

Supplementary file 5: Characteristics of the 17 included studies related to conflicts of interest.

Author, Year	Date of search/data collection	Start Upload Date	End Upload Date	Period of coverage	Population	Study outcomes	Funding of the study	COI of study authors	Country of study authors	Country of the subjects of study	Type of social media	Focus	Language of posts	Subject of COI	Type of COI	Sources of COI	Tools to assess the presence of COI	Results
Betschart 2020 [22]	May 2019	July 2007	May 2019	12 years	Cross-sectional: Survey of 159 YouTube videos addressing treatment options for lower urinary tract symptoms with benign prostatic hyperplasia	Frequency of reporting of COI	Not reported	None	Switzerland and Germany	Not reported	YouTube	Urology: lower urinary tract symptoms associated with benign prostatic hyperplasia.	English	Physicians, clinic, hospital, or university Others: Industry, news media, societies/organizations	Not specified	Not specified	None	<ul style="list-style-type: none"> 1.3% (2/159) videos included a disclosure of conflicts of interest 83.6% (133/159) of the videos were subject to commercial bias (defined as information presented in a manner that attempts to sway participants' opinions in favor of a particular commercial product for the express purpose of furthering a commercial entity's business, meaning a deliberate intent to mislead).
Chretien 2009 [30]	March/April 2009	N/A	N/A	N/A	Cross-sectional: Electronic survey of 78 deans of student affairs, their representatives, or counterparts from US medical schools in the Association of American Medical Colleges	Unprofessional incidents involving COI	Not reported	None	United States	United States	Web 2.0: not specified otherwise	General	English ¹	Medical students	Not specified	Industry	None	<ul style="list-style-type: none"> 4% (2/46) of all reported unprofessional incidents involved conflicts of interest (e.g., product endorsement without a COI disclosure)
Chretien 2011[21]	May 2010	May 1, 2010	May 31, 2010	1 month	Cross-sectional:	Unprofessional	Not reported	None	United States	United States,	Twitter	General: surgery,	English	Physicians	Not specified	Industry	None	<ul style="list-style-type: none"> 8.3% (12/144) of unprofessional tweets

					Survey of 5156 tweets of 260 self-identified physicians with >500 followers	tweets involving 'possible' COI				Europe, Canada, Asia, Australia, not specified		internal medicine, family medicine, pediatrics, psychiatry, emergency medicine, obstetrics/gynecology, and not specified						involved 'possible' conflicts of interest (i.e., making unsupported claims about a product being sold on the physician's website or repeatedly promoting specific health products)
Greysen 2012 [10]	N/A	N/A	N/A	N/A	Cross-sectional: Survey of 48 executive directors of all medical and osteopathic boards in the US	Unprofessional incidents involving COI	Funded by the Robert Wood Johnson Foundation and the Department of Veterans Affairs	1/5 reported serving as a scientific advisory board member for Fair Health Inc and receiving funding as a collaborator on the Yale University Open Data Access project	United States	United States	Not specified	General	English ¹	Physicians	Not specified	Not specified	None	<ul style="list-style-type: none"> 56% of state medical boards indicated that they received reports of violations related to "failure to reveal conflicts of interest online" (estimated percentage from the figure)
Hessari 2019 [31]	December 2016	January 2016	December 2016	1 year	Cross-sectional: Survey of a total of 2805 tweets of Alcohol industry (AI)-	Association between COI and content of posting	None	None	United Kingdom	United Kingdom, Ireland, Australia	Twitter	Social aspects/public relations organizations related to alcohol	English ¹	Alcohol industry (AI)-funded organizations and non-AI-funded charities	Sponsorship by alcohol industry	Alcohol industries	None	<ul style="list-style-type: none"> None (0/1156) of alcohol-industry funded organizations tweets mentioned alcohol marketing, advertising, and sponsorship; issues related to alcohol pricing; physical health harms, including cancers, heart disease,

					funded organizations (1156 tweets) and non-AI-funded charities (1649 tweets)							awareness							<ul style="list-style-type: none"> dementia and diabetes; and fertility and pregnancy 10.1% (166/1649) of non-industry-funded organizations tweets mentioned alcohol marketing, advertising, and sponsorship; issues related to alcohol pricing; physical health harms, including cancers, heart disease, dementia and diabetes; and fertility and pregnancy
Kaestner 2017 [29]	Jan 7-25, 2017	N/A	N/A	N/A	Cross-sectional: Survey of twitter accounts of 156 hematologist-oncologists in the US with a FCOI (at least US\$1000 in 2014), and frequent tweets (at least 100 total Tweets); physicians with private accounts were excluded	Proportion of undisclosed COI Association between COI and content of posting	Not reported	1/4 reported receiving payments for his book "Ending Medical Reversal".	United States	United States	Twitter	Hematology-oncology	English	Hematology-oncology physicians	Financial COI: payment	Biopharmaceutical industry	Open Payments database	<ul style="list-style-type: none"> 1.3% (2/156 physicians) of U.S-based hematologist-oncologists, who had financial conflicts of interest according to OPD, included disclosures of their payments, and these were in their 5-line twitter biography. 81% (126/156) of physicians mentioned at least one drug from a company for which they had a FCOI Of 4358 total drug mentions, 52% (2252/4358) regarded conflicted drugs. Association between COI and coding of tweets (positive, neutral, or negative): conflicted tweets were more likely to be positive (p=0.02), similarly likely to be neutral (p=0.45), and less likely to be negative (p=0.008) General payment FCOI: Median \$13,668 (IQR, \$4,292-\$33,213) Range \$1,031-\$444,055 	

																		More than half of drug mentions refer to a median of six companies that pay these physicians
Lagu 2008 [23]	December 14, 2006	January 1, 2006	December 14, 2006	1 year	Cross-sectional: Survey of 271 health-related blogs by doctors or nurses	Frequency of reporting of COI	Partially funded by The Robert Wood Johnson Foundation Clinical Scholars program	None	United States	Not reported	Blogs (Medlogs, Yahoo Health and Medicine Blogs and The Medical Blog Network)	General	English ¹	Physicians and nurses	Not specified	Industry	None	<ul style="list-style-type: none"> ▪ None (0/31) of the blogs that explicitly promoted a specific healthcare product (i.e., providing product images, descriptions, or advocacy) disclosed conflicts of interest.
Miller 2011 [12]	June 2007 and May 2008	N/A	N/A	N/A	Cross-sectional: Survey of 951 health blogs	Frequency of reporting of COI	Not reported	Not reported	United States	Not reported	Blogs	General	English	Physicians Others: other non-physician health professionals, patient, individual, consumer, caregiver	Funding/sponsorship	Corporation, Web site, medical group, foundation, or other entity	None	<ul style="list-style-type: none"> ▪ 15.6% (148/951) of health blogs reported sponsorship <p>Sponsorship stratified by occupation (p=0.053):</p> <ul style="list-style-type: none"> ▪ 14.9% (29/194) of physicians reported sponsorship in their blogs ▪ 19.7% (50/254) of other health professionals reported sponsorship in their blogs ▪ 12.9% (58/451) of non-health-related occupations reported sponsorship in their blogs
Niforatos 2019 [18]	N/A	June 1, 2017	June 1, 2018	1 year	Cross-sectional: Survey of 31 FOAMed blogs and websites	Prevalence of COI Proportion of undisclosed COI	Not reported	None	United States	United States	Blog posts and website entries	Emergency medicine	English ¹	Emergency medicine physicians	Financial: 1) compensation for services other than consulting, including serving as faculty or as a speaker at a venue	Industry	Open Payments database	<ul style="list-style-type: none"> ▪ 15.4% (45/292) of U.S.-based healthcare providers had FCOI in the 2017 Open Payments database. ▪ Of the 12 bloggers who had 'significant' FCOI (defined as general or research payments >\$5,000 from a single company over a 12-month period): 0%

														other than a continuing education program; 2) consulting fee; 3) travel and lodging; 4) honoraria; 5) food and beverage; and (6) education.				(0/12) disclosed FCOI in their FOAMed content. <ul style="list-style-type: none"> General payment FCOI: Median \$191 (IQR, \$94.1–\$829) Range \$38,132 Research payment FCOI: Median \$15,703 (IQR, \$10,262–\$72,916) Range \$127,261 Type of FCOI: Food and beverages (85.8%), Travel and lodging (8.6%), Other services (1.9%), Honoraria (1.9%), consulting (1.2%), and education (0.6%).
Nishizaki 2021 [24]	August 2021	N/A	N/A	N/A	Cross-sectional: Survey of 72 YouTube videos reporting on pediatrics nocturnal enuresis	Frequency of reporting of COI	Not reported	None	Japan	Japan	YouTube	Pediatrics : nocturnal enuresis	Japanese	1. Physicians, nurses 2. non-health personnel: (1) academic (authors/uploaders affiliated with research groups or universities/colleges); (2) non-physician health personnel (pharmacist/s/chiropractors/acupuncturists); (4) independent user (nursery	Not specified	Not specified	None	<ul style="list-style-type: none"> 0% (0/72) of videos had a conflicts of interest declaration by the uploader 0% (0/72) videos were judged to have a commercial bias

														schoolteachers/schoolteachers), and (5) patient and family				
Pratsinis, 2021 [25]	October 2019	December 2006	December 2018	12 years	Cross-sectional: 100 YouTube videos addressing treatment options of urinary stones	Frequency of reporting of COI	None	None	Switzerland, Germany	Not reported	YouTube	Urology: surgical treatment of urinary stones	English	Physicians, clinic, hospital or university Industry, consumer/patient, medical societies/or organizations and news media	Not specified	Not specified	None	<ul style="list-style-type: none"> 9% (9/100) of YouTube videos had a declaration of COI 72% of all videos were issued by healthcare providers or medical industry
Pratsinis 2021 [26]	October 2020	January 2008	June 2020	12 years	Cross-sectional: Survey of 240 YouTube videos reporting on benign prostatic hyperplasia, prostate cancer, and urinary stone disease. The 20 most viewed videos for each urological condition and language were included in the analysis.	Frequency of reporting of COI	None	None	Switzerland	Not reported	YouTube	Urology: benign prostatic hyperplasia, prostate cancer, and urinary stone disease	English, French, German, and Italian	Physicians, clinic, hospital or university Industry, consumer/patient, medical societies/or organizations and news media	Not specified	Not specified	None	<ul style="list-style-type: none"> “Majority” of all videos did not have declaration of conflicts of interest Estimated percentage of COI declaration: across 12 categories, proportion of videos reporting on COI ranges from 4.4%-35%, with a median of 19%; the total percentage of reporting of COI in the 240 videos is 19% No differences in reported COI for the different languages assessed

Shrank 2011 [28]	November 17, 2010.	N/A	N/A	N/A	Cross-sectional: Survey of 15 social networking sites (93% featured blogging)	Frequency of reporting of COI	Funded (by a research grant from CVS Caremark and a career development award from the National Heart, Lung, and Blood Institute)	None	United States	All countries	Social network websites	Diabetes	All languages	Health bloggers	Financial	Volunteer donation, foundation, pharmaceutical manufacturer, device manufacturer, insurer, not-for-profit, webhost	None	<p>1. Industry sponsorship: Pharmaceutical manufacturers: 53.3% (8/15)</p> <p>Diabetes device manufacturers: 60% (9/15)</p> <p>Webhost Sponsorship: 13.3% (2/15)</p> <p>2. Foundation sponsorship: 20% (3/15)</p> <p>3. Voluntary donations: 26.7% (4/15)</p> <p>4. No industry sponsorship: 20% (3/15)</p> <p>5. Insurers: 20% (3/15)</p> <p>6. Not-for-profit: 26.7% (4/15)</p>
Tao 2017 [19]	June 1 - August 1, 2016	N/A	N/A	N/A	Cross-sectional: Survey of Twitter accounts of 634 hematologist-oncologists in the US	Prevalence of COI	Funded by Laura and John Arnold Foundation	1/4 reported receiving payments for contributions to Medscape	United States	United States	Twitter	Hematology-oncology	English ¹	Hematology-oncology physicians	Financial (general payments and research payments)	Industry	Open Payments database	<p>▪ 79.5% (504/634) of U.S.-based hematologist-oncologists were reported on the Open Payment Database for having at least 1 FCOI</p> <p>▪ Type of COI: General and research payments: 41% (262/634) of hematologist-oncologists Receiving general payment: 72.4% (459/634) of hematologist-oncologists Prevalence research payment: 48.4% (307/634) of hematologist-oncologists</p> <p>▪ General payment FCOI: Median \$1,644 (IQR, \$129-\$13,744)</p> <p>▪ Research payment FCOI:</p>

																		Median \$11,064 (IQR, \$0-\$175164) General payments seemed consistent regardless of the extent of Twitter use, while research payments appeared greatest among those who use Twitter the least
Toth 2019 [13]	November 2017	N/A	N/A	N/A	Cross-sectional: Survey of 10 blog posts of nutritionists and registered dietitians in Ontario	Prevalence of 'potential' COI	None	1/5 reported being the chair of the Professional Titles for Dietitians in Ontario Advocacy Group and 5/5 of authors are Ontario registered dietitians	Canada	Canada	Blogs	Detoxification diets	English	Nutritionists and registered dietitians in Ontario	Not specified	Detox diets industry	None	<ul style="list-style-type: none"> ▪ 80% (4/5) of nutritionist blog posts had a 'potential' COI (i.e., selling a product or service related to detox diets, including selling books, meal plan guides, and products such as juices) ▪ None of registered dietitians blog posts had a 'potential' COI
Vu 2021 [27]	March 2021	February 2008 (surgery) November 2008 (radiotherapy)	September 2019	11 years	Cross-sectional: Survey of 80 YouTube videos on optimal treatment of prostate cancer: surgical therapy versus radiotherapy	Frequency of reporting of COI	None	None	Switzerland	Not reported	YouTube	Urology oncology: surgical therapy or radiotherapy of prostate cancer	English	Physicians, clinic, hospital or university Others: patients, societies (foundations, governmental institutions, academic journals), industry, and news media	Not specified	Not specified	None	<ul style="list-style-type: none"> ▪ 10% (surgery) and 5% (radiotherapy) of the providers included a disclosure of their conflicts of interest ▪ Commercial bias: 15% (surgery videos) and 23% (radiotherapy videos) of the videos contained commercial bias

Walradt 2021 [20]	April 2020	No limit	April 2020	N/A	Cross-sectional: Survey of 956 tweets by gastroenterologists and surgeons, sharing gastrointestinal (GI) endoscopy videos/images. Selected after identifying those followed by at least 1 major US gastroenterology society and had > 500 followers	Prevalence of COI Proportion of undisclosed COI	None	Potential competing interests: Dr. Berzin is a consultant for Wision AI, Boston Scientific, and Medtronic. All other authors disclosed no financial relationships relevant to this publication.	United States	United States	Twitter	Gastroenterology	English	Gastroenterologists and surgeons	Financial	Industry	Open Payments database	<ul style="list-style-type: none"> ▪ 37% (7/19) of tweets that mentioned the name of a medical device were posted by a U.S physician who had received a payment (according to OPD) from the manufacturer of the device mentioned. ▪ None of the physicians who had received a payment from the manufacturer of the device mentioned disclosed any financial relationships.
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¹Language was assumed based on the country of the individuals posting

ABBREVIATIONS:

COI: conflict of interest

FCOI: financial conflict of interest

OPD: Open Payment Database

FOAMed: Free Open Access Medical Education

N/A: Not available