Editorial

Authors Dichotomize Medical Research Findings as Significant Versus Not Significant, Creating a False Sense of Certainty, *and* Report Outcomes on Patients Whose Results Have Been Previously Reported Without Proper Disclosure

Abstract: Statistical significance dichotomizes research findings into significant versus not significant, creating a false sense of certainty. It is insufficient to mindlessly report results as significant versus not significant without providing a quantitative estimate of the uncertainty of the data. Authors could provide a confidence interval, draw a *P* value function graph, or run a Bayesian analysis. Authors could calculate and report a Surprise or S value. Most importantly, authors could thoughtfully consider how the uncertainty within their research data informs the results of their study. *And*, clinical databases allow researchers to test multiple hypotheses. This could result in reporting outcomes on the same patient or patients in more than 1 study. Such "double-dipping" is not a dilemma in and of itself, but a problem occurs if multiple reporting of outcomes on the same patient or patients is not disclosed in the methods of a study. Absent clarifying disclosure of multiple reporting, a single patient might then be counted twice in future systematic reviews or meta-analyses, resulting in a biased and incorrect review of the literature. Authors using databases to report clinical outcomes must absolutely and explicitly clarify in their methods if the results of 1 or more patients included in their study have been reported in previous publications.

Quiz:

Section I: The Uncertainty Challenge

1. In April 2021, we published:
   "Statistical significance dichotomizes research findings into significant versus not significant creating a false sense of certainty."[1]
   ___True ___False
2. In April 2021, we published:
   "It is insufficient to mindlessly report results as significant versus not significant without providing a quantitative estimate of the uncertainty of the data."[1]
   ___True ___False
3. In April 2021, we published:
   "Authors could provide a confidence interval, draw a P-value function graph, or run a Bayesian analysis. Authors could calculate and report an S value."[1]
   ___True ___False
4. In April 2021, we published:
   "More importantly: interpret. Consider the values …and interpret how these may inform the results of the study."[1]
   ___True ___False
5. Nevertheless, in 2022, authors *continue* to report results as "statistically significant" versus "not statistically significant" without thoughtfully considering how the uncertainty within their research data informs the results of their study.
   ___True ___False
6. In 2022, authors submitting original scientific articles to *Arthroscopy* will actually have to check a box prior to submission, answering the Yes/No question:
   "Have you reported results as significant versus not significant without thoughtfully providing a quantitative estimate of the uncertainty of the data?"
   ___True ___False
7. In 2022, authors checking the box described above as "Yes" will be instructed *not* to submit their paper until they revise their submission by interpreting how the uncertainty within their research data informs the results of their study.
   ___True ___False

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Section II: Proper Disclosure When Reporting Outcomes on Patients Included in Previous Publications

8. In March 2020, we published:
   "Clinical databases allow researchers to test multiple hypotheses. This could result in including outcomes on the same patient or patients in more than 1 study."[2]
   ___True ___False
9. In March 2020, we published:
   "Such 'double-dipping' is not a dilemma in and of itself, but a problem occurs if multiple reporting of outcomes on the same patient or patients is not disclosed in the methods of a study."[2]
   ___True ___False
10. In March 2020, we published:
    "Absent clarifying disclosure of multiple reporting, a single patient might then be counted twice in future systematic reviews or meta-analyses, resulting in biased and incorrect review of the literature."[2]
    ___True ___False
11. In March 2020, we published:
    "(A)uthors using databases to report clinical outcomes must absolutely and explicitly clarify in their methods if the results of 1 or more patients included in their study have been reported in previous publications."[2]
    ___True ___False
12. In March 2020, we published:
    "(T)o repeat, authors must disclose in their study methods the fact (or even the possibility) that their research includes reporting of outcomes on a patient or patients whose result(s) have been previously reported."[2]
    ___True ___False
13. Nevertheless, in 2022, authors continue to report outcomes on a patient or patients whose result(s) have been previously reported in other studies *without* proper disclosure in their methods.
    ___True ___False
14. In 2022, authors submitting original scientific articles to *Arthroscopy* will actually have to check a box prior to submission, answering the Yes/No question:
    "Have you reported on a patient or patients whose result(s) have been previously reported in other studies *without* proper disclosure in the methods of your current submission?"
    ___True ___False
15. In 2022, authors checking the box described above as "Yes" will be instructed *not* to submit their paper until they revise their submission by disclosing that their research includes even the possibility that they are reporting outcomes on a patient or patients whose result(s) have been previously reported in other studies.
    ___True ___False

Section III: Answer Key

The answer to all questions above is True. Submitting authors should consider themselves twice notified.

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References

1. Cote MP, Lubowitz JH, Brand JC, Rossi MJ. Misinterpretation of *P* values and statistical power creates a false sense of certainty: Statistical significance, lack of significance, and the uncertainty challenge. *Arthroscopy* 2021;37:1057-1063.
2. Lubowitz JH, Brand JC, Rossi MJ. Do some patients count more than others? Reporting outcomes of the same patient in more than one study requires disclosure. *Arthroscopy* 2020;36:617-618.