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RESPONSE TO LETTER TO THE EDITOR

Response to Mohammadi et al regarding: "Predicting adverse events, length of stay, and discharge disposition following shoulder arthroplasty: a comparison of the Elixhauser Comorbidity Measure and Charlson Comorbidity Index"

In reply:

We thank the commenters for their valuable input regarding our work. In designing the methodology for this article, we followed other authors who have done similar comparisons of comorbidity indices for general orthopedic conditions, including total hip arthroplasty, hip fractures, and proximal humeral fractures.[1-4] Similar to our report, these studies tested the discriminative capability of the Elixhauser Comorbidity Measure and Charlson Comorbidity Index by constructing multivariate logistic regression models and calculating the C statistics. However, no previous work had performed these calculations for patients undergoing total shoulder arthroplasty, a rapidly growing population with a different set of comorbidities and risk factors.

We agree with the comments that when developing a prediction model, a division into training, validation, and testing sets is standard. However, the purpose of our study was not to create a general prediction tool, as we would have with a machine learning algorithm or a nomogram, but to compare the discriminative ability of the Elixhauser Comorbidity Measure and Charlson Comorbidity Index. Because we were measuring the relative performance of the 2 comorbidity indices, we felt that it was appropriate to compare the C statistics.

We view our article as work that future authors can reference as they develop risk calculators for outcomes after shoulder arthroplasty, where validating the prediction model by using a hold-out test set would be needed. For instance, we are currently working on a computerized risk assessment tool for shoulder arthroplasty, based on popular machine learning algorithms, such as random forest, that uses stratified random subsampling for training the models and tests the trained models on a final testing set. For this purpose, we are using the Elixhauser Comorbidity Measure as the features for the model, based on our work in *Journal of Shoulder and Elbow Surgery*.

Disclaimer

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