

Analysis of Orthopedic Resident Ability to Apply Levels of Evidence Criteria to Scientific Articles

Louis C. Grandizio, DO,* Stephanie S. Shim, BS,* Jove Graham, PhD,* Callista Costopoulos, DO,*† Gerard Cush, MD,* and Joel C. Klena, MD*

*Department of Orthopedic Surgery, Geisinger Medical Center, Danville, Pennsylvania; and †Department of Orthopaedic Surgery, Philadelphia College of Osteopathic Medicine, Graduate Medical Education, Philadelphia, Pennsylvania

OBJECTIVE: In the era of evidence-based medicine, understanding study design and levels of evidence (LoE) criteria is an important component of resident education and aids practicing surgeons in making informed clinical decisions. The purpose of this study is to analyze the ability of orthopedic residents to accurately determine LoE criteria for published articles compared with medical students.

DESIGN: Basic science article.

SETTING: Geisinger Medical Center (Danville, PA), tertiary referral center.

PARTICIPANTS: Overall, 25 U.S. orthopedic residents and 15 4th year medical students interviewing for a residency position in orthopedic surgery voluntarily participated and provided baseline demographic information. A total of 15 articles from the American Volume of *Journal of Bone and Joint Surgery* were identified. Study participants were provided with the article title, the abstract, and the complete methods section. The assigned LoE designation was withheld and access to the LoE criteria used by *Journal of Bone and Joint Surgery* was provided. Each participant was assigned a study type and LoE designation for each article.

RESULTS: There were more correct responses regarding the article type (67%) than for LoE designation (39%). For LoE, the intraclass correlation coefficient was 0.30.

The percentage of correct responses for article type and LoE increased with more years of training ($p = 0.005$ and $p = 0.002$). Although residents had a higher proportion of correct LoE responses overall than medical students, this

difference did not reach statistical significance (42% vs. 35%, $p = 0.07$).

CONCLUSIONS: Although improvements in accurately determining both article type and LoE were seen among residents with increasing years of training, residents were unable to demonstrate a statistically significant improvement for determining LoE or article type when compared with medical students. Strategies to improve resident understanding of LoE guidelines need to be incorporated into orthopedic residencies, especially when considering the increased emphasis on evidence-based medicine. (*J Surg Ed* 73:381-385. © 2016 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: orthopedics, levels of evidence, resident education, research

COMPETENCIES: Medical Knowledge, Practice-Based Learning and Improvement, Systems-Based Practice

INTRODUCTION

During the past decade, many peer-reviewed orthopedic journals have begun publishing the levels of evidence (LoE) for original clinical articles.¹⁻³ Orthopedic journals have made an effort to improve the LoE for published articles.^{4,5} The American Academy of Orthopedic Surgeons has developed clinical practice guidelines that are largely determined by evidence-based reviews of available literature. Understanding both study design and LoE criteria is an important component of resident education and aids practicing surgeons in making informed, evidence-based clinical decisions.

Although an understanding of study design and LoE criteria is of unquestionable importance, there has been limited analysis of whether orthopedic surgery residents can apply these criteria to scientific articles. The purpose of this

None of the authors of this study received any external sources of funding or grants in support of this work.

Correspondence: Inquiries to Louis C. Grandizio, DO, Department of Orthopedic Surgery, Geisinger Medical Center, 21-30, 100 N Academy Avenue, Danville, PA 17822; fax: (570)271-5872; e-mail: clgrandizio@geisinger.edu

study is to analyze the ability of residents to accurately determine LoE criteria for published articles when compared with medical students.

MATERIALS AND METHODS

Institutional Review Board approval was obtained. A total of 15 original scientific articles were selected from the 2013 American Volumes of the *Journal of Bone and Joint Surgery*, utilizing a methodology similar to Bhandari et al.⁶ Review articles, case reports, and basic science research articles were excluded. The reviewers were blinded to certain details of the selected articles: only the title of the article, the abstract, and the methods section was provided to each study respondent. After coding the articles, respondents were contacted via e-mail with a description of the study and a link to the survey, which was hosted on a secure, cloud-based program. Participants were able to access the Journal of Bone and Joint Surgery LoE chart, adapted from Oxford Center for Evidence-Based Medicine LoE Working Group.

Participants

Overall, 75 Postgraduate year 1 (PGY1)-PGY5 residents from 5 geographically diverse U.S. orthopedic surgery programs were contacted via e-mail and asked to participate. A total of 2 of these programs were university affiliated academic programs. There were 3 allopathic and 2 osteopathic programs; 3 programs were located in an urban setting. Although all programs required their residents to meet the Accreditation Council for Graduate Medical Education research requirements for residents with a project of publishable quality, no program required a published article before graduation.

A total of 50 4th year medical students interviewing for an orthopedic surgery residency position at our institution were asked to participate in the survey during their interview day. There were no foreign medical graduates and there was strong geographic diversity regarding the location of the medical schools. A student was from an osteopathic medical school, with the remaining students from allopathic institutions. Their participation was voluntary.

Survey Design

After completing a brief survey of baseline demographics, respondents were asked to determine the LoE and study type (therapeutic, economic or decision analysis, prognostic, or diagnostic test) for each scientific article. Each respondent classified the 15 articles according to the 2 categories (study type and LoE) for a total of 30 answers per subject. We calculated the number and percentage of correct responses in each category for each person to assess the

TABLE 1. Baseline Characteristics of the 40 Respondents

	N (%)
Total number of respondents	40 (100)
Year in training	
Medical student	15 (38)
PGY1	8 (20)
PGY2	5 (12.5)
PGY3	5 (12.5)
PGY4	6 (15)
PGY5	1 (2.5)
Number of publications	
0	20 (50)
1	10 (25)
2-3	6 (15)
4-7	4 (10)
Number of poster presentations	
0	12 (30)
1	10 (25)
2	8 (20)
3	4 (10)
4-10	6 (15)
Self-confidence in ability to rate LoE (1 = least confident, 5 = most confident)	
1	2 (5)
2	9 (22.5)
3	19 (47.5)
4	7 (17.5)
5	3 (7.5)
Number of times per month a trainee's program holds a journal club	
0	3 (7.5)
1	21 (52.5)
2	9 (22.5)
3	4 (10)
4	2 (5)
5	1 (2.5)

accuracy of his or her classification. For LoE, we also calculated intraclass correlation coefficients to measure the agreement among respondents (as opposed to the absolute accuracy). Logistic regression was used to test whether the accuracy of classifying articles varied between residents and medical students or varied by year of resident training. Finally, the accuracy of classifying articles was evaluated for an association with either the number of publications or presentations a respondent had or the number of times per

TABLE 2. Characteristics of the Articles Included in the Study

	N (%)
Type of study	
Therapeutic	8 (53)
Prognostic	4 (26)
Diagnostic	2 (13)
Economic and decision analysis	1 (7)
LoE	
I	2 (13)
II	5 (33)
III	2 (13)
IV	6 (40)

Download English Version:

<https://daneshyari.com/en/article/10176379>

Download Persian Version:

<https://daneshyari.com/article/10176379>

[Daneshyari.com](https://daneshyari.com)