



Analysis of Abdominal Radiology fellowship website content and comprehensiveness

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Abstract

Purpose Fellowship programs' online content plays a key role in prospective Abdominal Radiology applicants' evaluation of programs. The purpose of this study is to examine the online accessibility of Abdominal Radiology fellowships, the comprehensiveness of the program websites' content, and evaluate whether specific program characteristics are associated with differentiated website comprehensiveness.

Methods A list of 67 Abdominal Radiology fellowship programs was obtained from the Society of Abdominal Radiology (SAR) website. Each of the 65 publicly-available fellowship websites was scored for the presence of 19 binary variables related to the program's attributes and curriculum to assess informational comprehensiveness. Comprehensiveness scores were compared by program characteristics (accreditation status, region, and size) using Kruskal–Wallis and two-tailed *t* tests.

Results Mean comprehensiveness score of Abdominal Radiology fellowship websites as measured by online criteria met was 52.6% (10.0 ± 3.0/19). Application requirements and information, rotation scheduling, and program director contact were found on more than 87.5% of the 65 websites, whereas salary and benefits, social information, and alumni were listed on fewer than 33.8% (22/65) of websites. Program accreditation status, region, and size were not associated with difference in mean comprehensiveness scores.

Conclusions There is a discrepancy between information commonly sought by prospective Abdominal Radiology fellowship applicants and what is available on fellowship program websites. Programs and applicants alike may benefit from programs strengthening their online material.

Keywords Abdominal · Radiology · Fellowship · Training · Online · Comprehensiveness

Introduction

Prospective fellows utilize the internet as an important source of information about programs to which they are interested in applying [1]. With applications integrated with the National Resident Matching Program (NRMP), applicants to medical specialty fields navigate the process through a unifying entity amongst all programs they are interested in. In contrast, Radiology residents interested in

applying to Abdominal Radiology fellowship do so outside of the NRMP match; therefore, the content and impact of individual Abdominal Radiology fellowship websites on applicants may be considerably higher.

The content, utility, and comprehensiveness of Abdominal Radiology fellowship websites have not been analyzed. Whether program websites offer all the important information applicants need to make an informed decision is not known. The purpose of this study is threefold: (1) examine the accessibility of programs from national lists or databases; (2) examine the content of the websites and determine their overall comprehensiveness; and (3) examine whether any specific program characteristics were associated with differentiated website comprehensiveness.

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Methods

A list of 67 Abdominal Radiology fellowship programs that self-identified as *abdominal imaging*, *body imaging*, *body MRI*, or *cross-sectional imaging* of the abdomen and pelvis was obtained from the Society of Abdominal Radiology (SAR) website [2]. All publicly available fellowship websites were investigated by two authors for online presence of 19 variables regarding the program's attributes and curriculum to assess comprehensiveness (Table 1). The variables chosen were derived from a number of previous studies on website utility in a diverse group of medical disciplines [3–8]. Disagreements in observation were resolved by the consensus of all authors to improve data collection reliability. A website's addressing of the topic specified by each variable was sufficient to warrant meeting that particular criterion.

Programs were denoted for their accreditation status as dictated by the Accreditation Council for Graduate Medical Education (ACGME) as of 2017–2018. Programs were designated with one of the four US Census Bureau regions (Midwest, Northeast, South, West) or international. Fellowships with ≥ 4 positions offered for the 2018–2019 academic year or ≥ 4 fellows in the 2017–2018 academic year were classified as large, whereas the rest were classified as small. The data on both a fellowship's number of positions for 2018–2019 and number of Abdominal Radiology fellows as of May 2018 at the program were acquired from the fellowship's website (if available) and from the ACGME's Accrediting Data System (ADS) (if accredited).

Abdominal Radiology programs were also distinguished by type of program.

Websites were assigned a comprehensiveness score out of the 19 total criteria. Comprehensiveness means for different classifications of program were calculated, and they were compared using Kruskal–Wallis tests for region and two-tailed *t* tests for ACGME accreditation status and size. Programs with no publicly accessible website as of May 2018 were excluded from the analysis, and international programs were excluded from region comparison due to small sample size ($n = 3$).

Results

Programs evaluated from national databases

Sixty-five (97.0%) of the 67 Abdominal Radiology fellowships investigated from the SAR list of training programs contained a publicly accessible website. 18.5% (12/65) analyzed were accredited by the ACGME as of May 2018. The South contained the greatest number of programs (20), compared to the Midwest (16), West (13) and Northeast (13). Only 70.8% (46/65) websites specified either the number of positions offered for 2018–2019 or number of fellows during 2017–2018; however, additional data points obtained through the ACGME's ADS allowed 78.5% (51/65) of fellowships to be classified by size. Thirty were designated as small, and 21 were large. The mean number of positions offered for 2018–2019 was

Table 1 Percent and number of Abdominal Radiology fellowship websites containing each item

Comprehensiveness variable	Percent of websites (%)	<i>N</i> = 54
Application information	95.4	62
Program director contact	92.3	60
Rotations	87.7	57
Hospital	84.6	55
Faculty	80.0	52
Program coordinator contact	76.9	50
Research publications & activity	73.8	48
Number of positions for 2018–2019	64.6	42
Didactic schedule	60.0	39
Separate faculty for Abdominal Radiology	53.8	35
Current fellows	46.2	30
Number of fellows in 2017–2018	44.6	29
Call	41.5	27
Salary/benefits	32.3	21
Stand-alone website	29.2	19
Social information	21.5	14
Fellowship alumni	13.8	9
Away rotations	0.0	0
Case log	0.0	0

3.54 ± 2.8 for 46 programs. Similarly, the mean number of fellows enrolled per program in 2017–2018 was 3.2 ± 2.6 for 39 programs.

Content and comprehensiveness score of websites

Mean comprehensiveness score of Abdominal Radiology fellowship websites as measured by online criteria met was 52.6% (10.0 ± 3.0 out of a total of 19). All but three programs contained information for residents on applying to fellowship via their websites (Table 1). Readily accessible items also included program director contact information (92.3% [60/65] of websites), rotation schedules (87.7% [57/65] of websites), information about the fellowship's primary hospital(s) (84.6% [55/65] of websites), and faculty listing (80.0% [52/65] of websites).

Fewer than 50% [32.5/65] of Abdominal Radiology websites contained information on 9 of the 19 online criteria, and zero websites provided any information on the incorporation or lack thereof away rotations or an example or actual log of fellow cases. Other items that were seldom accessible online were fellowship alumni (14.8% [9/65] of websites), information regarding social life or opportunities with colleagues or in the community (21.5% [14/65] of websites) and salary and benefits (32.3% [21/65] of websites).

Table 2 Mean of criteria met per program, by category

Characteristic (n)	Comprehensiveness out of 19 (SD)	P Value
All (65)	10.0 (3.0)	
ACGME		
Accredited (12)	10.6 (2.7)	0.44
Not accredited (53)	9.8 (3.0)	
Region		
Midwest (16)	9.7 (3.1)	0.32
Northeast (13)	11.5 (2.3)	
South (20)	9.9 (2.8)	
West (13)	9.4 (3.6)	
Size		
Small (30)	10.0 (2.9)	0.17
Large (21)	11.1 (2.9)	

Table 3 Type of Abdominal Radiology fellowship and mean criteria met

Fellowship type	Number of programs (N = 65)	Criteria met out of 19 (SD)
Abdominal Radiology	34	10.1 ± 3.1
Body MRI	8	9.5 ± 3.1
Body imaging	20	10.0 ± 2.9
Cross-sectional imaging	3	10.3 ± 3.2

Comparison by program characteristics

Programs with four or more fellow spots or then-current fellows were not associated with significantly different comprehensiveness score (60.1% [11.6/19] versus 52.0% [9.9/19]; $p = 0.17$) (Table 2). Programs with ACGME accreditation status were not associated with a significant increase in website comprehensiveness score compared to those not accredited ($p = 0.46$). US Census region was not associated with significant differences in website comprehensiveness score ($p = 0.66$), though the Northeast had the highest number of and lowest standard deviation of online criteria met per program with 60.5% (11.5 ± 2.3/19). The three analyzed international program websites had a score of 43.8% (8.3 ± 1.5/19), compared to domestic program websites 53.3% (10.1 ± 3.0/19). Results were similar across all four self-identified variants of Abdominal Radiology fellowship (Table 3).

Discussion

As radiology and postgraduate training continue to evolve, medical academics must continue to evaluate how applicants interface with programs, and what those applicants may come to expect when researching programs. The present study analyzed websites for 65 Abdominal Radiology fellowships from the SAR and ACGME, assessing their accessibility and content through 19 pre-specified binary variables and assessing whether program characteristics may predict website comprehensiveness score. The SAR's webpage containing hyperlinks to various fellowships provides applicants with an accessible central starting point for site access and a map of where programs are located [2]. While this is a valuable tool for the applicant, a number of the links send the user to a webpage that does not exist.

Website content analysis demonstrated consistent information about rotations, application information, contact information, faculty, and various hospitals. However, these same websites lacked information about call responsibilities, information on current or past fellows, or even the number of fellows currently enrolled and number that would be accepted the following year (all variables found on fewer than 60% of websites). Interestingly, the

information that is readily available is more so related to the logistics of the application process than the educational and lifestyle experience of the fellowship itself. While a clear application process is essential to convey to prospective fellows, applicants are likely very interested in the experience they can expect from the training itself.

While 52.6% of content items met by Abdominal Radiology websites leaves substantial room for improvement, this value was in contrast to a similar study on integrated Interventional Radiology residency websites, which contained only a mean of 38% of similar content items [8]. The results of Abdominal Radiology fellowship websites were similar to those of Radiology residency websites, with a mean 60.8% of the 19 similar variables found per program [7]. However, if future research were to assess the content of other radiological subspecialties, a more robust comparison between subspecialty websites and online presence may be possible. An important limitation of comparing results of these studies is that although the variables used are similar, they are not all the same, conferring some inherent margin of error.

There was no difference in comprehensiveness among programs based on ACGME accreditation, geographical location, or size. Such comparisons may reflect the relatively low cost and risk of building and maintaining a website, given the variability of funds different types of programs are allotted.

Several studies have demonstrated both the importance of training website content on applicant decisions and the shortcomings of a variety of specialties' websites. For example, Chu et al. found that only 25% of Anesthesiology residency applicants in 2011 regarded the majority of Anesthesiology residency websites as providing complete and useful experiences. Furthermore, 63% of the applicants reported that websites were "most helpful" when preparing for interviews, while 47% found them "very helpful" or "most helpful" when determining where to apply [9]. When comparing these findings to radiologic subspecialties, Charalel et al. found that 21% of radiology subspecialty fellowship applicants valued information found on programs' websites as "the most important" or "very important" when making a fellowship career choice. That same study found that advice from a mentor or counselor was "the most important" or "very" important" deciding factor for 52% of applicant respondents [1]. Future research may study the relative importance of such decision factors specifically for residents applying to Abdominal Radiology fellowship. Better understanding of the needs of this specific population may allow for improved recommendations about content that should exist across all fellowship websites.

Prior analyses of website comprehensiveness, content, and impact on applicants in different specialties, such as

Otolaryngology, Plastic Surgery, Neurosurgery, and Orthopaedic Surgery [3–6], are unified in that they studied specialties that participate in the NRMP [10]. A unique difference between the present study and prior studies is that Abdominal Radiology fellowship is not part of a match process. Consequently, Abdominal Radiology applicants have a lack of unified timeline, application process, and central governing body through which they can gather certain information on specific programs. Rather, applicants apply directly to fellowships, interview at the institution, and are either offered or not offered a position. Without a centralized match process, applicants may rely relatively more so on program websites, advice from mentors and counselors, or geographical location when choosing where and when to apply. When individual websites lack basic accessible information about programs, relying more heavily on mentor advice presents additional challenges in that mentors may not have full, current information about some of the programs' most integral components.

There are limitations to the present study that create potential areas for future research. While this study examined each website on the basis of whether or not information was present, it did not assess the quality or accuracy of this information. Since this study was aimed at assessing the content and comprehensiveness of Abdominal Radiology fellowship websites, identifying presence or lack thereof variables was prioritized. Additionally, it is possible that certain information exists on various websites but was not located by both of the two authors. However, owing to the thorough, systematic search and predetermined specifications for each variable, we would contend that if certain information was not found, it is likely either not present or inaccessible. Lastly, the chosen variables evaluated are, by nature, subjective; to address this concern, this study used common measures evaluated in previous research on specialty website comprehensiveness score [3–8]. The authors would like to acknowledge that the public accessibility of the 19 variables are of interest more so from the perspective of applicants; fellowship directors and programs, however, are equal partners in the exchange of information. Future surveys could examine the effect of strengthening online presence in these areas on applicant satisfaction regarding ability to make informed decisions and on program satisfaction regarding success of attracting well-fitting applicants.

Were an applicant interested in researching various programs on his or her own, he or she would find that only 64.5% (42/65) of programs list the number of fellowship positions that will be offered in the coming year, and that only 44.6% (29/65) list the number of fellow positions currently filled. This discrepancy may leave an applicant spending undue time researching basic program

information, and potentially, erroneously applying to programs that either have zero spots to offer in the coming cycle or are a poor fit. Thus, applicants are effectively reliant on the advice and recommendations of mentors or counselors within their current programs, which in some cases could be sub-optimal. This simple informational gap may foster situations where optimal program–applicant fit may be reduced. Abdominal Radiology fellowship programs have room for improvement in the content they make available on their websites, and they may see benefits if more resources are directed efforts toward strengthening their online presence.

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