Disclosure of Article Funding and Conflicts of Interest in High-Impact Clinical Journals

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INTRODUCTION

In light of strong evidence that financial relationships with industry may influence the conduct and reporting of clinical research, there has been a call for greater transparency via disclosure of financial conflicts of interest (COI).¹ Accurate disclosure of study funding and authors' financial relationships provides editors, reviewers, and readers with key information when evaluating study results and is recommended by EQUATOR reporting guidelines for trials, observational studies, systematic reviews, and clinical practice guidelines.² However, the rate at which journals disclose funding and COI information in published articles is unknown. We therefore examined a cross section of high-impact clinical journals to determine the inclusion of funding and disclosure statements within articles and whether these practices varied by article type and clinical field.

METHODS

Similar to prior studies,³ we examined the highest-impact clinical journals based on 2015 Journal Citation Reports categories and impact factor rankings.⁴ We included 34 journals, consisting of 5 general interest journals, 11 internal medicine, 11 surgical, and 7 non-medicine non-surgery specialty journals. Specialties were selected by size based on number of active physicians.⁵

For each journal, we examined all original clinical research, review, and opinion articles published in the first issue of 2015. Individual article data was independently abstracted from online articles between January and June 2017. To identify all text related to funding and financial relationships, we searched each article electronically for the phrases

“disclosure,” “funding,” “support,” “conflict of interest,” “acknowledgment” and “financial.”

We present descriptive statistics of article types and prevalence of funding and COI statements, overall and by journal specialty and article type.

RESULTS

The mean number of articles per journal was 24 (range 6 to 67). A total of 800 articles met inclusion criteria, of which 57% were research studies, 22% were opinion pieces, and 11% were reviews (Table 1).

Nearly half of articles did not include a funding statement (382/800, 48%; Table 2). A larger proportion of articles in surgery journals (62%) lacked a funding statement compared with general interest (42%), internal medicine (35%), and other specialty journals (30%). Few articles included a statement that they received only internal institutional funding (4%) or no funding (3%). A larger proportion of opinion articles lacked a funding statement (82%) compared with review articles (43%) and original research articles (37%).

The majority of articles included a statement regarding authors' disclosure of COI (673/800, 84%; Table 2); however, COI statements were less common in surgery journals (73% vs 93–99% of other journal categories). Most articles with COI statements included the statement within the article itself (612/673, 91%); however, 9% included only a link to an online repository.

DISCUSSION

Our analysis of high-impact clinical journal articles reveals that though the majority of journal articles include a published statement on COI, nearly half of published articles lacked a specific funding statement.

The International Committee of Medical Journal Editor guidelines advise journals to publish statements describing external article funding as part of COI disclosures; however, recommendations for documentation are less clear for articles receiving no external funding. Our findings

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Table 1 Article Characteristics

	Total ^a	General interest	Internal medicine	Surgery	Other specialty
Articles, No. (%)	800	52	210	395	143
Articles per journal, mean (range)	24 (6–67)	10 (6–30)	19 (11–36)	36 (9–67)	20 (11–26)
Original research, No. (%)	534 (67)	18 (35)	125 (60)	293 (74)	98 (69)
Clinical trial	97	6	22	51	18
Observational study	424	12	99	238	75
Other ^b	13	0	4	3	5
Review, No. (%)	87 (11)	10 (19)	26 (12)	35 (9)	16 (11)
Systematic review	37	2	10	17	8
Narrative review	50	8	16	18	8
Opinion, No. (%)	179 (22)	24 (46)	59 (28)	67 (17)	29 (20)
Editorial	121	10	42	51	18
Perspective	55	13	16	16	10
Guideline	3	1	1	0	1

^aGeneral interest journals included the *New England Journal of Medicine*, *Lancet*, *Journal of the American Medical Association*, *British Medical Journal*, and *PLoS Medicine*. Internal medicine journals included the *Journal of Clinical Oncology*, *Gastroenterology*, *Journal of the American College of Cardiology*, *JAMA Internal Medicine*, *American Journal of Respiratory & Critical Care Medicine*, *Clinical Infectious Diseases*, *Journal of the American Society of Nephrology*, *Arthritis & Rheumatology*, *Journal of Clinical Endocrinology & Metabolism*, and *Annals of Family Medicine*. Surgical journals included the *Annals of Surgery*, *Ophthalmology*, *Obstetrics & Gynecology*, *Journal of Urology*, *Journal of the American College of Surgeons*, *Plastic and Reconstructive Surgery*, *Neurosurgery*, *Journal of Vascular Surgery*, *Clinical Orthopaedics & Related Research*, *Annals of Thoracic Surgery*, and *Head & Neck*. For the specialty of orthopedics, online disclosure forms from the highest-impact journal were not accessible; thus, the next highest-impact journal was included. Other specialty journals included *JAMA Psychiatry*, *Annals of Neurology*, *JAMA Pediatrics*, *Radiology*, *Journal of the American Academy of Dermatology*, *Anesthesiology*, and *Annals of Emergency Medicine*.

^bOther original research articles include modeling studies and pre-clinical drug trials

suggest that many journals omit negative funding statements or subsume them within the COI statement. To avoid incorrect assumptions by readers, journal policies and ICMJE guidelines could be improved by clarifying

the requirement for all published articles to include both a COI statement and a distinct funding statement (specifying external funding sources, institutional funding, or no funding received).

Table 2 Article Funding and Conflict of Interest Disclosure, by Journal Specialty and Article Type

	Total, No. (%) (n = 800)	Journal specialty, No. (%)				Article type, No. (%)		
		General i (n = 52)	Internal medicine (n = 210)	Surgery (n = 395)	Other specialty (n = 143) ^a	Original research (n = 534)	Review (n = 87)	Opinion (n = 179)
Funding statement								
No funding statement	382 (48)	22 (42)	74 (35)	243 (62)	43 (30)	199 (37)	38 (44)	145 (81)
Government	188 (24)	11 (21)	80 (38)	51 (18)	46 (32)	152 (28)	21 (24)	15 (8)
Industry ^b	64 (8)	7 (13)	20 (10)	27 (7)	10 (7)	57 (11)	7 (8)	0 (0)
Non-profit	52 (7)	4 (8)	11 (5)	28 (7)	9 (6)	43 (8)	2 (2)	7 (4)
Internal funding	29 (4)	0 (0)	3 (1)	16 (4)	10 (7)	22 (4)	4 (5)	3 (2)
Statement of no funding	25 (3)	2 (4)	0 (0)	9 (2)	14 (10)	15 (3)	5 (6)	5 (3)
Mixed non-industry	60 (8)	6 (12)	22 (1)	21 (5)	11 (8)	46 (9)	10 (11)	4 (2)
COI disclosed								
≥ 1 relationships	238 (30)	22 (42)	81 (39)	94 (24)	41 (29)	178 (33)	33 (38)	27 (15)
with industry disclosed ^c								
No industry relationships	436 (55)	29 (56)	114 (54)	193 (4)	100 (70)	267 (50)	46 (43)	123 (69)
No disclosure statement	126 (16)	1 (2)	15 (7)	108 (27)	2 (1)	89 (17)	8 (9)	29 (16)
Method of COI disclosure								
Disclosure within article	612 (77)	41 (79)	146 (70)	284 (72)	141 (99)	412 (77)	73 (84)	128 (72)
Link to online repository	61 (8)	10 (19)	48 (23)	3 (1)	0 (0)	33 (6)	6 (3)	22 (12)
No disclosure statement	126 (16)	1 (2)	15 (7)	108 (27)	2 (1)	89 (17)	8 (9)	29 (16)

COI, conflict of interest

^aOther specialties include anesthesiology, dermatology, emergency medicine, neurology, pediatrics, psychiatry, and radiology

^bIndustry funding including funding solely by industry and mixed funding including industry

^cPer International Committee of Medical Journal Editor guidelines, only disclosures of relationships with “entities that could be perceived to be affected financially by the published work, such as drug companies, or foundations supported by entities that could be perceived to have a financial stake in the outcome” were considered positive COI disclosure. Financial relationships with other institutions such as government agencies, non-profit research foundations, medical journals, or academic institutions were not defined as conflicts for the purposes of this project

We found that review and opinion articles were less likely to include funding statements than research articles. While research articles are often held to higher levels of scientific scrutiny than other article types, by design, opinion pieces and reviews are more subjective than research reports. Authors' viewpoints, which may be consciously or unconsciously influenced by financial relationships, should be interpreted by readers with the most complete information on potential biases possible.

We examined a cross-sectional subset of high-impact clinical journals which may not be generalizable to all clinical journals; however, high-impact journals may set editorial trends for other journals. Prior research suggests that lower impact journals are likely to have less complete COI policies;⁶ thus, our findings are likely conservative.

For disclosure to be an effective mechanism of managing COI, journal editors should standardize the inclusion of both COI and funding statements for all journal articles.

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Compliance with Ethical Standards:

Conflict of Interest: All authors report no external funding for this work. Drs. Gellad and Anderson served on the Journal of General Internal Medicine editorial board during the conduct of this study. Dr. DeJong served as an editorial fellow at JAMA Internal Medicine during the conduct of this study.

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