Implementation and Initial Evaluation of an Academic Career Development Curriculum for Fellows

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Abstract

Objective To develop and evaluate an academic career development curriculum.

Methods We anonymously surveyed 25 fellows and advanced trainees in 9 obstetrics and gynecology subspecialty fellowships prior to the start of an academic career development common curriculum in 2007. Results were compared with responses from the same survey given at the completion of the 2-year program to guide and improve the curriculum. Fourteen surveys were completed for both administrations.

Results Most fellows expressed the desire to pursue academic careers and planned to present and publish research from their fellowship in both surveys. After completing the curriculum, fellows reported overall improvement in self-appraised confidence for speaking at national meetings and preparing a research grant. The most substantial change in self-assessment was increased awareness and utilization of departmental research support personnel. Elements of training that showed improvement but were not main topics of core sessions included the frequency of constructive feedback from mentors and peers, and frequency of discussion of research ethics.

Conclusion Instituting an academic career development curriculum for obstetrics and gynecology fellows was associated with increased self-appraised confidence in specific academic skills as assessed by anonymous survey.

Background and Objectives

Academic career development for fellowship trainees represents an opportunity and a challenge. The number of fellows and advanced trainees at our institution rivals the number of residents, yet individual fellowship programs typically train only a few individuals at a time. We developed an academic oversight committee for fellow training, the Fellow Advisory Committee, to coordinate among our 9 obstetrics and gynecology fellowships, provide more efficient administration, and promote a common set of academic core competencies. Four of the fellowships are accredited by the American Board of Obstetrics and Gynecology. All fellowships have a research project requirement, but the depth of the required project varies.

In group discussions with fellows and advanced trainees, we identified a consistent desire among our fellows for having academic career development competencies taught. Approaches in the literature to academic career development include conducting a series of individual and group projects on curriculum vitae preparation, abstract and poster submission, and grand rounds lecture development.[1] Interdisciplinary approaches to research career development across clinical, basic, and translational research areas present further challenges of common language and knowledge base.[2]

To guide the development of the common curriculum and to assess educational outcomes, an anonymous survey was given to participating fellows about academic career aspirations, adequacy of research instruction, and mentorship prior to the start of the curriculum. The same survey was given at the completion of the 2-year curriculum for comparison and the results were used to improve the curriculum for the next 2-year cycle. Intensive short courses in biostatistics have been reported for fellows and physicians to "learn the language" and to facilitate collaborative research.[3–5] At our institution, each fellow enrolls in graduate-level statistics classes as required by their individual training program. In addition, the American Board of Obstetrics and Gynecology requires that fellows in

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Editor's Note: The online version of this article includes a survey of preparation for academic careers.

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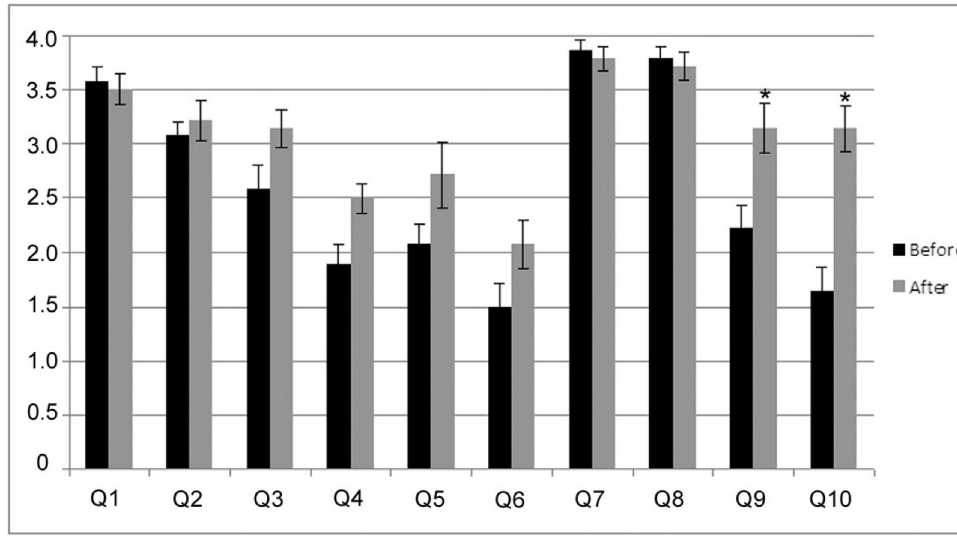

FIGURE

Comparison of Survey Responses Before (Black Fill) and After (Gray Fill) Initiation of a Fellows Academic Common Curriculum. A Likert-Type Survey was Developed With the Following Questions: Q1 "How Likely are You to Pursue A Career in Academic Medicine?" Q2 "Do You Feel Prepared to Write Manuscripts in Your Scientific Area?" Q3 "Do You Feel Prepared to Speak at A National Meeting in Your Scientific Area?" Q4 "Do You Feel Prepared to Write A Grant Proposal in Your Scientific Area?" Q5 "How Often Do You Receive Constructive Feedback from Your Mentors or Research Group?" Q6 "How Often Do Your Mentors or Research Group Discuss Issues of Research Ethics?" Q7 "By the Time You Complete Your Fellowship, How Likely are You to Submit A Peer-Reviewed Manuscript?" Q8 "By the Time You Complete Your Fellowship, How Likely are You to Present at A National Meeting?" Q9 "By the Time You Complete Your Fellowship, How Likely are You to Submit A Grant Application?" Q10 "How Often Do You Seek Help from Departmental Support Personnel for Research Issues?" Survey Responses were Assigned an Ordinal Numerical Value of 1 (Least Prepared) to 4 (Most Prepared). Average Values +/- Standard Error of the Mean are Shown. Trends for Improvement were Noted in Most Responses. Statistically Significant Differences in Question Responses are Marked (* $p<.05$)."

accredited programs complete a thesis comprising original research that must be successfully defended for subspecialty board certification. The goals of this educational program were to broaden the academic career development of our fellows by providing instruction in related aspects required for success as a faculty member including research idea development, grant proposal submission, writing skills, and presentation skills.

Methods

A Likert-type survey (as noted in the Figure legend) was developed with approval of the University of Michigan Institutional Review Board (No. HUM00017460). Questions were designed in discussion with the Fellowship Advisory Committee to assess fellow self-appraised level of preparation. Brief questions with response check boxes on a 4-level ordinal scale were chosen in response to fellow feedback that the survey be as simple and brief as possible. An informed consent waiver for this educational project was granted with safeguards for subject confidentiality including written and verbal scripts given to fellows before taking the survey stating participation was optional, anonymous, and would not affect their grading or evaluation.

The initial format for the common curriculum was bimonthly educational sessions composed of a didactic presentation by a faculty member and followed by an interactive workshop with discussion of practical examples. The areas of competency identified for successful academic careers include research ethics, research idea development, grant writing skills, manuscript writing, presentation skills, evaluation and feedback, interdisciplinary research training, and a posttraining program plan. Individual workshops then focused on a specific academic skill such as academic writing, research proposal design, speaking skills, and grant proposal submission including practical examples of common mistakes and how to avoid them.

The study was planned for paired analysis. Institutional review board restrictions prevented identifying individual respondents. A crossover design was not practical given the small number of fellows in a relatively small department, and we did not want to deny a control group of fellows access to the curriculum. Consequently, the data set is a

mixture of longitudinal and cross-sectional data. Given this fact, the best option was to analyze the 2 sets of observations as 2 independent samples, although that overstates the extent to which the 2 samples are independent. Fourteen of 25 eligible fellows completed the survey at each survey time. Based on fellowship graduation rates, approximately two-thirds of the respondents were the same at both survey times.

Results

Survey responses to the 10 questions on a 4-level ordinal scale are shown numerically as average plus or minus the standard error of the mean in the FIGURE. Data were analyzed in 3 steps using SAS statistical software (SAS Institute Inc., Cary, North Carolina). Ordinate data were treated as a scale score to measure the fellows' report on the extent to which they have been prepared for a career in academic medicine. Cronbach alpha statistics revealed that the alpha statistics were acceptable on 5 of the questions on both administrations. A 2-sample *t* test statistic comparing the 5-question scale scores from the 2 administrations showed a significant difference between the administrations with a higher score on the second administration ($P = .04$). We next compared the multinomial distributions of the scale scores from the 2 survey administrations by chi-square test and found statistically significant improvement for likelihood of submitting a grant application and frequency of seeking help from department support personnel for research issues ($P<.05$).

As expected, most fellows expressed the consistent desire to pursue academic careers prior to and after initiation of the curriculum, indicating the high motivation of this set of fellows. Areas of training that were not the main topic of core sessions but showed improvement were the frequency of constructive feedback from mentors and peers, and frequency of discussion of research ethics.

Discussion

Educational requirements for fellowships are different from those of residencies, but the infrastructure using the 6 competencies is similar. Institution of a formal career development curriculum for subspecialty fellows and advanced trainees was associated with increased self-appraised confidence in specific academic skills as assessed by an anonymous survey. A limitation of our study is its use of unpaired ordinal data, resulting in insufficient power to determine significant differences for most of the responses. Power calculation for a future study dividing the fellow curriculum in a 2-group crossover paired design would have a 90% power to detect a change of 1.0 (1 ordinate on a 4-point scale) difference in survey responses of 50 subjects.

Feedback from the trainees was used to modify and improve the program. For the next curriculum cycle, we revised the format to reduce the amount of time needed to meet face-to-face as a group. A multilayered approach to academic career development evolved to supplement the academic training from fellowship directors and individual mentors. Our current curriculum now comprises (1) a welcome dinner for all fellows and advanced trainees (families invited), (2) a half-day workshop in the fall and spring for discussing academic career development, (3) a lending library for fellows, and (4) enrollment of fellows in a university-wide e-mail LISTSERV and website for research seminar announcements, advice for how to write effective applications for research grants, and mentoring ideas. The half-day workshop devotes an hour each to specific topics within the areas of research fundamentals, presentation/publishing, education techniques, and academic ins and outs. All fellowship directors preapprove release time from clinical duties for fellows to attend the workshops. The lending library contains multiple copies of books on academic career development and is introduced in the workshop as a resource for further self-study at a time and level appropriate to the individual fellow.

Barriers to implementation of a common curriculum continue to include arranging common times to meet and variable attendance. Future goals include increasing the fellows' visibility as supervised teachers.

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