

A Systematic Review of Meta-analyses Published in *Arthroscopy: The Journal of Arthroscopic and Related Surgery*



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Purpose: To determine whether the number of meta-analyses published by *Arthroscopy: The Journal of Arthroscopic and Related Surgery* has increased from the inception of the Journal through 2014. **Methods:** A literature search of the Journal's Web site and Medline was carried out. All studies described as a "meta-analysis" as well as systematic reviews that pooled data were included. The number of published meta-analyses was calculated and summarized by year of publication, region, topic, and level of evidence. **Results:** The Journal's Web site search resulted in 517 citations for review, and the Medline search resulted in 400. After the results of each search were combined and duplicates were removed, a total of 60 studies were included in this review. The first published meta-analysis appeared in 2001. Of the 60 meta-analyses, 36 (60%) were published between 2013 and 2014. In light of the increase in the number of publications, a review of the design and conduct of a meta-analysis is presented in a straightforward question-and-answer format. **Conclusions:** The number of meta-analyses appearing in *Arthroscopy* has increased over the past 2 decades. This increase highlights the importance of developing an understanding of the premise and components of a meta-analysis to allow the reader to critically appraise these studies. **Level of Evidence:** Level IV, systematic review of Level I through IV meta-analyses.

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Evidence-based medicine (EBM) is a buzzword in the current literature. In EBM, clinical research is ranked by study design and often displayed in a pyramid.¹ Sitting on top of most EBM pyramids is the meta-analysis. Similarly, the level-of-evidence grading schemes found in the front of most journals give top billing to the meta-analysis, particularly meta-analyses conducted on high-quality randomized clinical trials.

Much like a chainsaw, the meta-analysis can be a powerful and efficient tool but without proper care and

attention carnage may ensue. The premise of meta-analysis is simple: Several studies examining the same question in the same population of patients is better than one. Various statistical techniques, plots, and figures unique to a meta-analysis are used to examine how alike a group of studies are and whether it is appropriate to combine, or pool, their results. In this regard, an understanding of the concepts guiding these methods is essential for the consumer of a meta-analysis.

Over the past 5 decades, the number of meta-analyses occurring in the realm of orthopaedic surgery has continued to increase.^{2,3} Considering the growing prevalence of meta-analyses and the weight they carry as potential high-level evidence, we conducted a systematic review of meta-analyses published in *Arthroscopy: The Journal of Arthroscopic and Related Surgery*. The purpose of this study was to determine whether the number of meta-analyses published by the Journal has increased from its inception through 2014. In addition, we aimed to identify trends in terms of frequency of topic areas and levels of evidence. Our hypothesis was that the number of meta-analyses appearing in the Journal had increased over the past 2 decades.

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The authors report the following potential conflict of interest or source of funding: R.A.A. receives support from Arthrex, Mitek, Biomet, and Soft Tissue Regeneration. A.D.M. receives support from Arthrex.

Received March 13, 2015; accepted August 4, 2015.

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0749-8063/15245/\$36.00

<http://dx.doi.org/10.1016/j.arthro.2015.08.002>

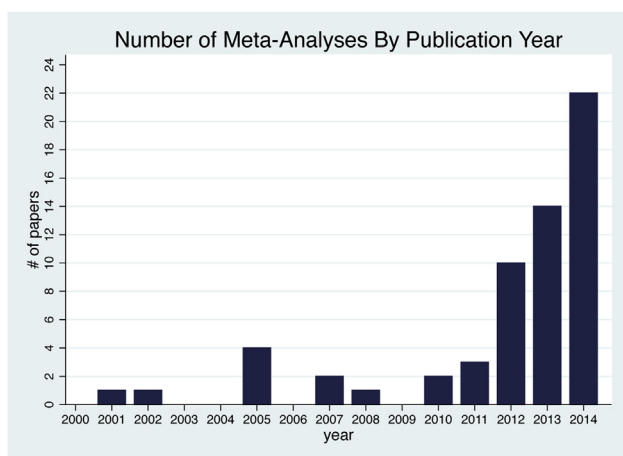


Fig 1. The number of meta-analyses appearing in *Arthroscopy* has increased over the past 2 decades.

Methods

A systematic review specific to *Arthroscopy* was conducted from 1985 through 2014.

Eligibility

All studies described as a “meta-analysis” were included. In addition, all systematic reviews were reviewed, and if statistical pooling of study data was performed, the study was considered a meta-analysis and was included. Studies that combined laboratory data (biomechanical, animal, or cell-based studies) were excluded.

Literature Search and Selection of Studies

Two separate searches were conducted to determine the number of meta-analyses published in *Arthroscopy* from January 1, 1985, through December 31, 2014. A single investigator (M.P.C.) conducted a search of the *Arthroscopy* Web site (<http://www.arthroscopyjournal.org>) in January 2015 using the search term “meta-analysis” or “systematic review.” To be as inclusive as possible, a second search was conducted in February 2015 by a second investigator (J.M.A.) using the Medline database through PubMed. The search criteria were set to “((meta) OR systematic) AND (“Arthroscopy: the journal of arthroscopic & related surgery: official publication of the Arthroscopy Association of North America and the International Arthroscopy Association”[Journal])” with the search filter confined to publication dates from January 1, 1985, through December 31, 2014. The investigators separately reviewed all abstracts or manuscripts (or both) recovered from their respective searches. After the initial screening process, both investigators reviewed the cumulative group of potential studies and came to a consensus regarding which met the inclusion criteria and were to be included in this review.

Data Abstraction and Analysis

The year of publication, region (shoulder, knee, and so on), topic (glenohumeral instability and so on), and assigned level of evidence were abstracted from each study. Quality assessment of the studies was not performed because the primary goal of this review was to determine whether the number of published meta-analyses has increased over time. The number of published meta-analyses was calculated and summarized by year of publication, region, topic, and level of evidence.

Results

The search of the *Arthroscopy* Web site (performed by M.P.C.) resulted in 517 citations, of which 440 were excluded based on the title or abstract. The search of the Medline database through PubMed (performed by J.M.A.) resulted in 400 citations. Of these, 332 were excluded based on the abstract. After the studies from each search were combined and duplicates were removed, a total of 60 studies were included in this review. The final group of 60 meta-analyses was categorized according to year of publication (Fig 1). The first published meta-analysis appeared in 2001.

Table 1 displays the number of meta-analyses according to region and topic. Eighty-eight percent of all meta-analyses were on topics relating to the knee (n = 32) and shoulder (n = 20). Anterior cruciate ligament reconstruction (n = 21), glenohumeral instability (n = 10), and rotator cuff repair (n = 7) were the most common areas, accounting for 63% of all meta-

Table 1. Meta-analyses by Region

Region	Topic	No. of Studies	% of Region	% of Total
Knee	ACL	21	66	35
	VTE	2	6	3
	PF instability	2	6	3
	PRP	2	6	3
	ACI	2	6	3
	Imaging	2	6	3
	Postoperative injection	1	3	2
Shoulder	Instability	10	48	17
	RCR	7	33	12
	PRP	1	5	2
	OA	1	5	2
	AC joint Surgical positioning	1	5	2
Hip	Impingement	1	33	2
	Chondral lesions	1	33	2
	Hip-spine syndrome	1	33	2
Ankle	Chondral lesions	1	50	2
	Impingement	1	50	2
Elbow	Instability	1	100	2
General	VTE	1	100	2

AC, acromioclavicular; ACI, autologous chondrocyte implantation; ACL, anterior cruciate ligament; OA, osteoarthritis; PF, patellofemoral; PRP, platelet-rich plasma; RCR, rotator cuff repair; VTE, venous thromboembolic event.

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