

Abstract

IMPORTANCE Clinical researchers are obligated to present results objectively and accurately to ensure readers are not misled. In studies in which primary end points are not statistically significant, placing a spin, defined as the manipulation of language to potentially mislead readers from the likely truth of the results, can distract the reader and lead to misinterpretation and misapplication of the findings.

OBJECTIVE To determine the level and prevalence of spin in published reports of cardiovascular randomized clinical trial (RCT) reports.

DATA SOURCE MEDLINE was searched from January 1, 2015, to December 31, 2017, using the Cochrane highly sensitive search strategy.

STUDY SELECTION Inclusion criteria were parallel-group RCTs published from January 1, 2015, to December 31, 2017 in 1 of 6 high-impact journals (*New England Journal of Medicine*, *The Lancet*, *JAMA*, *European Heart Journal*, *Circulation*, and *Journal of the American College of Cardiology*) with primary outcomes that were not statistically significant were included in the analysis.

DATA EXTRACTION AND SYNTHESIS Analysis began in August 2018. Data were extracted and verified by 2 independent investigators using a standard collection form. In cases of disagreement between the 2 investigators, a third investigator served as arbitrator.

MAIN OUTCOMES AND MEASURES The classifications of spin type, severity, and extent were determined according to predefined criteria. Primary clinical outcomes were divided into safety of treatment, efficacy of treatment, and both.

RESULTS Of 587 studies identified, 93 RCT reports (15.8%) met inclusion criteria. Spin was identified in 53 abstracts (57%; 95%CI, 47%-67%) and 62 main texts of published articles (67%; 95%CI, 57%-75%). Ten reports (11%; 95%CI, 6%-19%) had spin in the title, 35 reports (38%; 95%CI, 28%-48%) had spin in the results section, and 50 reports (54%; 95%CI, 44%-64%) had spin in the conclusions. Among the abstracts, spin was observed in 38 results sections (41%; 95%CI, 31%-51%) and 45 conclusions sections (48%; 95%CI, 38%-58%).

CONCLUSIONS AND RELEVANCE This study suggests that in reports of cardiovascular RCTs with statistically nonsignificant primary outcomes, investigators often manipulate the language of the report to detract from the neutral primary outcomes. To best apply evidence to patient care, consumers of cardiovascular research should be aware that peer review does not always preclude the use of misleading language in scientific articles.