Reporting Bias is Highly Prevalent in Systematic Reviews and Meta-Analyses Related to MPFL Reconstruction

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Introduction

- Medial patellofemoral ligament reconstruction (MPFLR) is commonly performed to treat recurrent patellar instability.
- To ensure that the results of MPFLR are accurately portrayed in the literature and are of high quality, it is important to review published studies for reporting bias in the form of spin.
- Spin is defined as a “specific way of reporting, intentional or not, to highlight that the beneficial effect of the experimental treatment in terms of efficacy or safety is greater than that shown by the results (i.e., overstate efficacy and/or understate harm).”

Methods

- This study was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines.
- Peer-reviewed systematic reviews were collected from PubMed, Scopus, and Embase databases using the search “medial patellofemoral ligament reconstruction” or “MPFLR” AND “systematic review” OR “meta-analysis” in January of 2024.
- The abstracts were assessed for the 15 most common types of spin. A Critical Appraisal Tool For Systematic Reviews (AMSTAR 2) was used to evaluate the quality of the studies. Several study characteristics were analyzed including PRISMA adherence, year of publication, and Level of Evidence.
- The association of these characteristics with the presence of spin, as well as the number of spin types present, was determined using t-tests, analysis of variance (ANOVA), Fischer Tests, and Spearman’s Rank Coefficients.

Results

- The initial database search identified 1,044 studies, of which 438 duplicates were removed. An additional 499 studies were removed after title and abstract screening because they did not meet the inclusion criteria.
- The remaining 107 studies were assessed for eligibility after which a total of 57 studies were included.
- Spin was present in the abstract of 51 out of 57 studies (89.5%).
- Each type of spin was observed in at least one study’s abstract with the exceptions of spin types 1, 7, 13, and 15.
- The three most common types of spin were type 5 (48/57, 84.2%), followed by type 3 (32/57, 56.1%), and type 9 (30/57, 52.6%).
- There was a statistically significant negative correlation between the numerical AMSTAR 2 rating and the presence of spin.

Category	Type	Description	Abstracts
Misleading interpretation			
	1	The conclusion formulates recommendations for clinical practice not supported by the findings	0 (0.0%)
	2	The title claims or suggests a beneficial effect of the experimental intervention not supported by the findings	1 (1.8%)
	4	The conclusion claims safety based on non-statistically significant results with a wide confidence interval	26 (45.6%)
	9	The conclusion claims the beneficial effect of the experimental treatment despite reporting bias	30 (52.6%)
	12	The conclusion claims equivalence or comparable effectiveness for non-statistically significant results with a wide confidence interval	5 (8.8%)
Misleading reporting			
	3	Selective reporting of or overemphasis on efficacy outcomes or analysis favoring the beneficial effect of the experimental intervention	32 (56.1%)
	5	The conclusion claims the beneficial effect of the experimental treatment despite a high risk of bias in primary studies	48 (84.2%)
	6	Selective reporting of or overemphasis on harm outcomes or analysis favoring the safety of the experimental intervention	5 (8.8%)
	10	Authors hide or do not present any conflict of interest	13 (22.8%)
	11	The conclusion focuses selectively on statistically significant efficacy outcome	9 (15.8%)
	13	Failure to specify the direction of the effect when it favors the control intervention	0 (0.0%)
	14	Failure to report a wide confidence interval of estimates	6 (10.5%)
Inappropriate extrapolation			
	7	The conclusion extrapolates the review findings to a different intervention (e.g., claiming efficacy of one specific intervention although the review covered a class of several interventions)	0 (0.0%)
	8	The conclusion extrapolates the review’s findings from a surrogate marker or a specific outcome to the global improvement of the disease	1 (1.8%)
	15	The conclusion extrapolates the review’s findings to a different population or setting	0 (0.0%)

Limitations

- Identifying spin is a subjective process, despite the measures taken to avoid bias including a simultaneous collection process by three reviewers.
- Second, this study was limited by the low level of evidence utilized by most of the included studies, the vast majority being of level IV with no level I studies and few level II studies.
- Finally, the AMSTAR-2 instrument that we employed for evaluation was created and released in 2017. As a result, using it to evaluate systematic reviews that were published earlier in 2017 would have led to lower results.

Conclusion

- The majority of systematic reviews on MPFL reconstruction received critically low AMSTAR 2 ratings, with none achieving moderate or high confidence, reflecting the overall poor quality of evidence in this area.
- Nearly 90% of abstracts exhibited at least one type of spin, with Spin types 3, 5, and 9 being the most common, suggesting a tendency to overstate the efficacy of MPFLR for patellar instability.
- This analysis highlights the widespread occurrence of spin and low-quality evidence in MPFLR systematic reviews, underscoring the importance of critical evaluation and the need for improved research quality.

References

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