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Hip and Knee Arthroplasty Orthopedic Literature in Medical Journals—Is It Negatively Biased?

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ABSTRACT

Background: Healthcare policy is often determined by well-designed studies most often published in high-impact medical journals. However, concern about the presence of publication bias against lower-extremity arthroplasty-related studies has called into question some of the validity of certain reports. There are only a few studies investigating the presence of the bias in high-impact medical journals against lower-extremity arthroplasty intervention, particularly in the *Journal of American Medical Association (JAMA)*, *New England Journal of Medicine (NEJM)*, and the *Lancet*. Thus, the purpose of this study was to assess (1) the distribution of positive, neutral, and negative results; (2) the number of reports focused on lower-extremity arthroplasty complications among these 3 journals; and (3) difference in bias between 2 time periods (1975 to 1990 and 2000 to 2016).

Methods: A review of the literature from 3 major medical journals (*NEJM*, *Lancet*, and *JAMA*) was performed using PubMed electronic databases, which retrieved articles between January 1976 and December 2016. Studies were categorized as being positive, neutral, and negatively biased by 2 reviewers. Studies were categorized as reporting on lower-extremity arthroplasty-related complications if they were based on complications including deep vein thrombosis, infection, metal-related complication, fat embolism, readmission, or mortality. In addition, we have compared the journal bias between 2 different time points (1975 to 1990 and 2000 to 2016). Descriptive analyses were performed to assess frequencies. Chi-squared analysis was conducted for categorical variables, whereas a z-test was performed for dichotomous data.

Results: When assessing all 3 journals, there were 46 positive (30.3%), 46 negative (30.3%), and 60 neutral reports (39.5%). There was no statistically significant difference in classification proportions between the 3 groups ($P = .905$). There was a higher percentage of medical literature reporting on the complications of arthroplasty (55.9%); however, this was not statistically significant (z -score = 1.38; 95% confidence interval, 0.48–0.64; $P = .17$). There was no difference in overall journal reporting between 1975 to 1990 and 2000 to 2016 ($P = .548$).

Conclusion: There was no evidence of publication bias of lower-extremity arthroplasty reports in the major medical journals (*JAMA*, *NEJM*, and *Lancet*). However, there were more published studies reporting on complications of lower-extremity arthroplasty. This may be due to systematic bias among journal editors in these journals, or due to low journal submission reporting noncomplications after arthroplasty intervention. We did not find the time period to be a factor in bias reporting of orthopedic literature in major medical journals. More work is needed to verify the results of this study.

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Recently there has been increasing efforts by healthcare policy makers to improve value of care [1–5]. Critical to these efforts has been the reliance upon evidence-based medicine for decision-making protocol and policy formation [6,7]. As such, evidenced-based medicine, most often from well-designed randomized control trials, are frequently published in high-impact medical

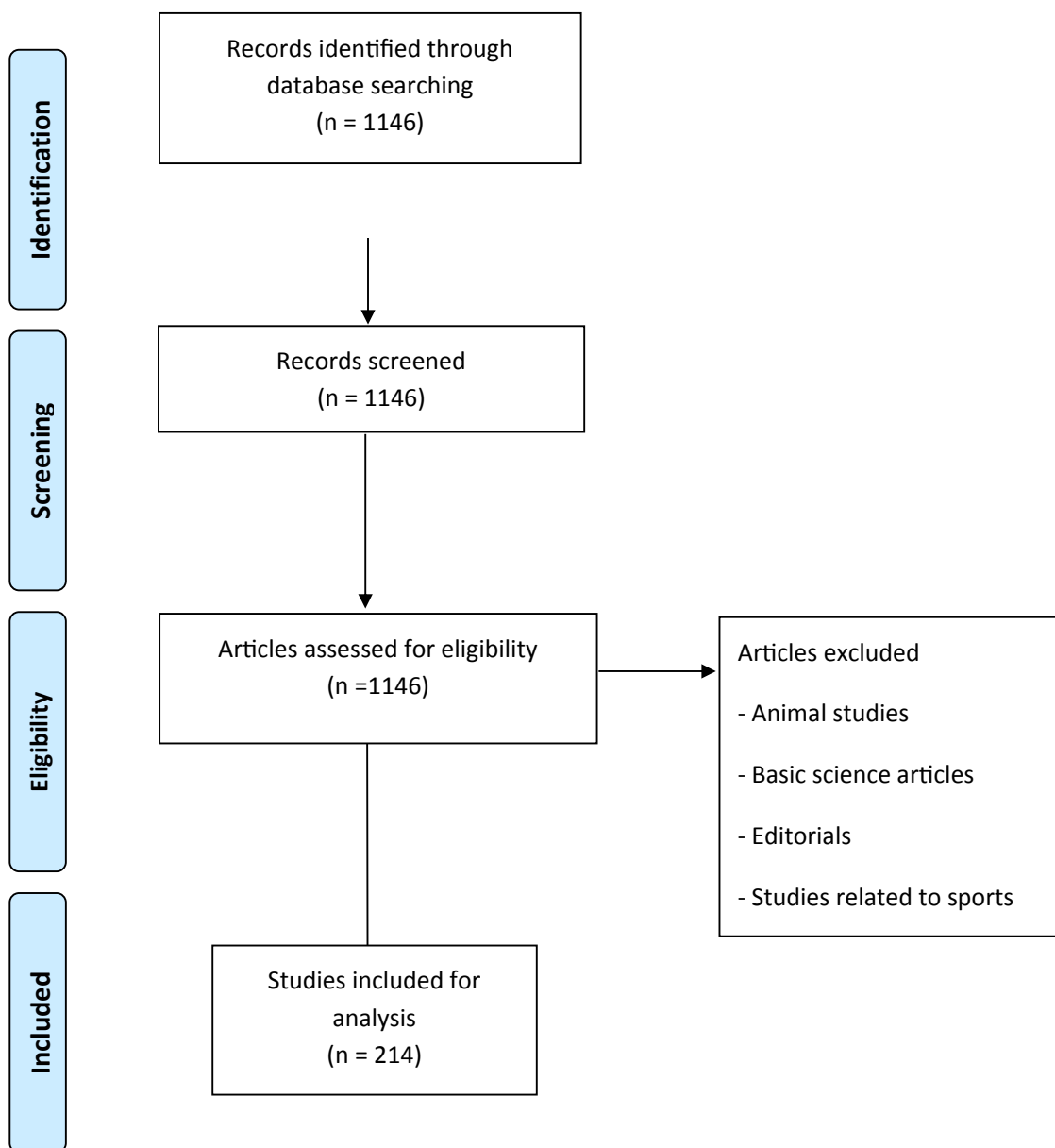


Fig. 1. Flow diagram presenting the systematic review process used in this study.

journals that harbor large audiences [8]. For the field of orthopedics, these publications carry important weight, particularly with studies that report on outcomes of lower-extremity arthroplasty [9].

In response, there has been increased publication of lower-extremity arthroplasty-related studies in high-impact general medical journals [10]. These studies have the highest visibility and thereby hold the largest potential for ultimately influencing key stakeholders in the healthcare system. Additionally, these publications are beneficial in educating primary care physicians on the risks and benefits of orthopedic interventions. This is of particular importance for future healthcare systems in which primary care physicians may dictate referral patterns for musculoskeletal ailments [9]. Unfortunately, there is increasing concern that medical journals may be subject to publication biases wherein only controversial or surprising research findings are published. This

concern has gained increased traction after a study from a prominent medical journal—reported sham arthroscopy to be just as effective as partial meniscectomy for meniscal tears [11–14].

To our knowledge, only a few studies exist that evaluate publication bias of lower-extremity arthroplasty-related literature in high-impact general medical journals. Therefore, our purpose was to assess the medical literature concerning the potential publication bias against arthroplasty intervention by comparing 3 high-impact factor medical journals: *New England Journal of Medicine (NEJM)*, *Lancet*, and *Journal of American Medical Association (JAMA)*. Specifically, we compared the articles published on total joint arthroplasty by (1) the distribution of positive, neutral, and negative results; (2) the number of articles focused on orthopedic complications among these 3 journals; and (3) difference in bias between 2 time periods (1975 to 1990 and 2000 to 2016).

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