Hype, the Responsibility of Authors and Editors, and the Subjective Interpretation of Evidence

Howard Bauchner, MD

Millar and colleagues have published the third in a series of articles on promotional language (or “hype”) in the abstracts of successful National Institutes of Health (NIH) grant applications, NIH funding announcements, and, in this issue, abstracts of publications of NIH-funded research. It is this last report that is the most important, because PubMed abstracts are available to the public and are used by medical reporters for mainstream media and medical electronic websites such as STAT, Medscape, or Medpage Today.

As with the first 2 reports, in the third, the authors found that between 1985 and 2020 there has been an increase in the use of words—such as novel, important, and key—that they classify as hype. Of 139 words they considered as hype, 133 increased in absolute frequency of 3335 words per million (wpm) in the 2 394 480 PubMed abstracts (462.2 million words) they reviewed. For example, the word novel increased by 504 wpm (803%), important by 414 wpm (139%), and key by 378 wpm (1327%). The authors acknowledge that in some cases these words likely do not reflect hype but are appropriate. For example, some research reports are indeed innovative, urgent, and timely. In addition, some readers would not agree that some terms represent hype, for example words such as longstanding or transdisciplinary. But it is the rare report that is transformative (4489% relative increase), unprecedented (2567%), crucial (1123%), or groundbreaking (621%). Obviously, context matters, and that was not assessed in any of the studies.

Why are these reports worthy of attention? Authors and editors have a responsibility to accurately report the findings of research reports. Very few clinical research reports change practice, and those that do are usually randomized clinical trials (RCTs), meta-analyses, and evidence-based guidelines. Few are transformative, first of their kind, or groundbreaking. Claiming causality may be best reserved for RCTs and perhaps meta-analyses, although this view is being challenged. Authors, both in published articles and during scientific meetings, should emphasize the primary preplanned findings of their studies, not the secondary or exploratory analyses. Authors (and journals) reporting the results of RCTs should provide the number needed to treat (NNT) (and number needed to harm). Indeed, the reporting of RCTs is misleading without those calculations. In RCTs with positive results the majority of patients do not benefit. Most RCTs have NNTs of greater than 5. A study of statistically nonsignificant primary outcomes of RCTs found that the reporting and interpretation of findings was frequently inconsistent with the actual results because of what has been described as “spin” (ie, misrepresentation of study results to imply a treatment is beneficial when that is not supported by the evidence). Press releases, either from the authors’ institutions or journals, likely reflect the language in the abstract. Words that exaggerate the findings are possibly more attractive to press officers and medical writers and may be repeated in subsequent reports.

The scientific communication ecosystem is becoming increasingly expansive. The addition of social media has assured that some scientific reports reverberate around the world shortly after publication. This was unimaginable just a decade ago. It is not clear that authors of these social media posts, many of whom may be physicians, have read the entire original scientific publication, and indeed may only read the abstract, potentially being influenced by words such groundbreaking, transformative, or unprecedented. That is why language in abstracts is so important.

Exaggerating the results of research studies may contribute to what could be called the subjective interpretation of evidence. The news of medicine appears to increasingly reflect the bias or political
views of authors rather than the objective assessment of the evidence. The debates around gender affirming care, use of body mass index to assess weight, the Great Barrington Declaration, and medical treatment of obesity in children are increasingly contentious, with what appears to be subjective interpretation of data. Many mainstream publications and medical websites either have their own columnists or quote so-called experts in their stories. Many of these stories often include a reference to a research report, or the evidence that supports the story. Yet, news reports may not contain any information about the quality and quantity of the evidence. Experts and columnists have their own biases, and rather than searching available studies, which admittedly is difficult, they may find it is easier to identify an abstract that supports their views, perhaps with exaggerated language. Marty Baron, the former Editor in Chief of the Boston Globe and Washington Post, argues that information should be “reported without an ideological bias or partisan agenda.” This is as true for medical information as other news. Baron believes that without objective reporting public trust in the news media will be lost, and indeed, has contributed to the polarization of news organizations around the world. The same could be said for medicine, without objective reporting, the public may lose faith in physicians and medicine.

Many in the scientific community have been concerned about misinformation and disinformation and the so-called politicization of science. It is not yet clear if any successful approaches to confront these challenges have been developed. But to start, those who develop the information, those who publish and disseminate it, and those who report it, should not overstate the importance of that information. Leave the hype out of the story.

REFERENCES