Published in final edited form as:

Obstet Gynecol. 2012 March ; 119(3): . doi:10.1097/AOG.0b013e31824206e9.

Unverifiable Accomplishments and Publications on Applications for Gynecologic Oncology Fellowships

Michael Frumovitz, MD, MPH¹, Maya L. Kriseman, MD², Charlotte C. Sun, DrPH¹, Jennifer Blumenthal-Barby, PhD³, Anil K. Sood, MD¹, Diane C. Bodurka, MD¹, and Pamela T. Soliman, MD, MPH¹

¹Department of Gynecologic Oncology, The University of Texas MD Anderson Cancer Center, Houston, Texas

²Department of Obstetrics and Gynecology, Baylor College of Medicine, Houston, Texas

³Center for Medical Ethics and Health Policy, Baylor College of Medicine, Houston, Texas

Abstract

Objective—Selection of physicians for fellowships in obstetrics and gynecology subspecialties has become increasingly competitive. The number and quality of research publications is an important factor in the selection process. We sought to estimate the incidence of unverifiable (“ghost”) publications among gynecologic oncology fellowship applicants.

Methods—We reviewed the applications to a single gynecologic oncology fellowship program during 2004–2008. Articles and book chapters reported as published, “in press”, “submitted”, or “in progress” were systematically searched for by three reviewers using PubMed and Google. Chi-square analysis was used to evaluate associations between demographic factors and unverifiable publications.

Results—Two hundred forty-three applications met the inclusion criteria. Of the 35 applicants who listed membership in Alpha Omega Alpha, 4 (11%) were not listed on the organization’s website as inductees. Of the 464 articles reported as published or “in press”, only 387 (83%) could be verified. Of the 148 applicants who reported at least 1 published/“in press” article, 44 (30%) had at least 1 unverifiable publication. On multivariable analysis, only male gender increased the likelihood of unverifiable publications (OR 2.1, 95% CI 1.1–4.1). Of the 282 manuscripts reported as “submitted” or “in progress”, only 126 (44%) were published. Of the 124 applicants who reported at least 1 “submitted”/“in progress” manuscript, 88 (71%) had at least 1 unverifiable manuscript.

Conclusion—The proportion of unverifiable publications listed on gynecologic oncology fellowship applications is concerning. Stringent review of applications before interview invitations and match list submission is warranted.

Introduction

In the past decade, the number of applicants to fellowship programs in obstetrics and gynecology tripled. (1) Subspecialty training in obstetrics and gynecology has evolved from unofficial “apprenticeships” to board-certified fellowships. Whereas in the past, fellows

Corresponding author: Michael Frumovitz, MD, MPH, Department of Gynecologic Oncology, CPB6.3244, Unit 1362, The University of Texas MD Anderson Cancer Center, 1155 Herman Pressler, Houston, TX 77030. Phone: (713) 792-9599. Fax: (713) 792-7586. mfrumovitz@mdanderson.org.

Disclosures: The authors have no conflicts of interest to disclose.

were selected and recruited with an informal interview and a handshake, current graduating residents must undergo a rigorous application process including submission of a written curriculum vitae, letters of recommendation, and a personal statement. United States Medical Licensing Examination and Council on Resident Education in Obstetrics and Gynecology scores as well as medical school grades are also submitted for review. Applicants are then selected for fellowships through the National Residency Match Program (NRMP).

At the same time that the fellowship application process has become more rigorous, the fellowship programs themselves have formalized the structure of their curricula. In gynecologic oncology, a premium has been placed on research and every fellowship program requires 1–2 years of dedicated research time. There are numerous references on fellowship websites to training future academicians as a mission of gynecologic oncology training. Our fellowship [website](#) states that graduates are expected “to become academic gynecologic oncologists”. (2) Other programs speak of “supporting successful academicians” (3) and preparing trainees for “an academic career in the subspecialty of gynecologic oncology”. (4) Not surprisingly, it has become well recognized among applicants to gynecologic oncology fellowship programs that a key to success in the application process is to stress a commitment to becoming an academic physician after training. In an effort to back their credibility as potential researchers, applicants are openly encouraged by their mentors to perform research to bolster their curricula vitae. As interviewers, we often look to publications as a measure of a candidate’s “academic potential.” As there exists a strong assumption that listing published papers on an application is considered highly favorably, we wondered if applicants might list on their applications publications that could not be verified upon careful review. The objective of this study was to estimate what percentage of publications listed on applications to our gynecologic oncology fellowship program were verifiable as published manuscripts. Other medical training programs have reported a wide range of misrepresentations (6–50%) by their applicants. (5–11)

Materials and Methods

After obtaining approval from the institution’s Institutional Review Board, we reviewed all data submitted during 2004–2008 by applicants for the Gynecologic Oncology Fellowship at The University of Texas MD Anderson Cancer Center. In order to protect the identity of applicants who ultimately matched into the program, data on those applicants were excluded from the analysis, as required by the Institutional Review Board.

The types of data abstracted from the applications are listed in Table 1. Undergraduate major was categorized as science or engineering versus liberal arts. Membership in the Alpha Omega Alpha Honor Medical Society was verified using the member search function on the organization’s website (<http://www.alphaomegaalpha.org>). For married female applicants who were not found on the Alpha Omega Alpha website using their legal names and who had a maiden name listed on their application, attempts were made to find the applicant using the maiden name. Residency programs were classified as “academic” if they were affiliated with a university or medical school and “community” if they were associated solely with a teaching hospital or community health center. Citations were grouped as 1) published or “in press” (publications that one would expect to be verifiable), 2) “submitted” or “in progress” (articles that might not be verifiable given that neither “submitted” nor “in progress” implies that the work may or may not be published), and 3) book chapters.

Articles in peer-reviewed and non-peer-reviewed journals and book chapters were reviewed. Listed articles were searched for in PubMed and on the Internet using Google by the data

abstractor (M. L. K.). All citations that could not be verified by the data abstractor were then independently searched for by two full-time faculty members in the Department of Gynecologic Oncology at MD Anderson (M. F. and P. T. S.), for a total of three independent attempts to verify each listed article. Searches were done between June 1, 2010 and July 31, 2010 to allow adequate time for manuscripts listed as “in press” or “submitted” to appear on the appropriate search engines. (12) Publications in foreign journals not included in PubMed and abstracts were not included as these proved difficult to accurately verify.

Descriptive methods were used to summarize the entire cohort of applicants. Further analysis was then undertaken of variables related to unverifiable manuscripts listed as published or “in press”. Using the presence or absence of at least one unverifiable published or “in press” journal article or at least one unverifiable book chapter, statistical analysis of this binary group using Mann-Whitney and chi-squared tests was used to evaluate differences between groups. *P* values of <0.05 were considered statistically significant. Missing data were coded as “unknown” and were excluded from the analysis. Variables found to be significant on univariable analysis were examined on multivariable analysis using a backwards stepwise regression. All data were analyzed using SPSS 17.0 for Windows (SPSS, Inc., Chicago, IL).

Results

From 2004 to 2008, 258 obstetrics and gynecology residents or graduates applied for the Gynecologic Oncology Fellowship at The University of Texas MD Anderson Cancer Center. After exclusion of the 15 applicants who ultimately matched into our program, 243 applicants were included in this analysis. Table 2 provides an overall description of the applicant cohort. Of the 35 applicants who listed membership in the Alpha Omega Alpha Honor Medical Society, 4 (11%) were not listed on the Alpha Omega Alpha website as members.

One hundred forty-eight applicants (61%) stated on their application that they had at least one article published or “in press” (median 1, range 1–38). Of these 148 applicants, 44 (30%) had at least one publication that was not verifiable. (37 applicants listed at least one unverifiable article as published, 4 listed at least one unverifiable article as “in press”, and 3 applicants listed both an unverifiable published and “in press article”). These 44 applicants represented 18% of the entire cohort of applicants (including those who listed no articles as published or “in press”). Of the four applicants whose Alpha Omega Alpha membership was unverifiable, 2 had no publications listed, 1 had all listed publications verified, and the last listed unverifiable publications. In total, 464 articles were listed as published or “in press”. Of these, only 387 (83%) were verified.

One hundred twenty-four applicants (51%) stated on their application that they had at least one manuscript “submitted” or “in progress” (median 1, range 1–9). Of these 124 applicants, 88 (71%) had at least one manuscript that would not be verifiable at the time data was abstracted. These 88 applicants represented 36% of the entire cohort of applicants (including those who listed no articles as “submitted” or “in progress”). In total, 282 manuscripts were listed as “submitted” or “in progress”. Of these, only 126 (44%) were verified as published.

Finally, 33 applicants (14%) listed at least one book chapter on their application (median 1, range 1–11). Of these 33 applicants, 8 (24%) had at least one book chapter that was not verifiable. These 8 applicants represented 3% of the entire cohort of applicants (including those who listed no book chapters). In total, applicants listed 54 book chapters. Of these, only 41 (76%) were verifiable.

Twenty-five of the 97 male applicants (26%, 95% CI [18–35%]) had at least one unverifiable publication, compared to only 19 of the 146 female applicants (13%, 95% CI [8–20%]) ($P=.02$). Nineteen graduates of non-U.S. medical schools (28%) had at least one unverifiable publication, compared to 25 U.S. medical school graduates (14%) ($P=.03$). Applicants from community programs were more likely to have unverifiable publications than applicants from university-based programs (25% vs. 14%, $P=.03$). Finally, applicants who had applied previously were more likely to have unverifiable publications than those applying for the first time (38% vs. 17%, $P<.05$). On univariable analysis, there were no differences in percentages of applicants with unverifiable publications by ethnicity, undergraduate major, type of medical degree (MD vs. DO), membership in Alpha Omega Alpha, or advanced degrees (any vs. none). On multivariable analysis, only male gender remained a significant predictor, with an odds ratio of 2.1 (95% CI [1.1–4.1]) for listing at least one unverifiable publication. Although applicants who had previously applied had an odds ratio of 2.6 (95% CI [0.9–7.8]) and those that attended an academic residency program had an odds ratio of 0.54 (95% CI [0.3–1.1]) of submitting an unverifiable publication, neither were statistically significant.

Discussion

In summary, we were unable to verify articles listed as either “published” or “in press” in almost one-third of gynecologic oncology fellowship applications. Although many readers may find the high rate of unverifiable publications startling, the rate is similar to the rate of publications found to be “misrepresented” in previous studies of applicants to residency programs (22–34%) (5–7) and applicants to other fellowship programs (16–50%) (8–11). Unlike previous authors, we took care to use the word “unverifiable” as opposed to “misrepresented” because of the severely negative connotation of the latter. In addition, we found no evidence of publication of 56% of manuscripts listed as “submitted” or “in progress”. For anyone involved in residency or fellowship interviews, this finding is less surprising. Finally, we were unable to find a listing for 11% of applicants who listed membership in the Alpha Omega Alpha Honor Medical Society on the organization’s website.

Gussman and Blechman (13) speculated as to possible reasons behind the high rates of unverifiable content on postgraduate medical training applications. They proposed that applicants might be careless, which could lead to errors; might be unable to understand the directions on the application clearly; might be receiving poor mentorship from their advisors; or might purposely misrepresent themselves in “a desire to strengthen the application”. (13) Although mistakes due to any of these reasons would make us question an applicant’s attention to detail and his or her ability to perform at the highest levels required in medicine, we hope that most cases of unverifiable publications are a result of carelessness, misunderstanding, or lack of good advice from superiors. Unfortunately, results of a recent meta-analysis suggested that some form of purposeful misrepresentation of research experience is likely present in more than 10% of applications submitted to residency or fellowship programs.(14) This is particularly concerning given the Accreditation Council for Graduate Medical Education (ACGME)’s designation of professionalism and adherence to ethical principles as one of six core competencies. (15)

Should gynecologic oncology fellowships share in the blame for falsifications on applications? The fellowships have become highly competitive: 38% of applicants did not match in 2011. (16) At the same time, our program descriptions and websites stress our commitment to training academicians. Is it any wonder, then, that applicants might feel the need to bolster their research experience?

Although fellowship programs, ours included, stress the strong desire to train academicians, we have little objective data on the applications to predict which potential fellows will actually stay in academia. In addition, at current training rates, gynecologic oncologists might expect a 20% increase in caseloads over the next 40 years. (17) Certainly much of the future need will be away from academic centers, in rural areas where women already are less likely to get optimal care for their gynecologic malignancies. (18)

The study presented here obviously has some limitations. Misspellings or other small errors in listed citations may have made verifying articles difficult. In addition, name changes due to marriage or other reasons may have added to the number of articles that we were unable to verify. We tried to anticipate some of these issues by verifying unfound citations using other authors listed, the article title, using multiple search engines, and having multiple investigators attempt to validate. We understood that many articles listed as “submitted” or “in progress” would ultimately never get published, and therefore we did not consider those unauthenticated listings as attempts to mislead. We report those numbers simply out of interest to fellowship interviewers. We are, however, at a loss for how to explain our inability to verify membership in Alpha Omega Alpha for 11% of the applicants who listed themselves as members.

In conclusion, a large number of fellowship applicants listed publications on their applications that were unverifiable by three independent reviewers. Although we have taken care to describe these publications as “unverifiable”, findings from a recent meta-analysis suggest that a significant proportion of these “unverifiable” documents are overt attempts to “misrepresent” prior experience. (14) Fortunately, the Electronic Residency Application Service now has a field for the PubMed identifier (PMID), and for next year’s applications, we will ask applicants to provide this number. In addition, we will encourage applicants to email or fax copies of any articles that are not listed in PubMed. Furthermore, as there may be many reasons a person may change his or her name, our cover letter to potential applicants will ask specifically for all names previously used to help us better verify information presented on their resume. Finally, we would emphasize not just the importance of detection of misrepresentation but also the importance of prevention of misrepresentation, which could be accomplished by educating learners (medical students, residents, and fellows) as well as faculty and mentors about academic integrity and research ethics. The importance of such education is supported by The American College of Obstetricians and Gynecologists’ Committee on Ethics in their recent statement on Professional Responsibilities in Obstetric-Gynecologic Medical Education and Training. (19)

Acknowledgments

Supported in part by the National Institutes of Health through MD Anderson’s Cancer Center Support Grant, CA016672.

References

1. Fang YM, Egan JF, Rombro T, Morris B, Zelop CM. A comparison of reasons for choosing obstetrician/gynecologist subspecialty training. *Conn Med*. 2009 Mar; 73(3):165–170. [PubMed: 19353991]
2. <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/graduate-medical-education/residency-and-fellowship-programs/gynecologic-oncology-fellowships.html> [cited; Available from: <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/graduate-medical-education/residency-and-fellowship-programs/gynecologic-oncology-fellowships.html>]
3. http://www.columbiaobgyn.org/fellowship_gynonc.html. [cited; Available from: http://www.columbiaobgyn.org/fellowship_gynonc.html]
4. <http://www.mskcc.org/mskcc/html/69080.cfm>. [cited; Available from: <http://www.mskcc.org/mskcc/html/69080.cfm>]

5. Dale JA, Schmitt CM, Crosby LA. Misrepresentation of research criteria by orthopaedic residency applicants. *J Bone Joint Surg Am*. 1999 Dec; 81(12):1679–1681. [PubMed: 10608378]
6. Gurudevan SV, Mower WR. Misrepresentation of research publications among emergency medicine residency applicants. *Ann Emerg Med*. 1996 Mar; 27(3):327–330. [PubMed: 8599492]
7. Konstantakos EK, Laughlin RT, Markert RJ, Crosby LA. Follow-up on misrepresentation of research activity by orthopaedic residency applicants: has anything changed? *J Bone Joint Surg Am*. 2007 Sep; 89(9):2084–2088. [PubMed: 17768209]
8. Bilge A, Shugerman RP, Robertson WO. Misrepresentation of authorship by applicants to pediatrics training programs. *Acad Med*. 1998 May; 73(5):532–533. [PubMed: 9609867]
9. Glazer JL, Hatzembuehler JR, Dexter WW, Kuhn CB. Misrepresentation of research citations by applicants to a primary care sports medicine fellowship program in the United States. *Clin J Sport Med*. 2008 May; 18(3):279–281. [PubMed: 18469571]
10. Panicek DM, Schwartz LH, Dershaw DD, Ercolani MC, Castellino RA. Misrepresentation of publications by applicants for radiology fellowships: is it a problem? *AJR Am J Roentgenol*. 1998 Mar; 170(3):577–581. [PubMed: 9490934]
11. Sekas G, Hutson WR. Misrepresentation of academic accomplishments by applicants for gastroenterology fellowships. *Ann Intern Med*. 1995 Jul 1; 123(1):38–41. [PubMed: 7762913]
12. Kuo PC, Schroeder RA, Shah A, Shah J, Jacobs DO, Pietrobon R. "Ghost" publications among applicants to a general surgery residency program. *J Am Coll Surg*. 2008 Oct; 207(4):485–489. [PubMed: 18926449]
13. Gussman D, Blechman A. Verification of publications, presentations and posters by applicants to a residency in obstetrics and gynecology. *J Reprod Med*. 2007 Apr; 52(4):259–261. [PubMed: 17506363]
14. Wiggins MN. A meta-analysis of studies of publication misrepresentation by applicants to residency and fellowship programs. *Acad Med*. 2010 Sep; 85(9):1470–1474. [PubMed: 20531151]
15. http://www.acgme.org/acWebsite/RRC_280/280_coreComp.asp.
16. Program NRM. Results and data: Specialties matching service 2011 appointment year. 2011
17. Wallace AH, Havrilesky LJ, Valea FA, Barnett JC, Berchuck A, Myers ER. Projecting the need for gynecologic oncologists for the next 40 years. *Obstet Gynecol*. 2010 Dec; 116(6):1366–1372. [PubMed: 21099604]
18. Carney ME, Lancaster JM, Ford C, Tsodikov A, Wiggins CL. A population-based study of patterns of care for ovarian cancer: who is seen by a gynecologic oncologist and who is not? *Gynecol Oncol*. 2002 Jan; 84(1):36–42. [PubMed: 11748973]
19. Committee opinion no. 500. professional responsibilities in obstetric-gynecologic medical education and training. *Obstet Gynecol*. 2011 Aug; 118(2 Pt 1):400–404. [PubMed: 21775874]

Table 1

Data Extracted and Analyzed from Gynecologic Oncology Fellowship Applications

1	Age
2	Gender
3	Ethnicity
4	Undergraduate major (science or engineering vs. liberal arts)
5	Medical degree (MD vs. DO)
6	Country of medical school (US vs. other)
7	Alpha Omega Alpha Honor Medical Society membership status (only for graduates of US medical schools)
8	Residency type (community vs. academic program)
9	Type of American Board of Obstetrics and Gynecology approved fellowship at residency program
10	Other advanced degrees (PhD, MPH, MS, and/or MA)
11	Previous application for fellowship
12	Type of publication (manuscript or book chapter)
13	Status of publication (published, "in press", "submitted", or "in progress")

Table 2

Demographics of Entire Cohort of Applicants (n=243)

Characteristic	Number (%)	
Median age (range)	31 years (26–39 years)	
Gender		
Female	146	(60)
Male	97	(40)
Ethnicity		
Caucasian	123	(51)
Asian	47	(19)
Middle Eastern	28	(12)
African American	18	(7)
Hispanic	18	(7)
Unknown	9	(4)
Undergraduate major		
Science	144	(59)
Liberal arts	31	(13)
Dual	6	(3)
Not stated	62	(25)
Foreign medical graduate		
No	174	(72)
Yes	69	(28)
Medical degree		
MD	234	(96)
DO	9	(4)
Alpha Omega Alpha member		
No	139	(58)
Yes	35	(14)
Foreign medical graduate	69	(28)
Type of residency		
University based	196	(81)
Community based	47	(19)
Other degree(s)		
None	214	(88)
MPH	11	(5)
PhD	8	(3)
MS	5	(2)
MPH and MS	3	(1)
MA	2	(1)
Previously applied for fellowship		
No	227	(93)
Yes	16	(7)