


An Update on Foot and Ankle Fellowship Website Content and Accessibility

Ansab Khwaja, MD¹, Peter Du, MD¹, Nathan Sherman, MD, MBA¹ ,
and Lisa Truchan, MD¹

Abstract

Background: The content and accessibility of foot and ankle fellowship websites impact applicants and fellowship programs. This study aimed to evaluate the accessibility provided via the American Orthopaedic Foot & Ankle Society (AOFAS) websites and individual websites.

Methods: The AOFAS website was used to identify existing foot and ankle fellowship programs. The database information was reviewed for links to fellowship program websites, which was corroborated through a Google search for accessibility. Information from fellowship program websites and the AOFAS was analyzed for the presence of recruitment and educational content, and this analysis was compared to previously reported metrics.

Results: Forty-eight orthopedic foot and ankle fellowship programs were identified. The AOFAS database featured direct links to 19 (40%) fellowship websites with the Google search providing direct links to 35 (73%) websites. Foot and ankle fellowship information markedly improved in domains of Salary/Benefits (+233%), Rotations/Curriculum (+199%), and Faculty Listing (+67%), but there was a reduction in available content in the domains of Operative Experience (-79%), Office/Clinic information (-78%), and Didactics (-39%) compared with the lone existing study.

Conclusion: There continues to be variability between foot and ankle fellowship websites and the AOFAS website regarding program content and descriptions. Some information is more readily available, but other domains have less information now than in previously reported research.

Keywords: fellowship, foot and ankle, website, education, content, accessibility

Introduction

The Orthopaedic Foot & Ankle Fellowship match is sponsored by the American Orthopaedic Foot & Ankle Society (AOFAS), and the match is run by the San Francisco Match (SFM). There are 48 programs sponsored by the AOFAS in the United States and Canada. The SFM directs prospective applicants to the AOFAS website and individual websites. This makes online accessibility through these 2 resources an essential resource where applicants can learn about clinical and educational opportunities as well as for programs to detail aspects that may affect recruitment, including Salary/Benefits, Program Description, Location Description, and other factors. Indeed, many fellowship applicants report the Internet to be the first resource to learn about programs.¹⁵

Content and accessibility of fellowship websites has been studied for multiple subspecialties including sports medicine,^{14,21} adult reconstruction,⁵ foot and ankle,⁷ hand,^{8,17,20} trauma,^{6,16,23} spine,¹⁸ pediatrics,² musculoskeletal oncology,²² and shoulder and elbow.²⁴ Each of these papers concluded

that the content and accessibility for fellowship applicants was suboptimal and that there remains significant opportunity for improvement.

In looking at hand surgery fellowship applications, applicants valued websites more than attendings when selecting fellowship programs.¹² Meanwhile, improving website content and accessibility is a trend observed in more fellowships than just orthopedic subspecialties.^{1,9,10,13,19} Seventy percent of pathology residents rate the fellowship's website as the most important source from which to obtain information.¹¹ Foot and ankle fellowship content has previously been evaluated by Hinds et al,⁷ with the authors finding

¹ Department of Orthopedic Surgery, University of Arizona, Tucson, Arizona, USA

Corresponding Author:

Nathan Sherman, MD, MBA, Department of Orthopedic Surgery, University of Arizona, 1501 N. Campbell Ave, Tucson, AZ, 85724, USA.
Email: nsherman@ortho.arizona.edu



considerable variability in the accessibility of information online. However, this query was performed in 2016, and programs may have updated the information present in their websites since that initial search. Furthermore, the AOFAS website fellowship listing may have been updated since this time as well. The purpose of this study was to (1) perform an updated assessment on the accessibility of recruitment and educational factors found on the AOFAS and individual websites, and (2) compare the results to the previous study. We hypothesized there would be an increase in the accessibility since the prior study in all areas.

Methods

The AOFAS website maintains a list of all active orthopedic foot and ankle fellowships. The fellowship programs included were active as of September 2019 according to the AOFAS website, which has some information about the various programs. The number of programs with a direct link to the program website, with links requiring more than one click (indirect links), or those with absent/nonfunctioning links were identified from the AOFAS website. In accordance with prior studies, the search engine “Google” was used to search for “program name + foot and ankle fellowship” and access to the program website with a direct link on the first page, via links requiring multiple steps, or with an absent/malfunctioning link was noted.^{14,21} The first 10 search results were reviewed to identify links to fellowship websites.

Previous investigations including the one performed by Hinds et al⁷ about website characteristics have focused on 2 domains: recruitment and educational content. The presence of various subsets of these categories was recorded and reported in a descriptive manner. If information about these domains was available through the AOFAS website or through the program website, it was noted to be accessible through the Internet. Of note, we did not evaluate the quality of the content present on either website, but merely whether it was present. This dichotomous evaluation approach was in line with prior studies.^{7,14}

Fellow recruitment domains included in this study were Salary/Benefits, Faculty Listing, Current Fellows, Program Contact Information, Location Description, Selection Criteria, Application Requirements, Program Description, and Past Fellows/Employment. Fellow educational domains included were information about Meetings/Courses, Office/Clinic Description, Operative Experience/Case Logs, Rotations/Curriculum, Evaluation Criteria/Competencies, Research, Examples of Research, Journal Club, Didactics, Call Schedules, and/or Responsibilities. Either qualitative or quantitative description of these domains was sufficient to identify each as present. For operative experience, however, this domain was considered present only if there was an example of case logs or case number. Qualitative descriptions of operative experience were deemed insufficient.

Table 1. Fellowship Website Accessibility.

	AOFAS n (%)	Google n (%)
Website with direct link	19 (40)	35 (73)
Website with links requiring multiple steps	21 (44)	5 (10)
Absent/nonfunctioning link	8 (17)	8 (17)

Abbreviation: AOFAS, American Orthopaedic Ankle & Foot Society.

In conducting our data analysis, we utilized an arbitrary cutoff of 0.2 difference in content present to determine a meaningful change. If domain content was not present in the initial study, but present in this updated analysis, this domain could not be considered for meaningful increase or decrease in content, only an absolute difference increase.

No external funding was obtained in support of this investigation.

Results

A total of 48 orthopedic foot and ankle fellowship programs were identified. The AOFAS database featured direct links to 19 (40%) and indirect links to 21 (44%) fellowship websites, with the Google search providing direct links to 35 (73%) websites and indirectly to 5 (10%) (Table 1). Twenty-three (48%) had explicit Application Requirements; however, multiple programs directed the applicant to the standardized application through AOFAS.

From the available program websites, the most common recruitment content was Salary/Benefits, Faculty Listing, Program Contact Information (48, 100%), and Program Description (47, 98%) (Figure 1). The most common educational content was presence of Research Component (44, 92%) and description of Rotations/Curriculum (43, 90%) (Figure 2).

Fellowship website content had a marked improvement in the presence of Salary/Benefits (+233%), Rotations/Curriculum (+199%), and Faculty Listing (+67%), but there was a reduction in available content in the domains of Operative Experience (−79%), Office/Clinic Information (−78%), and Didactics (−39%) (Figure 3 and Table 2).

Discussion

This study is a 3-year updated assessment of the content and accessibility of foot and ankle fellowship websites, and our hypothesis was incorrect; instead of an increase in the presence of content across all domains, we found an improvement in the presence of information on Salary/Benefits, Rotations/Curriculum, Faculty Listing, but a reduction in the availability of information regarding Operative Experience, Office/Clinic, and Didactics. The content presented on an orthopedic foot and ankle fellowship’s website and through AOFAS is often the first source of information a prospective applicant obtains in regard to that specific fellowship. The

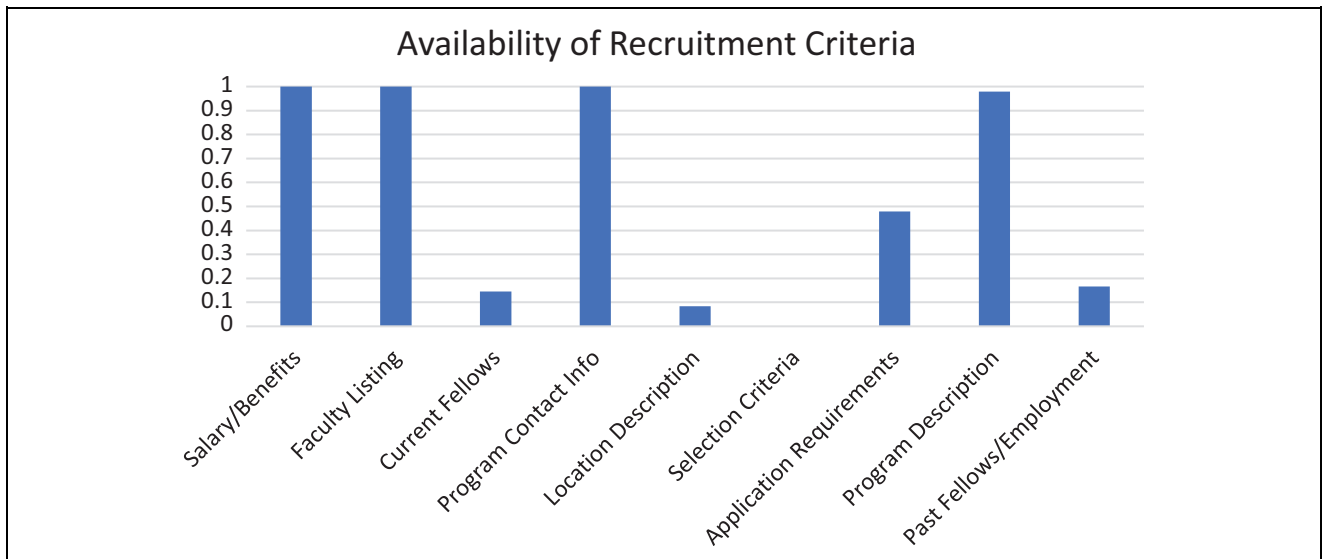


Figure 1. Fellowship website recruitment content.

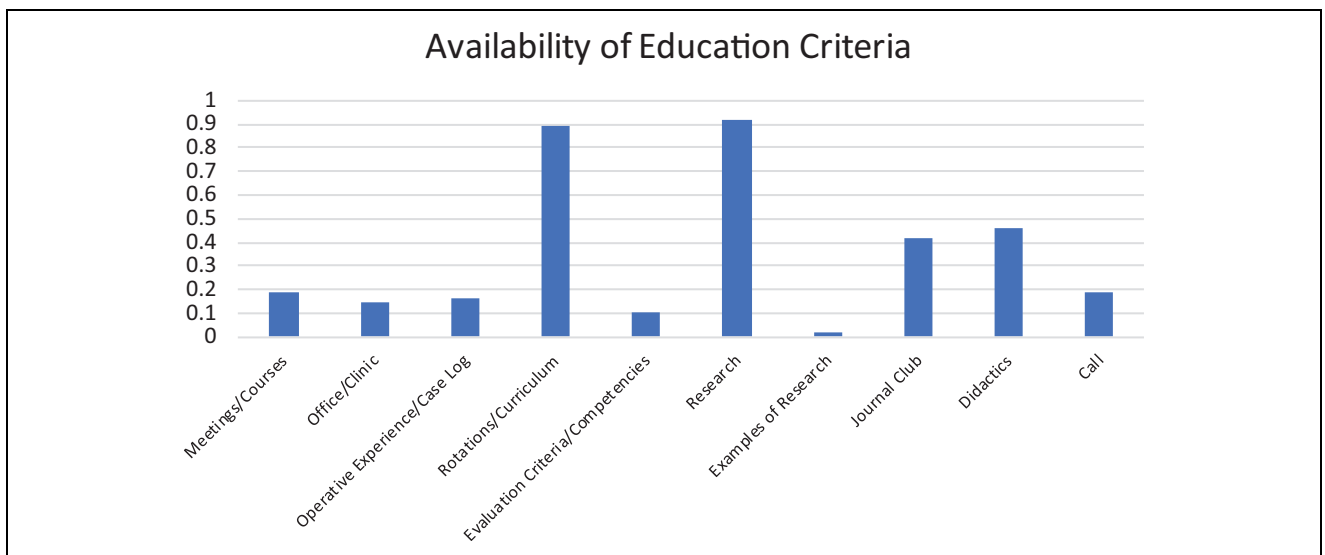


Figure 2. Fellowship website education content.

data continue to be highly variable among different fellowship programs in terms of whether it is present. In accordance with prior studies,^{7,14} we noted only the presence of these domains, but not how detailed they were, nor how helpful prospective applicants found them. The Hinds et al study⁷ alluded to a multichotomous approach in future assessments of fellowship website content, but there is not yet a standardized and accepted approach.

As the Internet continues to be a key part of the decision-making process for fellowship applicants, fellowship programs should strive to optimize their online content in order to improve their exposure to prospective applicants. Although specific fellowship-associated professional societies are a logical starting point for potential applicants, Google is a search engine commonly used to find program

websites. In this study, 83% of foot and ankle websites had either direct links or links requiring multiple steps to access the program. This is in contrast to shoulder and elbow (61%), pediatrics (74%),² spine (71%),¹⁸ adult reconstruction (77%),⁵ orthopedic sports medicine (93%),^{14,21} hand (86%),⁸ musculoskeletal oncology (82%),²² and trauma (94%).¹⁶ The 2017 study of orthopedic sports medicine fellowship accessibility by Yayac et al found that 47% of programs listed on the AOSSM had a functional link to the program’s personal website,²¹ compared to 18% with shoulder and elbow programs through ASES,²⁴ whereas 37% of hand surgery fellowships had a functional link from the ASSH directory.²⁰ It should be a goal of all fellowship-associated professional organization websites to host access to the fellowship programs that they support.

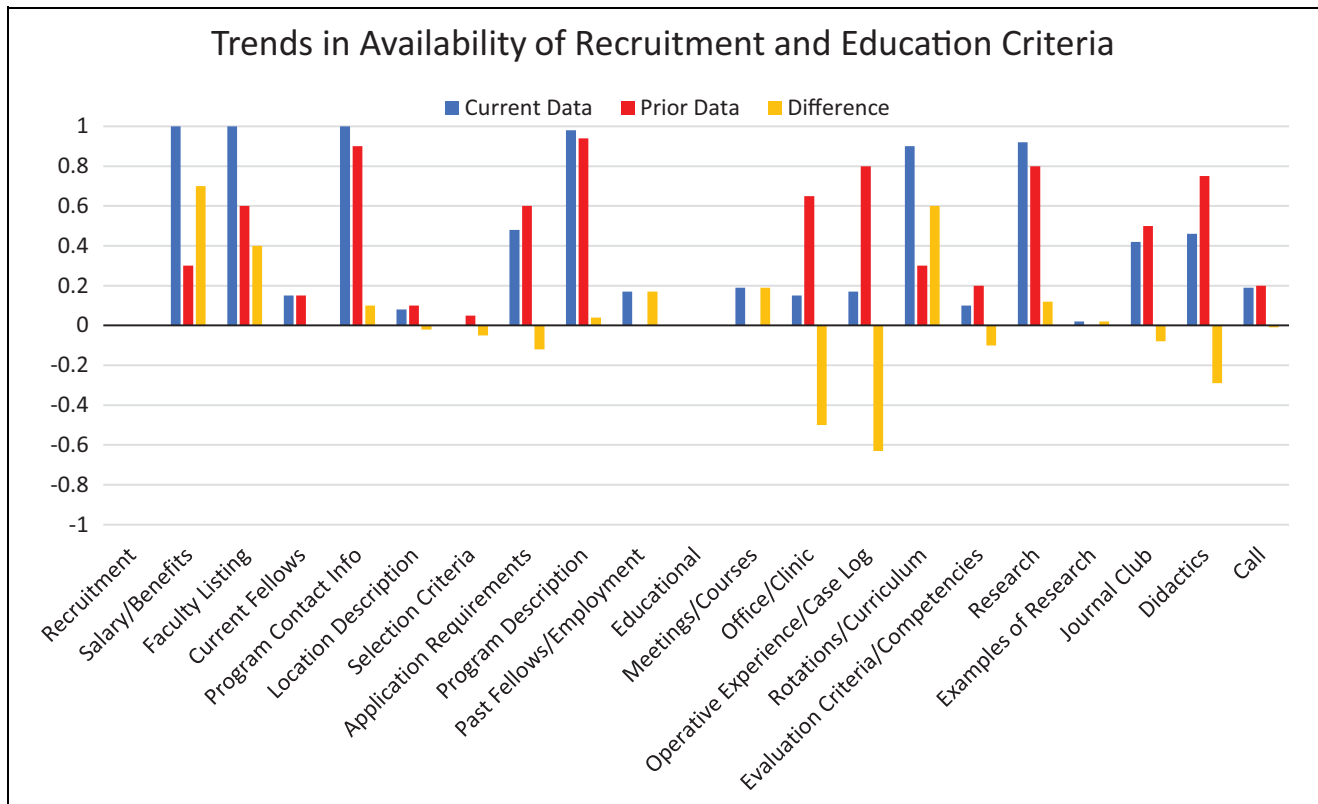


Figure 3. Change in the presence of recruitment and education content on foot and ankle fellowship websites.

Table 2. Difference and Percentage Difference in Fellowship Website Content.

Domain	Current Data	Prior Data	Difference	% Difference
Recruitment				
Salary/Benefits	1.00	0.30	0.70	233.3
Faculty Listing	1.00	0.60	0.40	66.7
Current Fellows	0.15	0.15	0.00	-2.8
Program Contact Information	1.00	0.90	0.10	11.1
Location Description	0.08	0.10	-0.02	-16.7
Selection Criteria	0.00	0.05	-0.05	-100.0
Application Requirements	0.48	0.60	-0.12	-20.1
Program Description	0.98	0.94	0.04	4.2
Past Fellows/Employment	0.17	0.00	0.17	n/a
Educational				
Meetings/Courses	0.19	0.00	0.19	n/a
Office/Clinic	0.15	0.65	-0.50	-77.6
Operative Experience/Case Log	0.17	0.80	-0.63	-79.2
Rotations/Curriculum	0.90	0.30	0.60	198.6
Evaluation Criteria/Competencies	0.10	0.20	-0.10	-47.9
Research	0.92	0.80	0.12	14.6
Examples of Research	0.02	0.00	0.02	n/a
Journal Club	0.42	0.50	-0.08	-16.7
Didactics	0.46	0.75	-0.29	-38.9
Call	0.19	0.20	-0.01	-6.3

Abbreviation: n/a, not applicable.

In the interval of 3 years, there have been notable improvements in content and accessibility of foot and ankle fellowship websites, but there still remain multiple

opportunities for further improvement and optimization of fellowship online presence. The strength of foot and ankle fellowship websites at present remains a standardized

method of description of Salary/Benefits, Faculty, Program Contact Information, and Program Description, where there is almost 100% of the information present. One area that may be “falsely low” is Application Requirements, as there are 23 programs (48%) where requirements are explicitly stated, whereas others simply refer to the standardized AOFAS application. The domain of rotations/curriculum is another category that saw a substantial increase in its Internet presence, which may possibly be due to the release of a recommended curriculum developed by the AOFAS fellowship task force in March 2015. This curriculum includes both recommended procedures and topics, which are subdivided into the categories of Trauma/ORIF, Ankle/Hindfoot, Midfoot, Forefoot, and General for procedural curriculum and Hindfoot/Ankle, Midfoot, Forefoot, and General for topic curriculum.^{3,4} As a result of this AOFAS initiative, the presence of fellowship curriculum likely was not incorporated into the fellowship websites until after the prior study was completed.

The areas that have less accessibility than prior reports are office/clinic time, operative experience, and didactics. Although it was unanticipated to find a reduction in the presence of these domains, we surmise that these domains are now partly assumed with the incorporation of the AOFAS curriculum and topic guidelines on individual fellowship program websites. In regard to operative experience, we only considered it present if there was a numerical estimation of cases or prior case logs, and it is unclear how this has historically been reported; however, a reduction in website content of operative experience was a surprising finding, particularly in an era of increasingly stringent licensing requirements. Although the domain of Evaluation Criteria saw an overall drop in its content presence in our updated analysis, Evaluation Criteria was previously only present in approximately 20% of fellowship websites, so although the percentage reduction is large, the actual difference is minimal.

There were several limitations to this study. First, we attempted to re-create the criteria used to assess website content in the Hind et al study,⁷ but there may be differences secondary to differing interpretations of each criteria by the differing authors. Additionally, we only assessed the presence of a certain criteria on each website and did not attempt to evaluate the quality of the content apart from its presence. Finally, this search was done in September 2019, and as websites get updated the information presented may be changed.

In conclusion, the information about foot and ankle fellowships on the program websites and through the AOFAS improved but continued to provide prospective applicants with an inconsistent picture. Improving content and accessibility may benefit both programs and applicants. Applicants may be able to make more informed decisions regarding their applications and be more selective in sending out applications. Programs able to effectively optimize their online content may be better able to promote their brand, and

while they may see a reduction in the total number of applicants, they may also notice an increase in the number of applicants who are a good fit for their program.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. ICMJE forms for all authors are available online.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Nathan C. Sherman, MD, MBA,  <https://orcid.org/0000-0001-8573-5222>

References

1. Cantrell CK, Bergstresser SL, Schuh AC, Young BL, Gray SH, White JA. Accessibility and content of abdominal transplant fellowship program websites in the United States. *J Surg Res*. 2018;232:271-274.
2. Davidson AR, Murphy RF, Spence DD, Kelly DM, Warner WC, Sawyer JR. Accessibility and quality of online information for pediatric orthopaedic surgery fellowships. *J Pediatr Orthop*. 2014;34(8):831-834.
3. Fellowship Curriculum Task Force. Recommended Foot & Ankle Curriculum Procedures. https://www.aofas.org/docs/default-source/education/fellowship-match/recommendedfootanklecurriculum_procedures-topics.pdf?sfvrsn=f7ea177c_2. Published 2015. Accessed December 14, 2019.
4. Fellowship Curriculum Task Force. Recommended Foot & Ankle Curriculum Topics. https://www.aofas.org/docs/default-source/education/fellowship-match/recommendedfootanklecurriculum_procedures-topics.pdf?sfvrsn=f7ea177c_2. Published 2015. Accessed December 14, 2019.
5. Gu A, Lehman JD, Sardana A, Cohen JS, Richardson SS, Sculco PK. Adult reconstruction hip and knee fellowship program content and accessibility. *J Arthroplasty*. 2018;33(6):1630-1633.
6. Hinds RM, Capo JT, Egol KA. Information on orthopedic trauma fellowships: online accessibility and content. *Am J Orthop*. 2017;46(5):E320-E325.
7. Hinds RM, Danna NR, Capo JT, Mroczek KJ. Foot and ankle fellowship websites: an assessment of accessibility and quality. *Foot Ankle Spec*. 2017;10(4):302-307.
8. Hinds RM, Klifto CS, Naik AA, Sapienza A, Capo JT. Hand society and matching program web sites provide poor access to information regarding hand surgery fellowship. *J Hand Microsurg*. 2016;8(2):91-95.
9. Hu J, Zhen M, Olteanu C, Avram R. An evaluation of accessibility and content of microsurgery fellowship websites. *Plast Surg (Oakv)*. 2016;24(3):187-190.
10. Huang BY, Hicks TD, Haidar GM, Pounds LL, Davies MG. An evaluation of the availability, accessibility, and quality of online content of vascular surgery training program websites

- for residency and fellowship applicants. *J Vasc Surg.* 2017; 66(6):1892-1901.
11. Lagwinski N, Hunt JL. Fellowship trends of pathology residents. *Arch Pathol Lab Med.* 2009;133(9):1431-1436.
 12. Meals C, Osterman M. The hand surgery fellowship application process: expectations, logistics, and costs. *J Hand Surg Am.* 2015;40(4):783-789.
 13. Miller VM, Padilla LA, Schuh A, et al. Evaluation of cardiothoracic surgery residency and fellowship program websites. *J Surg Res.* 2019;246:200-206.
 14. Mulcahey MK, Gosselin MM, Fadale PD. Evaluation of the content and accessibility of web sites for accredited orthopaedic sports medicine fellowships. *J Bone Joint Surg Am.* 2013; 95(12):e85.
 15. Rozental TD, Lonner JH, Parekh SG. The Internet as a communication tool for academic orthopaedic surgery departments in the United States. *J Bone Joint Surg Am.* 2001;83(7):987-991.
 16. Shaath MK, Yeranorian MG, Ippolito JA, Adams MR, Sirkin MS, Reilly MC. Evaluation of the content and accessibility of web sites for accredited orthopaedic trauma surgery fellowships. *J Bone Joint Surg Am.* 2018;100(9):e60.
 17. Silvestre J, Guzman JZ, Abbatematteo JM, Chang B, Levin LS. Evaluation of content and accessibility of hand fellowship websites. *Hand (N Y).* 2015;10(3):516-521.
 18. Silvestre J, Guzman JZ, Skovrlj B, et al. The Internet as a communication tool for orthopedic spine fellowships in the United States. *Spine J.* 2015;15(4):655-661.
 19. Silvestre J, Vargas CR, Ho O, Lee BT. Evaluation of the content and accessibility of microsurgery fellowship program websites. *Microsurgery.* 2015;35(7):560-564.
 20. Trehan SK, Morrell NT, Akelman E. Accredited hand surgery fellowship Web sites: analysis of content and accessibility. *J Hand Surg Am.* 2015;40(4):778-782.
 21. Yayac M, Javandal M, Mulcahey MK. Accredited Orthopaedic Sports Medicine Fellowship Websites: an updated assessment of accessibility and content. *Orthop J Sports Med.* 2017;5(1): 2325967116683942.
 22. Young BL, Cantrell CK, Patt JC, Ponce BA. Accessibility and content of individualized adult reconstructive hip and knee/musculoskeletal oncology fellowship web sites. *Arthroplast Today.* 2018;4(2):232-235.
 23. Young BL, Cantrell CK, Ponce BA, Quade JH. Evaluation of orthopaedic trauma fellowship web sites and an assessment of 21 content domains. *Iowa Orthop J.* 2018;38:39-43.
 24. Young BL, Oladeji LO, Cichos K, Ponce B. Content and accessibility of shoulder and elbow fellowship web sites in the United States. *Iowa Orthop J.* 2016;36:36-40.