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**Distinguishing Statistical Significance from Clinical Relevance: A Lesson from Riantho et al.’s Meta-Analysis on TKA**

**Rudolf W. Poolman**
Professor of Orthopaedic Surgery in particular healthcare evaluation.
LUMC/ OLVG

To the Editor:

Riantho et al.’s recent meta-analysis comparing robot-assisted to conventional total knee arthroplasty (TKA) presents some valuable findings. However, I believe the reporting of these results in the abstract would greatly benefit from a stronger emphasis on the absolute differences, incorporating the mean differences and their 95% confidence intervals (CI), rather than primarily focusing on p-values.

Their report identifies fewer outliers in several joint angles and a more neutral postoperative hip-knee-ankle (HKA) angle following robot-assisted TKA. However, the exact magnitude of these differences was not only once specified in the abstract. This information is crucial to fully comprehend the clinical relevance of their findings.

A revised presentation might read: “The postoperative HKA angle was more neutral in the robot-assisted TKA group, with a mean difference of -0.77° (95% CI, -1.11 to -0.43). No significant differences were found in the femoral component coronal (FCC) angle (mean difference, 0.33° [95% CI, -0.29 to 0.95]), femoral component sagittal (FCS) angle (mean difference, -0.75° [95% CI, -1.90 to 0.40]), tibial component coronal (TCC) angle (mean difference, -0.18° [95% CI, -0.90 to 0.53]), or the tibial component sagittal (TCS) angle (mean difference, 0.46° [95% CI, -0.24 to 1.16]) between the robot-assisted TKA and conventional TKA groups.”

By presenting the mean differences and their respective confidence intervals, this approach would provide a more nuanced understanding of the clinical relevance of these findings. This could help practitioners more accurately evaluate the potential advantages and trade-offs in their specific clinical context.

The current threshold for outliers in this study, defined as being >±3° from the measured angle, serves as a binary criterion: an angle is either an outlier or not. However, it’s crucial to recognize that the deviation of an angle from a set standard may have varying clinical significance depending on the degree of deviation.

Clinically, a deviation of 3.1° may have less impact than a deviation of 10°, even though both would be categorized as outliers under the current threshold. The adoption of categorical thresholds might contribute more to the clinical relevance of these findings. For example, creating categories like minor (3.1° – 5°), moderate (5.1° – 7°), and severe (>7°) outliers could provide a more nuanced understanding of the potential clinical implications.

This categorization could reveal whether robot-assisted TKAs are simply reducing the number of minor outliers
(which may have less clinical impact), or if they are also effective in reducing the number of moderate or severe outliers (which may have a more substantial clinical impact). Therefore, a more granular approach could potentially enhance the clinical applicability of the study findings.

While the work by Riantho et al. is undoubtedly a notable contribution, I propose a more clinically meaningful presentation of the findings to better capture the practical implications of robot-assisted versus conventional TKA.

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