Research education in obstetrics and gynecology: how are we doing?

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OBJECTIVE: This study was undertaken to determine how obstetrics and gynecology residency programs are teaching residents about research.

STUDY DESIGN: Obstetrics and gynecology program directors in the United States and Canada completed a 15-question survey about their current research education programs, their perception of the most important components of resident research education, and how well prepared graduating residents were for a variety of research-related activities.

RESULTS: One hundred thirty-two of 213 (62%) program directors completed the survey. Ninety-five percent required residents complete a research project to graduate. Research topics were more commonly taught via journal clubs (84%) and informal apprenticeships (78%). Less than half of the programs provided didactic presentations on clinical trial design and biostatistics (47%) or statistical software (38%).

CONCLUSION: Although nearly all of the sampled obstetrics and gynecology residency programs require resident research projects, most provide limited resources or formal education on clinical research design and biostatistics.

Key words: research curriculum, research education, resident research

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Two requirements *common to all residency programs* accredited by the Accreditation Council for Graduate Medical Education (ACGME) are as follows: (1) that the faculty maintains an environment of scholarship and an active research component; and (2) that residents have and take advantage of opportunities to participate in research or other scholarly activities.[1] Although the ACGME clearly defines "scholarly activity" for faculty, the requirements for residents are less explicit (Table 1), leaving this to the interpretation of individual programs and specialties. As a result, a variety of activities can be classified as "scholarship," including journal clubs, teaching conferences and other research projects. A recent survey of Internal Medicine program directors found that an ACGME Residency Review Committees (RRC) citation for failure to demonstrate scholarly activities was a strong predictor of a shortened interval between RRC site review visits.[2]

Multiple studies have documented the finding that resident research enhances patient care as well as overall medical knowledge.[3,4] In addition, resident research aids clinician development of analytical and communication skills, as well as lifelong learning.[5] Despite ACGME requirements and the benefits of resident research on future practice, numerous barriers to successful research training have been reported in other medical disciplines, including lack of mentoring, time, and resources; lack of financial support; and lack of curricular time.[6,3,7-9]

Given the clearly established requirements and importance of resident research, we sought to determine how obstetrics and gynecology residency program directors incorporated resident research education into their training programs.

Materials and Methods

We invited all United States and Canadian obstetric and gynecology residency program directors attending the Association of Professors for Gynecologists and Obstetricians Annual Meeting in March of 2006 to complete a 15-question written survey about resident research education. The survey queried program directors about their program's research requirements and specific components of their research curriculum. They were also asked to rank 11 research-related items from most important to least important (Table 2).

Program directors were also queried about the percentage of graduating residents who have continued to do research over the last 5 years and graduating residents' preparedness to design a research protocol, write a research protocol, prepare an institutional review board (IRB) submission, analyze and interpret results, prepare an abstract, write a manuscript, and interpret the published literature.

SPSS Version 13 (SPSS, Inc, Chicago, IL) was used for data management and analysis. The Mann-Whitney test was used to compare independent groups with respect to continuous variables. Spearman's correlations were used to

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TABLE 1
Accreditation council for graduate medical education scholarship requirements (http://www.acgme.org)

Faculty

The responsibility for establishing and maintaining an environment of inquiry and scholarship rests with the faculty, and an active research component must be included in each program. Scholarship is defined as the following:

a. the scholarship of discovery, as evidenced by peer-reviewed funding or publication of original research in a peer-reviewed journal;
b. the scholarship of dissemination, as evidenced by review articles or chapters in textbooks;
c. the scholarship of application, as evidenced by the publication or presentation of, for example, case reports or clinical series at local, regional, or national professional and scientific society meetings.

Complementary to the above scholarship is the regular participation in of the teaching staff in clinical discussions, journal clubs and research conferences in a manner that promotes a spirit of inquiry and scholarship (eg, the offering of guidance and technical support for residents involved in research such as research design and statistical analysis); and the provision of support for residents' participation, as appropriate, in scholarly activities.

Residents

Each program must provide an opportunity for residents to participate in research or other scholarly activities, and residents must participate actively in such scholarly activities.

compare proportion of residents doing research after graduation with levels of perceived preparedness. All tests were considered significant at .05 level and no 1-sided tests were used.

TABLE 2
Program directors ranking of resident research education

Ability to interpret the literature	2
Understand how to design research projects	1
Understand ethics of human subject research	3
Understand how to perform basic statistical analysis	4
Able to design research projects	5
Able to prepare an abstract	6
Know how to submit an IRB proposal	7
Able to perform basic statistical analysis	8
Present research at a local meeting (own institution)	9
Submit manuscript for publication	10
Present research at a national meeting	11

Most important = 1; least important = 11.

RESULTS

One hundred thirty-two of 213 (62%) United States and Canadian obstetric and gynecology residency program directors completed the survey. Sixty-three percent of respondents were from university-based programs, 35% community programs, and 2% military programs. There were no significant differences in any parameters measured between university and community programs. Ninety-five percent of responding programs required residents to complete a research project for graduation. None of the 6 programs without a resident research requirement were university based. The length of time programs had required a research project was less than 5 years in 15%, 5 years or more and less than 10 years in 25%, 10 years or more and less than 15 years in 24%, and 15 years or more in 36%. Eighty-nine percent of residency program directors report that they were actively involved in research.

Only 43 of the 127 programs (33%) with a research requirement provided a specified research rotation, most commonly in the third year (63%). Less commonly, the research rotation occurred in the first or second years (22%) or the fourth year (15%). The duration of the majority (87%) of the research rotations was 4 weeks. Residents in the remaining programs completed their research during their regularly scheduled rotations and/or when they were off duty.

TABLE 3
Obstetrics and gynecology residency programs research curriculum

Research curriculum	% of Programs
Journal clubs	84%
Informal apprenticeship with faculty mentor	78%
Designated biostatistician	58%
Formal with regularly scheduled research meetings and didactics	47%
Didactics on biostatistics and epidemiology	47%
Access to statistical software program	38%

Table 3 contains the percentage of residency programs that offer particular aspects of a research curriculum. The majority of programs had regularly scheduled journal clubs and used an apprenticeship model for research education. Less than half offered regularly scheduled research meetings with didactics on research design, biostatistics and epidemiology, or access to statistical software for data entry and management.

Table 2 contains program director's ratings of 11 components of resident research education from most important (1) to least important (11). The majority of program directors (78%) ranked resident's ability to interpret the published literature as most important. They also though it was important for residents to have an *understanding* of how to design and analyze research, although they believed presenting and publishing were less important.

Program directors estimated that 16% ± 13% of graduating residents continued research activities after graduation. Table 4 shows the proportion of program directors who reported that their residents were well prepared for various aspects of clinical research on gradua-