

Orthopaedic Business is the Focus of 3.4% of Articles in Top General Orthopaedic Journals.

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Objectives: The purpose of this study is to compare the proportion of business articles in top general orthopaedic journals.

Design: Review.

Intervention: Categorize all articles from general orthopaedic journals with top four H-Index.

Main outcome measurement: Articles categorized as payer analysis (PA), cost analysis (CA), value-based practice (VBP), Management and human resources (HR), practice efficiency (PE) and the business of scholarship (SC).

Results and conclusions: JBJS, B&JJ, CORR, and JAAOS were identified as top orthopaedic journals. All had some level of business scholarship with an average of 3.4% of articles dedicated to business, ranging from 2 to 7%. Of business-related articles 27% of articles were cost analysis, 25% focused on practice efficiency, 22% on Value based practices, 16% payer analysis, 7% business of scholarship and 4% on human resources. The lack of scholarship regarding human resources represents a significant opportunity for improvement as a profession.

Level of Evidence: IV; Review

Keywords: Business, management, human resources, cost, value, efficiency.

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INTRODUCTION

Functionality, return to work, and minimizing disability formed the early roots of scholarly work on the business of orthopaedic surgery. As early as 1928, JBJS published on the value of an orthopaedic specialist in reducing the cost of disability from fractures¹. A payer analysis from 1937 regarding the unwillingness of insurance companies to compensate for care of chronic back pain² still reflects the realities of today. The recently founded Journal of Orthopaedic Business (JOB) aims to advance this tradition. The first issues of JOB investigated the value of infection cases³, the inadvertent incentives that payer reimbursement can cause⁴, H-index as a metric for aiding academic promotion decisions⁵, and the possibility of vascularized bone grafting of the scaphoid as an outpatient procedure⁶. These articles represent three of the six types of business articles we have identified in orthopaedic literature.

Within orthopaedic business literature we have categorized articles as payer analysis (PA), cost analysis (CA), value-based practice (VBP), management and human

resources (HR), practice efficiency (PE) and the business of scholarship (SC). Payer analyses look at methods of payment such as commercial versus government insurance programs, bundled payments, or factors affecting payment. Cost analyses compare the cost of treatments or drivers of increased costs. Value-based practice articles look at both cost and outcomes and often correlate them using quality adjusted life years (QUALY). Management and human resource articles deal with staffing, hiring, promotion, and compensation of personnel. Practice efficiency articles investigate ways to increase the efficiency or effectiveness of clinic or operating room routines to allow greater productivity. Business of scholarship articles examine the business aspects of publishing, research funding, and leadership.

In this article we hypothesize that the top four general Orthopaedic journals; Journal of bone and joint science (JBJS), Clinical Orthopaedics and Related Research (CORR), Bone and Joint Journal (B&JJ), and Journal of the American Academy of Orthopaedic surgery (JAAOS), will differ in the proportion of articles dedicated to business as well as the types of business articles published.

Table 1: Number of business articles compared to total articles for the period from 2016 to 2020

	CORR	JBJS	B&JJ	JAAOS	Total
2016	12	15	5	5	37
2017	11	14	2	5	32
2018	7	21	7	11	46
2019	10	16	10	21	57
2020	10	17	8	30	65
2016-2020					
Business articles	50	83	32	72	237
Business (%)	2.0	4.1	2.3	7.0	3.4
2016-2020	2442	2040	1416	1022	6920
Total articles					

METHODS

Top general orthopaedic journals were identified by H-index on Sci major⁷. For this project we excluded subspecialty journals such as Spine and the American Journal of Sports Medicine. All articles from 2020 through 2016 were screened for articles regarding any aspect of orthopaedic business. Articles were categorized by type as defined in the introduction, and differences between journals were compared in the standard statistical fashion.

RESULTS

JBJS, CORR, B&JJ and JAAOS were identified as the top non-subspecialty orthopaedic journals as ranked by H-index. Overall ranks and H-indices were first and 260 for JBJS, sixth and 204 for CORR, ninth and 181 for B&JJ, and 29th and 111 for JAAOS.

For the 5 years from 2016 to 2020 there were 1226 articles published in JBJS, 2,434 in CORR, 1416 in BJJ, and

1022 in JAAOS for a total of 6098 articles. Of these articles 237 (3.4%) focused on aspects of the business of orthopaedics. There was a significant difference in the frequency of each journal publishing on business topics including 83 (4.1%) of JBJS, 50 (2.0%) of CORR, 32 (2.3%) of B&JJ and 72 (7.0%) of JAAOS ($P < 0.001$, Table 1).

There was significant variation in the distribution of article types between journals. Overall, 27% of articles were cost analysis, 25% focused on practice efficiency, 22% on Value based practices, 16% payer analysis, 7% business of scholarship and 4% on human resources. There were notable outliers such as the 47% of B&JJ business-focused articles dedicated to value-based care, and 36% of JAAOS business articles dedicated to practice efficiency ($P = 0.02$, Table 2).

From 2016 to 2020 there was a relatively steady proportion of articles dedicated to business ranging from 2% to 4%. This was true for all journals except JAAOS which increased the proportion of business articles each year from 2017 (3%) to 2020 (11%).

Table 2: Types of articles for each journal by year.

	CORR	JBJS	B&JJ	JAAOS	Total	
PA	10	17	2	8	37	16%
CA	11	21	11	20	63	27%
VBP	11	16	15	10	52	22%
HR	1	4	0	4	9	4%
PE	14	17	3	26	60	25%
SC	3	8	1	4	16	7%
Total	50	83	32	72	237	

PA: Payer Analysis

CA: Cost Analysis

VBP: Value based practice

HR: Human Resources

PE: Practice Efficiency

SC: Scholarship

DISCUSSION

Among the most cited general orthopaedic journals in the most recent five-year period, an average of 3.4% of articles were orthopaedic business related with a range of 2 to 7%. All journals tended to focus on value, cost, and efficiency, there were significant variations in the level of each in each journal. Furthermore, the proportion of publications focused on orthopaedic business was relatively constant over the five years examined.

These findings suggest a consistent and important level of scholarship regarding orthopaedic business in top general orthopaedic journals. However, there is a wide range in the proportion of editorial space in each journal dedicated to business articles. JAAOS has been steadily increasing this proportion over the last five years rising from 3% in 2017 to 11% in 2020. This trend may recommend growing support among surgeons for re-taking business leadership roles in our hospitals.

This is the first article that we know of which attempts to classify scholarly work regarding orthopaedic business. While value-based healthcare¹¹ has been recognized⁹ as the way forward in Orthopaedics¹⁰, and a call has been made for improved methodology to light that way forward¹², there has not been an attempt to classify other types of business articles in orthopaedics. In our analysis we found 52

Value based practice articles, which compare cost to patient outcomes, exemplified by Kazarian's article demonstrating that although more costly, uni-compartmental arthroplasty provides more quality adjusted life years (QALYs) than non-operative modalities¹⁶. Cost analysis articles, which were the most common type, looked at costs or charges for a specific procedure as exemplified by Baumgarten's article looking at the cost of TKA implants through distributorships vs conventional model¹⁷. Payer analysis looked at the effect different payers have on patient access to care¹⁸ or treatment decisions¹⁹. Practice efficiency articles looked at ways to improve patient follow up²⁰, increase patient satisfaction²¹, decrease unnecessary use of clinic resources²², or improve operative efficiency²³. Scholarship articles looked at factors that affect orthopaedic scholarship and publishing such as industry relationships²³, and publication fees²⁴.

One area that appears to be less represented in orthopaedic business scholarship is human resources. Examples are Obremskey's 2020 AOA critical issues articles in which the authors discuss methods to determine the allocation of academic bonuses¹³, Vaughn's article documenting the impact of lean six sigma training in improving resident QI projects¹⁴, or Shaath's article regarding increasing fellowship applicant engagement through website design¹⁵. Although the critical nature of human resources is widely accepted in the broader business community⁸, only 4% of the orthopaedic articles in top business journals are dedicated to it. This represents an important area of research that we should endeavor to expand as a profession.

CONCLUSION

Orthopaedic business articles are a priority in top general orthopaedic journals representing 3.4% of all articles published. Three-quarters of these articles were dedicated to value-based care, cost analysis, and practice efficiency. There is a lack of articles dedicated to human resources. There is a notable opportunity for scholarship regarding human resource management in orthopaedics.

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