

Analysis of Shoulder and Elbow Surgery Publications Between 2008-2017 in Brazil

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ABSTRACT

AIM: Medicine has been based on empirical knowledge since Galen time. The term evidence-based medicine is more recent, appearing for the first time in 1992. To analyze the articles on Shoulder and Elbow Surgery published by Brazilian authors between 2008 and 2017. **METHODS:** Two researchers independently performed a search of journal articles on Shoulder and Elbow Surgery published by Brazilian authors in two orthopedic journals: Brazilian Journal of Orthopedics (RBO) and Brazilian Orthopedic Act (Acta) between 2008 and 2017. A third researcher searched PUBMED for Brazilian Shoulder and Elbow Surgery specialists to identify relevant articles in other national and international journals. After selection, the articles were classified by the level of evidence based on the classification proposed by the Oxford Center for Evidence-based Medicine. **RESULTS:** Between 2008 and 2017, 333 articles on Shoulder and

Elbow surgeries were published by Brazilian authors in national and international journals. Of these, 93 were published in international journals, 24 in national journals (excluding Acta and RBO), 172 in the Brazilian Journal of Orthopedics, and 44 in the Acta Ortopédica Magazine. Authors from the state of São Paulo accounted for about 68% of the articles. There was a predominance of articles with a level of evidence of 4 and 5, and of the works with level 1, 66.7% were published in international journals.

CONCLUSION: There was a predominance of articles with a level of evidence of 4 and 5, and of the works with level 1, 66.7% were published in international journals.

Key words: Evidence based medicine; Orthopedics; Health education

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INTRODUCTION

The practice of medicine has been based on empirical knowledge since at least the time of Galen. The term evidence-based medicine is more recent, appearing for the first time in a journal article in 1992. The modern concept of Evidence-Based Medicine (EBM) is based on the notion that doctors' decisions should be based not only on evidence in general, but on evidence of the highest quality^[1].

The philosophical foundation of MBE originated in the mid-nineteenth century in Paris with the ideas of Pierre Charles Alexandre Louis. Louis, the founder of Médecine d'Observations, associated numerical data with the results of medical procedures. The group of doctors who integrated this society enjoyed great scientific notoriety^[2].

The quantification of the level of evidence for each clinical study provides the appropriate context in which each study should be interpreted. This promotes greater recognition of evidence derived from higher-level studies, which are generally more reliable when consid-

ering application to patient care. Thus, evidence index not only tells the clinician how to interpret the results of a particular study but also helps them decide whether clinical practices should be changed as a consequence. It is for this reason that the whole concept of EBM is fundamentally important as the level of evidence can have an impact on patient care^[3].

Described for the first time by David Sackett, the Levels of Evidence advocated by the Oxford Center for Evidence-Based Medicine are widely used as the standard method for classifying scientific evidence worldwide^[4].

The objective of this study is to analyze journal articles on Shoulder and Elbow Surgeries published by Brazilian authors between the years of 2008 and 2017.

MATERIALS AND METHODS

Three researchers independently performed a search of journal articles on Shoulder and Elbow Surgery published by Brazilian authors in two orthopedic journals: Brazilian Journal of Orthopedics (RBO) and Brazilian Orthopedic Act (Acta) between 2008 and 2017. A third researcher searched PUBMED for Brazilian Shoulder and Elbow Surgery specialists to identify relevant articles in other national and international journals. After selection, the articles were classified by the level of evidence based on the classification proposed by the Oxford Center for Evidence-based Medicine. The list of specialists was obtained by consulting the Brazilian Society of Orthopedics webpage on 02/28/2018. After selection, the journal articles were classified by the level of evidence based on the classification proposed by the Oxford Center for Evidence-based Medicine 5 (Figure 1). The controversies were resolved in a meeting between all members of the research group. Journal articles not related to Shoulder and Elbow Surgery, editorials, articles published by authors of other nationalities and letters to the editor were excluded. Other variables evaluated were: state of origin and theme of the article.

RESULTS

A search of journal articles published in Acta Ortopédica (Acta) and the Brazilian Journal of Orthopedics (RBO) between 2008 and 2017 found a total of 1579 articles with 613 and 966 coming from Acta and RBO, respectively. In total, 44 were selected from Acta and 172 from the RBO.

A search of the Brazilian Society of Orthopedics webpage on 02/28/2018 identified 838 Shoulder and Elbow Surgery specialists. A PUBMED search was conducted for each of the identified specialists and articles that met the inclusion criteria were highlighted. After exclusion of duplicate articles, 117 articles were selected from journals indexed in both Brazil and abroad. Of these, 93 were published in international journals and 24 in national journals (excluding articles from the Orthopedic Act and Brazilian Journal of Orthopedics). Table 1 shows the distribution of articles selected by journal.

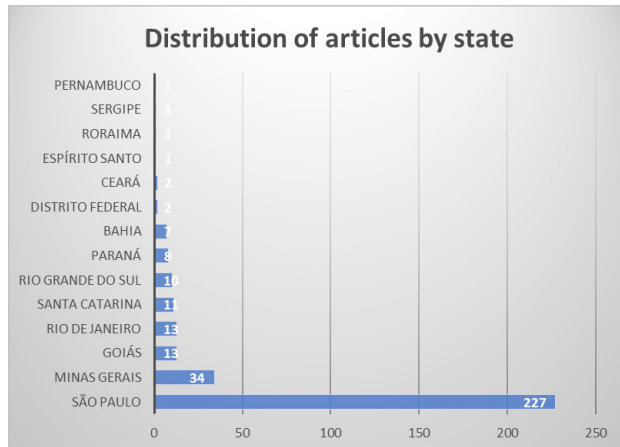
When evaluated the articles by their place of origin and verified that only 14 of the 27 Brazilian states published articles during this period. The state of São Paulo contributed a total of 227 articles corresponding to 68.16% of the total articles.

The evaluation by level of evidence of each journal showed the following distribution: Of the 172 articles published in RBO, 5 were classified as 1B (2.9%), 2 as 2A (1.2%), 12 as 2B (6.9%), 27 as 2C (15.7%), 27 as 3B (15.7%), 75 as 4 (43.6%), and 24 at level 5 (13.9%). Graph 2 shows the percentage distribution by level of evidence of the articles.

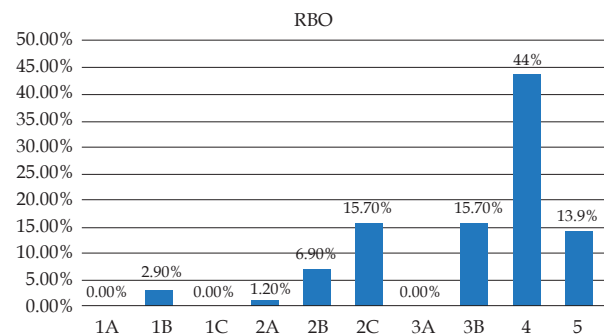
Of the 44 articles published in Acta, 2 were classified as 1B (4.5%),

Grade of recommendation	Level of evidence	Type of study
A	1a	Systematic review of (homogeneous) randomized controlled trials
	1b	Individual randomized controlled trials (with narrow confidence intervals)
B	2a	Systematic review of (homogeneous) cohort studies of "exposed" and "unexposed" subjects
	2b	Individual cohort study / Low-quality randomized controlled trials
	3a	Systematic review of (homogeneous) case-control studies
	3b	Individual case-control studies
C	4	Case series, low-quality cohort or case-control studies
D	5	Expert opinions based on non systematic reviews of results or mechanistic studies

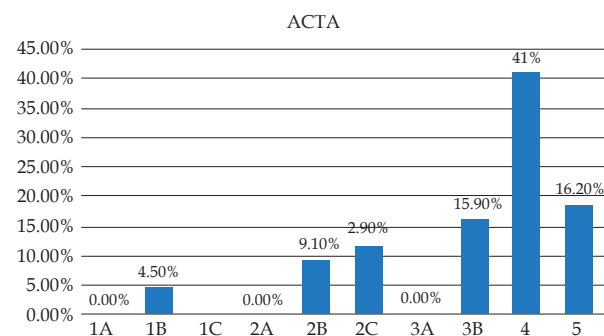
Figure 1 Levels of evidence according to the Oxford Center for Evidence-based Medicine



Graph 1 Distribution by state of articles published between 2008 and 2017.



Graph 2 Percentage distribution by level of evidence of RBO journal articles.



Graph 3 Percentage distribution by level of evidence of Acta journal articles.

4 as 2B (9.1%), 5 as 2C (11.4%), 7 as 3B (15.9%), 18 as 4 (40.9%), and 8 as 5 (18.2%). Graph 3 shows the percentage distribution by level of evidence of the articles.

Table 1 Number of articles published on Shoulder and Elbow Surgery from 2008 to 2017.

Journal	Articles published on Shoulder and Elbow between the years 2008 and 2017
Acta	44 (7,17% of total articles published by the Journal in the period evaluated)
RBO	172 (17,81% of total articles published by the Journal in the period evaluated)
National (except RBO e Acta)	24
International	93
Total articles	333

Of the 24 articles published in national journals (except Acta and RBO), 4 were classified as 1B (16.7%), 3 as 2A (12.5%), 4 as 2B (16.7%), 1 as 2C(3.8%), 3 as 3A (3.8%), 5 as 3B (4.8%), and 2 as 5 (3%). Graph 4 shows the percentage distribution by level of evidence of the articles.

Of the 93 articles published in international journals, 8 were classified as 1A (8.6%), 11 articles as 1B (11.8%), 3 as 1C (3.2%), 5 as 2A (5, (8.6%), 8 as 3 (8.6%), 8 as 4 (19%) and 18 as 5 (19%). Graph 5 shows the percentage distribution by level of evidence of the articles.

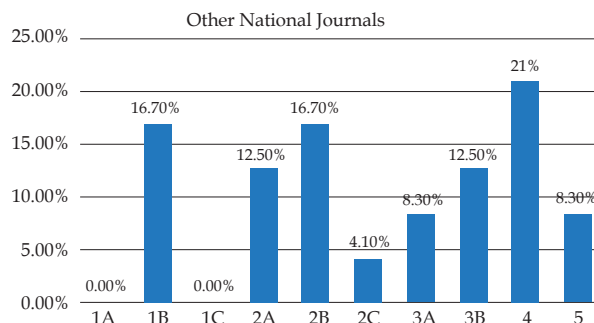
The evaluation by themes addressed by the articles reveals that the most frequently discussed were trauma with 95 articles representing 28.5% of the total (mainly fractures of the humerus, acromioclavicular dislocation and clavicle), rotator cuff lesions with 58 articles (17.4%) and glenohumeral instability with 33 articles (9.9%).

DISCUSSION

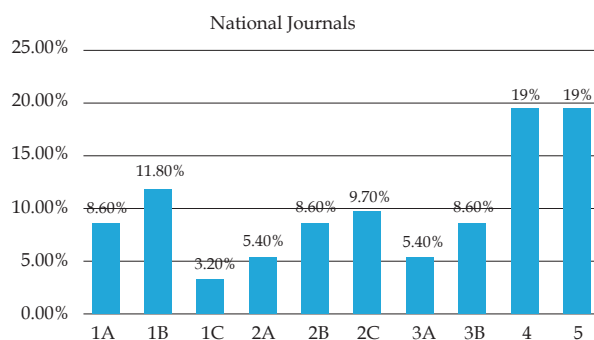
The results of the present study show a large number of articles published in international journals. Of the 333 articles included in this study, 93 (27.9%) were published in foreign journals. There was also a large number of articles published in the southeast region of Brazil (82.3%), especially in the state of São Paulo. This distribution is similar to that found in cases of knee surgery in which 83.1% of the articles were published by authors from this region of the country^[6]. 838 shoulder and elbow surgery specialists were identified on the Brazilian Society of Orthopaedics and Traumatology website. Of this total, only 291 (34.72%) were from the state of São Paulo, while 68.17% of the identified articles originated in the same state. Moreover, it was found that no articles were published from 13 Brazilian states during this time period. This data reveals the need to foster research and stimulate scientific production on the subject in other states of the country.

The adoption of the principles of Evidence-Based Medicine with regard to decisions about surgical procedures is not universally accepted. However, surgeons are not alone in the challenge of accepting that randomized controlled trials are always the best way to answer a clinical question^[7]. Still, EBM is used by institutions, public health agencies, and regulatory agencies to create protocols, guidelines, and approvals for public health interventions. As a result, the ability to critically evaluate the available evidence is a crucial skill for all those in the health profession^[8] and access to and production of good methodological quality is an indispensable factor for good medical practice.

The evaluation of the level of evidence of the articles showed a high prevalence of articles at level 4 and 5 in Acta and RBO with more than half of the articles in each journal being at that level. This prevalence was also found in knee surgery articles published in these journals^[6]. The articles identified in other national journals and international journals showed a percentage of articles with a higher level of evidence. Of the 333 articles evaluated, 33 were classified as



Graph 4 Percentage distribution by level of evidence of articles in national journals (except Acta and RBO).



Graph 5 Percentage distribution by level of evidence of articles in international journals.

level 1 (1A, 1B and 1C) and of these, 22 (66.7%) were published in international journals. This data shows that Brazilian authors who do research on shoulder and elbow surgery tend to submit their articles with a higher level of evidence for international publication, seeking journals with greater scientific impact.

CONCLUSION

Between 2008 and 2017, Brazilian authors published 333 journal articles on shoulder and elbow surgery in national and international periodicals. Of these, 93 were published in international journals, 24 in national journals (excluding Acta and RBO articles), 172 in the Brazilian Journal of Orthopedics and 44 in Acta Ortopédica. Authors from the state of São Paulo accounted for about 68% of the articles. There was a predominance of articles with a level of evidence of 4 and 5, and of the works with level 1, 66.7% were published in international journals. The publications aimed at trauma assessment (17.4%) were found in greater number followed by cuta pathologies (9.9%) and glenohumeral instability (9.9%).

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