Residency Education

Family Medicine Obstetrics Fellowship Graduates: Training and Post-fellowship Experience

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Background and Objectives: *Family medicine obstetrics and maternal-child health fellowships offer family physicians additional training in pregnancy care. Our objectives were to assess the content of these fellowship programs, the clinical practices of fellowship graduates, and factors associated with inclusion of cesarean delivery in practice after fellowship training.* Methods: *A survey was sent to graduates of obstetrics or maternal-child fellowships around the country regarding their fellowship experience and current practice characteristics.* Results: *A total of 165 graduates responded, for a response rate of 64%. Cesarean delivery, postpartum tubal ligation, and dilation and curettage are taught in most fellowships. Involvement in residency education and caring for outpatient family medicine patients are also included in most fellowships. Forty-four percent of fellowship graduates practice in rural areas, 88% are based in community hospitals, and 49% are faculty in family medicine residency programs. Most fellowship graduates are comfortable caring for high-risk pregnancy patients and performing related operative procedures. Sixty-six percent of graduates reported obtaining cesarean delivery privileges. Practicing in the Northeastern part of the United States decreased the likelihood of graduates having cesarean delivery privileges while practicing in a rural community increased it.* Conclusions: *A majority of family physicians care for high-risk pregnancy patients and perform operative procedures related to pregnancy after completing an obstetrics fellowship.*

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Forty-six percent of family physicians in 1978 reported delivering babies compared to only 23% in 2005.[1,2] Decreased access to pregnancy care provided by family physicians has affected underserved and rural populations.[3,4] Family physicians are often the only physicians accessible for patients in these communities, and these physicians may need to have advanced procedural skills or knowledge in the management of patients with high-risk pregnancies.[5-9] In addition, because the US cesarean delivery (CD) rate has risen dramatically, from 4.5% in 1970 to 29.1% in 2004, a higher proportion of family physicians' patients deliver by CD.[10] Family physicians' involvement in deliveries may decrease the rate of CD because the percentage of family physicians delivering babies has been shown to be a marker for an environment that supports nonoperative care.[11-13]

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Family medicine obstetrics fellowships were initially developed to teach family physicians the advanced skills needed to deliver pregnancy care to patients in areas where obstetricians were not available.[14,15] The first formal fellowship for advanced obstetrics known to us was started in the mid 1980s. According to the American Academy of Family Physicians (AAFP) fellowship directory, obstetrics fellowships are considered "private arrangements made between an institution and the individual who trains in them. They are not accredited by the Residency Review Committee/Accreditation Council for Graduate Medical Education and they do not lead to certification by the American Board of Family Medicine." Therefore, there may be a range of clinical experiences and teaching methods depending on the program and the needs of the fellows in training.

Our study had three objectives. The first objective was to describe clinical experiences offered by family medicine obstetrics fellowship programs. The second was to report practice patterns of obstetrics fellowship graduates. The third was to examine factors associated with inclusion of CDs in post-fellowship practice.

Methods

Identifying Programs

We identified fellowship programs using the AAFP *Directory of Fellowship Programs.* Additional programs not listed in the directory were identified by personal communication and by a request on the Society of Teachers of Family Medicine listserve to the Group on Family-centered Perinatal Care (FAMDEL). We asked directors of identified fellowships to provide a list of their graduates during 1992–2002. We sent follow-up letters, telephoned, or e-mailed directors if they did not respond. A search for fellowship graduates was also posted on FAMDEL. Internet search engines were used to assist in locating graduates.

A total of 39 programs were identified. Fifteen of these programs were no longer in existence. Eight of the remaining 24 programs matriculated their first graduate in 2003 or later and, therefore, these programs were not included in our survey. Some directors identified fellows who were currently in their program but not yet graduated, and we included these fellows in the study. The Institutional Review Boards of the University of New Mexico and Boston University Medical Center approved our study methods.

Survey Content

We asked graduates about their fellowship experience. Specifically, we asked about length of fellowship, what year fellowship was completed, and whether a master of public health degree was obtained. From a list of clinical activities, we asked which activities were included in their fellowship training and how many CDs they performed as a fellow. Our questionnaire used the term *performed* rather than the term *primary surgeon* because there is not a standardized understanding of what defines primary surgeon. In some cases it refers to the billing physician. In others it refers to the physician operating from the dominant side, and in still others it refers to who performed a certain percentage of the surgery. In some circumstances, fellows operate with attending physicians who would intervene for teaching purposes or for patient safety. In other circumstances, fellows may operate with family medicine or obstetrics-gynecology residents, and the fellow acts as the teaching physician. In these teaching roles, the fellow is directing the key portions of the surgery, though there is variation as to who would be designated as primary surgeon. To accurately capture CD numbers, we chose to use the word "performed" without reference to "primary surgeon" to refer to all CDs in which fellows had significant involvement and directed the surgery. This was distinct from CDs in which they were merely "assistants." Additionally, whereas a prospective study can specify an exact definition for the term *primary surgeon* and ask for procedures that qualify, our study asked for retrospective data and, therefore, it was not plausible to ask graduates to count only those procedures matching our chosen definition of primary surgeon.

We also asked graduates to list what percentage of their primary preceptors during fellowship were obstetricians or family physicians and whether these family physicians had CD privileges. We also asked for comments regarding satisfaction with fellowship and what fellowship activities would have better prepared them for practice.

A second section of our survey focused on current practice characteristics. We asked about demographics of current practice setting and whether the respondent was a faculty member in a family medicine department. We asked graduates if they worked with obstetrics-gynecology or family medicine residents. We asked whether they had CD or dilation and curettage (D&C) privileges, whether they performed medical or surgical abortions, and what percentage of patient visits involved prenatal care. We asked for the average number of CDs, D&Cs, and vacuum-assisted and forceps-assisted deliveries graduates performed in 1 year of practice. We asked what types of other inpatient care graduates provided. From a list of high-risk pregnancy conditions and pregnancy-related operative procedures, we asked graduates to select which types of care they were providing and whether they felt comfortable providing this care. We asked whether there was difficulty obtaining privileges for procedures they felt comfortable performing; if not privileged in CD, we asked graduates to indicate the reasons. Lastly, we asked whether they were in favor of a Certificate of Added Qualifications for advanced obstetrics.

Data Analysis

Univariate analyses were performed to describe the frequencies of various demographic and fellowship-related variables for the entire sample. In some cases, the few subjects who were not currently providing prenatal care were excluded from the analyses because such physicians are likely not delivering babies.

Next, bivariate analyses were used to compare the frequencies of certain variables between subjects who currently had CD privileges and those who did not. These frequencies were compared using chi-square analyses. The numbers of CDs were grouped based on a descriptive analysis of data.

A multivariate analysis was performed to determine the effect of selected variables on the likelihood of having CD privileges currently. A secondary outcome was faculty status; we determined the likelihood of faculty status based on obtaining a master of public health degree and inclusion of resident teaching in fellowship. Variables were included in this analysis if the difference between groups was statistically significant and substantive in the bivariate analysis. These were region of the country, hospital setting, type of community, and number of CDs in fellowship. Since the

0–50 group was significantly less likely to have CD privileges currently, the number 50 was used as the cutoff in the multivariate analysis.

Odds ratios (ORs) are reported with 95% confidence intervals (CIs). SAS 9.1 was used for all analyses.

Results

Respondent Demographics

We identified 259 fellowship graduates of fellowship programs around the United States. A total of 165 graduates completed surveys, for a response rate of 63.7%. One graduate declined to fill out the survey because he was no longer practicing medicine. Respondents represent 24 different fellowship programs. Characteristics of respondents are listed in Table 1.

Table 1

Demographic Characteristics of Entire Sample

		# in Sample	*% of Total Sample*
Region	East	33	20.5
	Midwest	31	19.3
	South	57	35.4
	West	37	23.0
Gender	Male	78	49.7
	Female	79	50.3
Practice setting	Solo	18	11.9
	Group	73	48.3
	University	21	13.9
	Community Health Center	39	25.8
Hospital setting	Community	130	87.8
	University	17	11.5
Community	Urban	56	37.6
	Rural	66	44.3
	Suburban	27	18.1
Faculty	Yes	78	48.5
	No	83	51.6
Now providing prenatal care	Yes	141	88.1
	No	19	11.9
Has CD privileges*	Yes	105	66.0
	No	54	34.0
Number of CDs per year (average)	0-30	86	77.5
	31-60	20	18.0
	61-100	5	4.5
Years since fellowship graduation	0-5	81	52.3
	6-10	51	32.9
	>10	23	14.8

* Comparison of subjects with and without cesarean delivery (CD) privileges is in Table 3.

Fellowship Experience

Length of fellowship training ranged from 3 months to 2 years. Two graduates completed 3-month fellowships, nine completed 6-month fellowships, 136 completed 12-month fellowships, three completed 18-month fellowships, and 17 completed 24-month fellowships.

Fellowship activities and numbers of CDs performed during fellowship are reported in Table 2. Core clinical activities taught in most fellowships include colposcopy, basic ultrasound, D&C, and postpartum tubal ligation. The average number of CDs performed in fellowship was 99. A majority of fellows also participated in care of newborn infants and outpatients in a family medicine practice.

Sixty-three percent of graduates reported having obstetricians as preceptors, 43% reported having family physicians with CD privileges as preceptors, and 22% reported having family physicians without CD privileges as preceptors. Eighteen percent of comments (n=115) about fellowship experience mentioned that hysterectomy training would have been useful. A quarter of the comments mentioned a desire for more gynecologic experience, including office gynecology, D&C, colposcopy, and cervical loop excision.

Current Practice Characteristics

Forty-nine percent of graduates reported currently being a faculty member at a family medicine residency program. Eighty-seven percent of the faculty members worked with family medicine residents; 33% worked with obstetrics-gynecology residents. Twenty-four percent of non-faculty members worked with family medicine residents; 4% worked with obstetrics-gynecology residents. Fellows who obtained a master of public health degree during fellowship had a higher likelihood of faculty status, with an OR of 4.2 (95% CI=0.84–20.9). Participation in residency education during fellowship also increased likelihood of faculty status with an OR of 4.47 (95% CI=0.65–6.14).

Graduates performed an average of 8.3 vacuum-assisted deliveries and 1.6 forceps-assisted deliveries per year. Fellowship graduates who reported having CD privileges performed an average of 28.9 CDs per year. Sixty-one percent of graduates reported having privileges for D&C, with only 18% of graduates with D&C privileges performing termination of pregnancy. Eleven percent of total graduates performed medical or surgical termination of pregnancy. A quarter of graduates reported having trouble obtaining privileges for at least one procedure they felt comfortable performing. Regarding those providing prenatal care and not privileged in CD (n=40), 40% cited personal reasons for not being privileged, 30% reported desiring but having problems obtaining privileges, 17.5% cited insufficient training, 10% reported having insufficient back-up, and 7% listed the cost of malpractice insurance as prohibi-

Table 2

Fellowship Activities for Entire Sample

		# in Sample	*% of Total Sample*
Activities During Fellowship	Postpartum tubal ligation	150	90.9
	Involved in resident education	148	89.7
	Basic ultrasound	148	89.7
	Dilation & curettage	138	83.6
	Outpatient family medicine	136	82.4
	Colposcopy	127	77.0
	Newborn nursery	118	71.5
	Complete OB ultrasound	96	58.2
	Inpatient family medicine	86	52.1
	Hysterectomy	58	35.2
	Bowel/bladder repair	45	27.3
	Abortion	18	10.9
	Master of public health	9	5.8
# of Cesarean Deliveries Performed During Fellowship	0–50	30	19.4
	51–75	28	18.1
	76–100	43	27.7
	101–125	18	11.6
	126–150	20	12.9
	>150	16	10.3

tive. Of note, 35% (n=19) of graduates not providing prenatal care reported that malpractice was prohibitive in providing this care.

Comparison of CD Privileged Versus Non-CD Privileged Fellowship Graduates

In Table 3, we compare graduates with and without CD privileges on a number of variables. This comparison highlights differences in region of the country, hospital setting, community setting, faculty status, and number of CDs in fellowship as being significantly different between the two groups. Graduates performing more than 50 CDs during fellowship were more likely to have current CD privileges. Table 4 shows the multivariate analysis detailing the independent contribution of several variables on the likelihood of CD privileges.

A list of high-risk pregnancy conditions and surgical procedures performed by fellowship graduates are listed in Table 5, with comparisons made between those with and without CD privileges. CD-privileged physicians were more involved in the care of patients with severe preeclampsia, pregestational diabetes, insulin-requiring gestational diabetes, chronic hypertension, and preterm delivery 32 to 35 weeks than were graduates without CD privileges. They were more likely to perform operative vaginal deliveries and repair of third- or fourth-degree lacerations. They were also more likely to provide care in the newborn nursery (93% versus 72%, $P<.0003$), adult inpatient ward (96% versus 72%, $P<.0001$), adult intensive care unit (76% versus 48%, $P<.0004$), and inpatient children's ward (88% versus 67%, $P<.0016$).

Certificate of Added Qualifications

Eighty-six percent of graduates were in favor of a Certificate of Added Qualifications for advanced obstetrics.

Discussion

Our study shows that a core set of knowledge and skills are commonly included in family medicine obstetrics fellowship training despite the lack of a published standardized curriculum for these programs. Most graduates provide care for high-risk pregnancy patients and feel comfortable delivering this care in their current practice.

A majority of graduates were successful in obtaining CD privileges after fellowship. The results in our multivariate analysis suggest that regional and practice setting differences most strongly affect the likelihood of having CD privileges. Performing more than 50 CDs in fellowship also has a strong independent association.

Most graduates were satisfied with their overall fellowship training; however, some stated that they would have liked to have more experience with hysterectomies as well as other gynecological procedures. Many fellows performed D&Cs during fellowship; however, only a few performed abortions. Nearly half of respondents are faculty members in family medicine residencies.

The majority of family physicians completing a fellowship with the curriculum described by our respondents are able to care for high-risk pregnancy patients and perform operative procedures related to pregnancy. Most respondents were in favor of a Certificate of Added Qualification for advanced obstetrics indicating a desire for the establishment of guidelines regarding their training and future practices. A joint statement by the AAFP and the American College of Obstetrics and Gynecology recommending competency-based rather than specialty-based hospital privileging was first published in 1980, then revised in 1998.[16] Starting

Table 3

Comparison of Demographic and Fellowship-related Variables Among Subjects Who Have (n=98) and Do Not Have (n=40) CD Privileges (Chi-Square)*

		CD Privileges (%) (n=98)	*No CD Privileges (%) (n=40)*	P *Value***
Gender	Male	73	27	.42
	Female	66	34	
Region	East	37	63	<.0001
	Midwest	57	43	
	South	84	16	
	West	91	9	
Practice setting	Solo	83	17	.68
	Group	68	32	
	University	67	33	
	CHC	74	26	
Hospital setting	Community	77	23	.0056
	University	44	56	
Community setting	Urban	61	39	<.0001
	Rural	91	9	
	Suburban	50	50	
Faculty	Yes	63	37	.0281
	No	80	20	
Years Since Fellowship Graduation	0–5 years	76	24	.3586
	6–10 years	68	32	
	11+ years	59	41	
# of CDs Performed During Fellowship	0–50 CDs	44	56	.0035
	51–100 CDs	71	29	
	101–150 CDs	87	13	
	151+ CDs	85	15	

* Subjects not currently providing prenatal care were excluded.
** For comparison between those with and without CD privileges
CHC—Community Health Center
CD—Cesarean delivery

in the fall of 2008, the American Board of Physician Specialties, a less well-recognized alternative to the American Board of Medical Specialties, will begin taking applications for a family medicine obstetrics board certification in surgical and high-risk pregnancy care (written communication with William J. Carbone, chief executive officer, American Board of Physician Specialties, April 2008.) This certification may play a role in the establishment of guidelines for training and privileging for family physicians who complete obstetrics fellowships.

Not all family physicians who practice advanced pregnancy care have fellowship training. Some physicians are successful in achieving competency in operative deliveries during residency.[17-19] In a rural setting, a 1995 study showed that most of the physicians performing CDs were not fellowship trained.[20] With recent work hour restrictions during residency and increased accessibility of fellowship program information, it would be interesting to investigate whether the percentage of fellowship-trained physicians performing CDs in rural settings has changed since 1995.

More gynecological education and training is desired among obstetrics fellowship graduates. Of note was the difference in the number of graduates performing D&Cs compared with surgical abortions since these procedures are technically very similar. Identification of barriers in abortion training during obstetrics fellowship may increase the number of abortion providers and improve the lack of access to abortion in the United States.[21]

Malpractice coverage prevented some respondents from including CDs in their practice, and it prevented more respondents from providing prenatal care. In Washington State, malpractice premiums increased by 75% for family physicians delivering babies between 2002–2004.[22,23] In certain settings, malpractice reform may be required to increase the number of fellowship graduates providing routine prenatal care as well as advanced pregnancy care.[24] However, physicians also tend to overestimate the impact of malpractice and time related to labor and delivery activities.[25,26] Emphasis on financial, professional, and personal benefits at a national level may encourage family physicians to include labor and delivery activities in their practice.

The presence of family medicine faculty members providing maternity care is important in shaping the future of the medical community. The presence of family medicine faculty members who provide maternity care, specifically those with advanced procedural skills, significantly increases the rates of their residency graduates who chose to deliver babies after residency.[27,28] In addition, exposure of obstetrics-gynecology residents to family medicine faculty who deliver babies may affect their attitudes toward family physicians since obstetricians are more supportive of family physicians delivering babies if they know a family physician who provides this care.[29]

Limitations

There are limitations to our study. All of our data was self-reported. Although most graduates are able to report how many CDs they performed during fellowship, there is not a standard method of determining which CDs are eligible to be "counted," and there may

be variation in how graduates counted CD performed during fellowship. Other fellowship activities that were not quantified are subject to recall bias.

This was a cross-sectional study and did not capture all clinical experiences of graduates since their time of graduation. We were not able to obtain graduate identification from all program directors. Contact information for graduates from larger, established, and organized fellowships was more complete and reliable. We also had an increased rate of locating recent graduates. Due to variable fill rates of the fellowships, the total number of graduates that exists is unknown.

Our data likely overestimates the level of participation in residency education or clinical activities related to pregnancy because our methods would tend to identify graduates currently involved in the academic community or maternity care. However, due to lack of centralization for data regarding past obstetrics fellowship graduates and due to the fluidity of programs in existence, it would be difficult to increase the success rate of finding more graduates.

Table 4

Multivariate Analysis of Variables Affecting Likelihood of Cesarean Delivery Privileges

Variable	*OR*	*95% CI*
Region (Other regions of the US versus Northeastern part of the US)	4.17	1.53–11.40
Hospital setting (community versus university)	2.73	0.99–7.58
Community (rural versus urban/suburban)	4.57	1.53–13.62
Number of CDs performed during fellowship (>50 CD versus <50 CD)	3.26	1.11–9.62

OR—odds ratio
CI—confidence interval
CD—cesarean delivery

Conclusions

Despite the lack of a standardized curriculum for obstetrics fellowships, most graduates responding to our survey reported similar training experiences during their fellowship. A majority of graduates are privileged in surgical procedures related to pregnancy and care for high-risk pregnancy patients. Geographical location in the United States, working in a rural setting, or performing greater than 50 CDs during fellowship were all independently associated with obtaining CD privileges after fellowship.

Table 5

High-risk Obstetrical Conditions and Obstetric Procedures Included in the Current Practice of All Subjects Compared With Subjects Currently Performing CD

	% of Entire Sample (n=138)	*% of Subjects With CD Privileges (n=98)*	*% of Subjects Without CD Privileges (n=40)*	*P Value**
Severe preeclampsia	69.5	80.6	45.0	<.0001
Pregestational diabetes	67.4	75.5	47.5	.0014
Insulin-requiring gestational diabetes	70.2	76.5	55.0	.0120
Chronic hypertension	80.2	89.8	55.0	<.0001
Preterm delivery < 32 weeks	39.7	44.9	27.5	.0582
Preterm delivery 32–35 weeks	61.0	66.3	47.5	.0398
Vacuum-assisted delivery	86.5	94.9	67.5	<.0001
Forceps delivery	35.5	43.9	15.0	.0013
Repair or third- or fourth-degree laceration	80.1	91.8	55.0	<.0001

CD—cesarean delivery
* P value for comparison of % doing the procedure between those with and those without CD privileges.
Subjects not currently providing prenatal care (n=19) were excluded from this table.
Above percentages represent column percents.

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