60%
50%
40%
30%
20%
10%
0%
N=24
N=14
N=36
N=24
N=9
N=31
Actual SANE worse than Predicted
(<-5)
Actual SANE aligned with Predicted
(-5 to 5)
Actual SANE better than Predicted
(>5)
Actual Postoperative SANE Score Compared with Prediction
(Actual - Predicted SANE)
Patient Prediction
Surgeon Prediction

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