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Women's Health Training in Gastroenterology Fellowship: A National Survey of Fellows and Program Directors

Sumona Saha,

Division of Gastroenterology and Hepatology, University of Wisconsin School of Medicine and Public Health, UW Medical Foundation Centennial Building, Room 4224, 1685 Highland Avenue, Madison, WI 53705, USA, ssaha@medicine.wisc.edu

Erica Roberson,

Division of Gastroenterology, Department of Medicine, Oregon Health & Science University, 3181 SW Sam Jackson Park Road L461, Portland, OR 97239-3098, USA, robersoe@ohsu.edu

Kelly Richie,

Division of Gastroenterology and Hepatology, University of Wisconsin School of Medicine and Public Health, H6/516 Clinical Science Center, 600 Highland Ave, Box 5124, Madison, WI 53792, USA, kr2@medicine.wisc.edu

Mary J. Lindstrom,

University of Wisconsin-Madison, K6/432 Clinical Sciences Center, 600 Highland Avenue, Madison, WI 53792-4675, USA, lindstro@biostat.wisc.edu

Silvia Degli Esposti, and

Center for Women's Digestive Diseases, Women & Infants Hospital of Rhode Island, The Warren Alpert Medical School of Brown University, 101 Dudley Street, Suite #1440, Providence, RI 02905, USA, silvia_degli@hotmail.com

Arnold Wald

Division of Gastroenterology and Hepatology, University of Wisconsin School of Medicine and Public Health, UW Medical Foundation Centennial Building, Room 4215, 1685 Highland Avenue, Madison, WI 53705, USA, axw@medicine.wisc.edu

Abstract

Background and Aims—The Gastroenterology Core Curriculum requires training in women's digestive disorders; however, requirements do not necessarily produce knowledge and competence. Our study goals were: (1) to compare perceptions of education, fellow-reported levels of competence, and attitudes towards training in women's gastrointestinal (GI) health issues during fellowship between gastroenterology fellows and program directors, and (2) to determine the barriers for meeting training requirements.

Methods—A national survey assessing four domains of training was conducted. All GI program directors in the United States ($n = 153$) and a random sample of gastroenterology fellows ($n = 769$) were mailed surveys. Mixed effects linear modeling was used to estimate all mean scores and to assess differences between the groups. Cronbach's alpha was used to assess the consistency of the measures which make up the means.

Results—Responses were received from 61% of program directors and 31% of fellows. Mean scores in perceived didactic education, clinical experiences, and competence in women's GI health were low and significantly differed between the groups ($P < 0.0001$). Fellows' attitudes towards women's GI health issues were more positive compared to program directors' ($P = 0.004$). Barriers to training were: continuity clinic at a Veteran's Administration hospital, low number of pregnant patients treated, low number of referrals from obstetrics and gynecology, and lack of faculty interest in women's health.

Conclusions—(1) Fellows more so than program directors perceive training in women's GI health issues to be low. (2) Program directors more so than fellows rate fellows to be competent in women's GI health. (3) Multiple barriers to women's health training exist.

Keywords

Women's health; Gastroenterology fellowship; Training guidelines

Introduction

Since the 2001 report by the Institute of Medicine on the status of sex and gender differences in biomedical research, medical education has placed greater emphasis on understanding differences between the sexes and translating this understanding into improved clinical care [1]. Focused women's health residency and fellowship tracks in internal medicine and family practice, for example, have been developed at many institutions to address deficiencies in women's health education within standard training programs [2]. In addition, mandatory competencies in women's health have been integrated into the educational guidelines for all internal medicine residency programs [3, 4].

The Gastroenterology Leadership Council (GLC) is comprised of the four major American gastroenterology societies: the American Gastroenterological Association (AGA), the American College of Gastroenterology (ACG), American Association for the Advancement of Liver Disease (AASLD), and the American Society for Gastrointestinal Endoscopy (ASGE). The GLC formally recognized the importance of educating fellows on the differences in gastrointestinal (GI) and liver diseases between men and women in 2003 by including training in women's health issues in digestive disorders in the Gastroenterology Core Curriculum (GCC) for the first time [5]. A document which complements the standards and requirements by the Accreditation Council for Graduate Medical Education (ACGME) for gastroenterology training programs, the GCC represents the four societies' vision of best practices in gastroenterology training. In its most current version, the GCC includes explicit programmatic recommendations in 17 areas, including women's digestive disorders (Table 1) [6]. Training in each of the core clinical areas is required of all gastroenterology fellows.

While there is little dispute that gender influences the functioning of the GI tract and impacts the epidemiology of many GI and liver diseases as well as the rates of colorectal cancer screening, it is unknown whether GI fellowship programs are addressing gender in their curricula or whether fellows are acquiring the competence to manage the spectrum of women's health disorders outlined in the GCC. We hypothesized that, despite published guidelines, training in women's health remains inadequate and is associated with multiple barriers at both the institutional and individual level.

The aims of this study were to characterize current training in women's health in gastroenterology training programs and to compare and contrast the perceived education and self-competence in women's GI health issues between GI fellows and their program directors. We also tried to identify barriers to achieving women's digestive disorders training goals.

Methods

Survey Instrument

A 37-item questionnaire was created to assess respondent demographics, training program characteristics, potential barriers to women's GI health training, and the following four domains of training: didactic teaching, clinical experiences, self-competence, and attitudes concerning women's GI health. Item choice was informed by the GCC, literature review, and review of the topics covered in the American Board of Internal Medicine (ABIM) Certificate Exam in gastroenterology.

The quantity of didactic teaching in various topics in women's GI health was rated using a 5-point Likert scale (1 = far too little to 5 = far too much). The frequency with which fellows evaluate, manage, or perform specific tasks pertaining to women's GI health was graded as follows: 1 = never, 2 = less than once each year, 3 = yearly, 4 = monthly, 5 = greater than once each month. Competence and attitudes were rated using Likert scales (1 = very unprepared to 5 = very prepared, and 1 = strongly disagree to 4 = strongly agree, respectively).

Content validity was established by individual review of the survey by three gastroenterologists who are considered national experts in women's GI health. Face validity was assessed by detailed interviews with the gastroenterology fellowship program director, faculty, and fellows at the University of Wisconsin School of Medicine and Public Health.

This study was approved by the Institutional Review Board at the University of Wisconsin-Madison in February 2009.

Participants

Program Directors—A list of all ACGME-approved adult gastroenterology fellowships in the United States as of July 1, 2009 was obtained using the American Medical Association (AMA) Fellowship and Residency Electronic Interactive Database Access (FRE-IDA Online) (<http://www.ama-assn.org/ama/pub/education-careers/graduate-medical-education/freida-online.shtml>). Program websites were reviewed for contact information for those programs which did not provide this information in FREIDA online. All programs were contacted by phone to verify their mailing address and to obtain their current number of fellows.

Fellows—A random sample of programs was selected to receive the fellows' survey. All first- through third-year fellows at a given program were surveyed. Fellow sample size ($n = 769$) was calculated based on the ability to detect a 10% difference in a two-group independent sample t test in self-competence in women's GI health with an alpha of 0.05 and power of 0.80.

Those fellows pursuing advanced training beyond the standard 3-year gastroenterology fellowship were excluded. Pediatric gastroenterology fellows were also excluded.

As individual contact information for the fellows could not be obtained, fellows were contacted through their fellowship program directors. As an incentive to participate, all respondents were entered into a drawing for a US\$1,000 cash prize.

Survey Distribution

An anticipatory email was sent to all program directors and program coordinators 1 week prior to the first survey mailing. This email explained the nature of the study and indicated

the date study materials would be mailed. Program directors unwilling to participate were given the opportunity to withdraw from the study at that time.

Study packets were mailed to each program in September 2009. Programs whose fellows were chosen to participate in the study were sent additional materials for each fellow to complete and mail back. Program directors and coordinators were asked to distribute study packets to their fellows during a conference or meeting that all fellows were expected to attend or to place them in their fellows' work mailboxes. Programs not selected for fellow participation were only mailed a single study packet for the program director to complete.

Non-responders were contacted by email 3 weeks later notifying them of their non-response status and that the survey instruments would be mailed again. A final request was emailed to program directors and coordinators after an additional 3 weeks with the survey attached.

Data Collection

All surveys were coded with a unique indentifying number and responses were kept confidential.

Statistical Methods

Descriptive statistics, including means and standard deviations for continuous variables and frequencies for categorical variables, were calculated for program directors using standard methods. Linear mixed effects models were used to estimate all reported statistics for fellows in order to account for the potential within-program correlation. Variables measured using a 1 to 5 or 1 to 4 scale were transformed to the log scale before analysis.

Linear mixed effects models were used to assess differences in scores between fellows and program directors for each of the four domains of training and to evaluate the relationships between potential barriers to women's health training and the four domains of training.

Cronbach's alpha reliability coefficients were calculated to determine the internal consistency of the four means for both fellow and program director respondents. Hypothesis tests were regarded as significant if *P* values were < 0.05. The R statistical computing environment (version 2.01) was used to perform all analyses.

Results

Survey Respondents

We identified 154 ACGME-accredited gastroenterology fellowship programs. One program was eliminated because it had closed prior to beginning our study. Program contact information and the number of fellows for the remaining 153 programs were confirmed. A random sample of 88 programs was selected to receive both the program directors' and fellows' surveys in order to achieve the desired sample size for fellows. Only program directors were surveyed from the remaining 65 programs. A total of 769 fellows were invited to participate.

The survey was returned by 94 (61%) program directors and 228 (30%) fellows. Of the program directors who responded, 88% were male. Mean year of graduation from fellowship was 1990 (range 1970–2007). All returned program directors' surveys were included in the analysis.

Of the fellows who responded, 65% were male which is comparable to the most recent national statistics of the proportion of gastroenterology fellowship positions filled by men [7]. Approximately 29% were in their first year of gastroenterology training and 71% were

second or third year fellows (Table 2). Six fellow surveys were excluded from the analysis (5 advanced fellow responses, 1 survey with no year of training specified).

Program Characteristics

Based on program director responses, the mean number of fellows per program was 9.4 (range 3–36) and 68% of fellows were male. Thirty-two (35%) of program directors reported that less than 10% of the full-time teaching physicians in their programs were female. Forty-eight program directors (53%) reported having at least one GI faculty member with a specific clinical or research interest in women's health (Table 4).

With regards to the mandatory half-day per week ambulatory care clinic required for GI fellows, 41 program directors (44.5%) reported that some or all of their fellows fulfilled this requirement at a Veterans Administration (VA) hospital. While 86% of programs reported having inpatient obstetric services at their primary teaching hospital, nearly 25% of fellows reported no consultations from the obstetrics service during their fellowship training. Likewise, 27% of third-year fellows reported being involved in the care of less than five pregnant women during their course of fellowship. The overall percentage of female patients, however, was high, with 50% of fellows reporting a female patient case-load between 51 and 75% (Table 3).

Training Domains

Didactic Teaching in GI Women's Health Issues—We assessed respondents' perceptions of didactic teaching in women's GI health issues offered by their fellowship program using a 5-point Likert scale. We found that both groups perceived training to be insufficient (mean score < 3); however, there was a significant difference between program directors (mean score = 2.60, 95% CI 2.47–2.73) and fellows (mean score = 2.32, 95% CI 2.24–2.40) with program directors reporting the quantity of didactic teaching experiences to be significantly higher than the fellows ($P < 0.0001$) (Fig. 1). This difference remained significant throughout training ($P < 0.0001$ for program directors compared to second-year fellows and $p = 0.002$ for program directors compared to third-year fellows).

The distribution of scores for each survey item in this domain is presented in Table 4.

Clinical Experiences in GI Women's Health Issues—Using a 5-point scale, we assessed the frequency fellows evaluate and manage various women's GI health issues. Although both groups reported clinical experiences in women's health to be infrequent (mean Likert score < 3), program directors reported that their fellows had significantly more clinical experiences (mean score = 2.94, 95% CI 2.76–3.12) than did fellows (mean score = 2.58, 95% CI 2.49–2.68) ($P < 0.0001$) (Fig. 1). This difference remained significant for all 3 years of training ($P < 0.0001$ for program directors compared to second-year fellows, $P = 0.001$ for program directors compared to third-year fellows). The distribution of scores for each survey item in this domain is presented in Table 4.

Trainee Competence in Women's GI Health Issues—We asked fellows and program directors to rate trainee levels of preparedness in the evaluation and management of women's GI health issues using a 5-point Likert scale. Program directors' ratings were significantly higher (mean score = 3.12, 95% CI 2.94–3.29) than fellows' (mean score = 2.59, 95% CI 2.48–2.69) ($P < 0.0001$) (Fig. 1). This difference remained significant throughout all levels of training ($P < 0.0001$ for program directors compared to both second- and third-year fellows). The distribution of scores for each survey item in this domain is presented in Table 4.

Attitudes Towards Women's GI Health Issues—We asked program directors and fellows to assess the importance of gastroenterologists being knowledgeable and prepared to manage women's GI health issues and whether their programs' offerings in this area were sufficient, using a 4-point Likert scale. We found that both groups had favorable attitudes towards training in this area. However, the program directors' score (mean = 3.08, 95% CI 2.96–3.21) was significantly lower than the fellows' (mean = 3.28, 95% CI 3.20–3.35) ($P = 0.0004$) (Fig. 1), and remained so throughout training ($P = 0.0003$ for program directors compared to second-year fellows and $P = 0.0281$ for program directors compared to third-year fellows). The distribution of scores for each survey item in this domain is presented in Table 4.

Reliability of the Scales—Cronbach's alpha reliability coefficients were calculated for each training domain for both fellows and program directors. Coefficients ranged from 0.64 to 0.61 in the "Attitudes" domain for fellows and program directors, respectively to 0.85 and 0.86 for fellows and program directors, respectively in the "Self-competence" domain. For "Didactic teaching" coefficients were 0.84 and 0.82 for fellows and program directors, respectively. Coefficients were 0.74 and 0.80 for fellow and program directors, respectively for the "Clinical experience" domain. These scores represent acceptable to good reliability in the scales used to measure didactic teaching, clinical experience, and self-competence [8]. The low alpha values in the attitudes domain were due mainly to a single statement in that domain ("Obstetricians are primarily responsible for managing GI disorders during pregnancy"). When that statement was removed the alphas increased to 0.74 for both fellows and program directors. In further analysis we separated out this question from the attitudes domain.

Barriers to Training

We evaluated the association between potential barriers and each of the four training domains (Table 5). After adjusting for fellow gender and/or year of training, male gender of fellow, the number of pregnant patients treated, volume of referrals from obstetrics and gynecology, and teaching sessions dedicated to women's GI health issues were significantly associated with the fellows' scores in the domains of didactic teaching, clinical experiences and self-competence (all $P < 0.05$). In addition, having a continuity clinic at a VA hospital was associated with lower mean scores in the clinical experiences and self-competence domains ($P < 0.05$). With regards to attitudes towards women's GI health training, only male gender of the trainee was significantly associated with the fellows' mean score in this domain ($P = 0.0003$).

We asked program directors to indicate potential barriers to women's GI health training at their institutions. Twenty-eight percent of program directors reported poor collaboration between gastroenterology and obstetrics and gynecology (Ob/Gyn), 18% reported lack of fellow interest, and 36% reported lack of faculty interest. Notably, 64% of program directors reported no institutional barriers to training.

Discussion

The GCC states that the goals of training for gastroenterology fellows in women's health issues can be divided into three categories, all of which must be included in training. They are as follows: general women's health issues, specific digestive diseases and women's health issues, and pregnancy and childbearing issues. This study is the first to evaluate training in women's digestive disorders since the GLC incorporated this area into the GCC nearly a decade ago. Our survey assessed whether gastroenterology fellowship programs in the United States are meeting GCC guidelines in four pre-specified domains of training.

We found that both GI fellows and program directors perceive the quantity of didactic teaching in this area to be low and clinical experiences in specific areas of women's GI health to be infrequent (mean score <3 in both domains). However, there were significant differences between fellows and program directors responses in these domains. Program directors' perceived didactic teaching and clinical experiences to be greater than did fellows, indicating a potential disconnect between what program directors believe they provide and what fellows believe they receive.

With regards to perceived competence in women's GI health issues, we found that fellows rate themselves as being less than "somewhat prepared" to evaluate and manage these issues in contrast to program directors who perceive fellows' preparedness to be significantly greater. Notably, these differences remained significant for all 3 years of training, suggesting that even fellows nearing the end of their training in gastroenterology rate their preparedness in women's health issues and the quality and quantity of clinical and didactic teaching to be low.

We found attitudes towards women's GI health training to be favorable in both groups. Fellows, however, responded with significantly more positive responses. This suggests willingness among fellows towards training in this area. It also suggests that a lower perceived need to train in GI women's health among program directors may account for the low mean scores in the other domains of training we assessed.

Our findings are similar to results from prior studies in other fields of medical training. In a survey of internal medicine residents at a single institution, Spagnoletti et al. found that senior residents received little didactic teaching or clinical experiences in several women's health topics that are covered on the ABIM Certificate Examination in Internal Medicine and that have been included in competency guidelines since 1997 [9]. The majority of their respondents felt unprepared to deliver care to patients who have such issues. Using a national sample of trainees in gastroenterology, we showed women's health training to be similarly poor. Together, these studies suggest that women's health issues, although recognized as a critical area for training by academic leaders, are inadequately addressed by many US training programs.

With regards to GI fellowship program compliance in other core clinical areas, a recent study by Guardino et al. found adherence to GCC guidelines in hepatology training to be adequate overall [10]. The authors reported that most prescribed hepatology core topics were covered and that fellow and program director assessments of compliance were highly concordant. While it is reassuring that GI fellowship programs are meeting national guidelines in hepatology, our study suggests that compliance may not be uniform across the 17 core clinical areas and that compliance in some areas may significantly lag.

In addition to assessing compliance in women's GI health training, we identified institutional and personal barriers and facilitators to meeting training guidelines. We found that the number of teaching sessions dedicated to women's GI health was positively associated with greater self-competence as well as with greater clinical experience in this area. The latter association may be because programs which offer more didactic teaching in women's health also provide more opportunities for clinical exposure to these issues. If so, then increasing the number of teaching sessions in women's GI health, in itself, may not lead to better training.

We also found that the number of pregnant patients treated and the number of referrals from Ob/Gyn serve as positive predictors for didactic teaching, clinical experience, and self-competence in women's GI health. We hypothesize that this may be because close collaboration between Ob/Gyn and gastroenterology in the form of shared patients leads to

better training in women's GI health issues for fellows. If so, then efforts to improve collaboration between these services at both the institutional and national level may be very important if training is to improve in this area.

As predicted, having a VA hospital as the site for fellows' GI ambulatory care clinic was significantly associated with lower scores in clinical experience and self-competence in women's GI health. To overcome this barrier to training, programs could consider adding a second clinic site at a non-VA hospital where fellows would be more likely to treat female outpatients.

Somewhat surprisingly, the number of female GI faculty was not associated with any of the domains of training we studied. The number of faculty with an interest in women's GI health, however, was associated with the amount of didactic teaching fellows receive in this area. Thus, focused recruiting and hiring of faculty, male or female, with focused interest in women's GI health appears to be more important for fellow training in this area than simply increasing the number of female faculty.

Lastly, we found male gender of the fellow to be significantly associated with higher self-reported scores in perceived quantity of didactic teaching and self-competence in women's GI health but found no difference by fellow gender in relation to perceived clinical experiences. This suggests that male fellows, as compared to female fellows, are more likely to perceive that they received an adequate amount of teaching in this area despite receiving the same amount of clinical experiences. As a result, male fellows are more likely to feel competent to manage women's GI health issues. We hypothesize that this difference in self-reported competence may reflect over-estimation of competence on the part of male fellows, or alternatively, under-estimation of competence on the part of female fellows.

Our study has several limitations. First, while our response rate was relatively high for program directors our response rate was low for fellows, introducing the possibility for non-response bias. Nevertheless, our fellow response rate was comparable to response rates reported in other mail survey studies of physicians [11–13] and represents a national sample of fellows. Second, nearly one-third of our fellow respondents were in their first year of training. Given that our survey was distributed early in the academic year many fellows responded after having had only limited exposure to their program's offerings and before they could realistically achieve self-competence in the topics addressed in the survey. We accounted for this by adjusting for year of training when computing the mean scores in the four training domains and found that even senior fellows perceived compliance with the GI women's health training guidelines to be low compared with program directors. Third, we did not verify didactic and clinical offerings by fellowship programs and therefore cannot assess whether respondents accurately represented their programs. Future studies which objectively assess curricular offerings in women's GI health training as well as in other core clinical areas of the GCC should be considered. Lastly, we investigated a limited number of potential barriers and facilitators to training. Potential barriers we did not study such as the costs of training and lack of time to acquire training should be addressed in future studies.

In conclusion, using a national sample of GI fellows and program directors, we found that both fellows and program directors perceive didactic teaching and clinical experiences in women's GI health during GI fellowship to be low with fellows perceiving this training to be significantly lower than program directors. In addition, we found program directors rate competence in women's GI health issues of their fellows to be higher than do fellows themselves and report less positive attitudes towards the need to train in this area. Lastly, we identified multiple barriers to women's GI health training. Future work targeted towards

these barriers is needed to improve compliance with GCC guidelines in women's digestive disorders and improve fellows' training overall.

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Abbreviations

AASLD	American Association for the Advancement of Liver Disease
ABIM	American Board of Internal Medicine
ACG	American College of Gastroenterology
ACGME	Accreditation Council for Graduate Medical Education
AGA	American Gastroenterological Association
AMA	American Medical Association
ASGE	American Society for Gastrointestinal Endoscopy
FREIDA	Fellowship and Residency Electronic Interactive Database Access
GCC	Gastroenterology Core Curriculum
GI	Gastrointestinal
GLC	Gastroenterology Leadership Council
Ob/Gyn	Obstetrics and gynecology
VA	Veterans Administration

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Fig. 1.

Mean unadjusted scores in domains of training. Scores generated using mixed effects model.

* Didactic teaching and clinical experience scored on 1 to 5 scale. § Self-competence and attitudes scored on 1 to 4 scale

Table 1

Core clinical areas for training per GCC

Acid-peptic disease
Biliary tract diseases and pancreatic disorders cellular and molecular physiology endoscopy
Ethics, medical economics, and system-based practice
Geriatric gastroenterology
Hepatology
Inflammation and enteric infectious disease malignancy
Motility and functional illnesses
Nutrition
Pathology
Pediatric gastroenterology
Radiology
Research
Surgery
Women's health in digestive diseases

Table 2

Respondent demographics

	Characteristic	<i>n</i> (%)
Program directors (<i>n</i> = 94)	Male gender	83 (88.3)
	Median year completed fellowship (range)	1987 (1970, 2007)
GI fellows (<i>n</i> = 235)	Male gender	151 (64.3)
	Year in GI fellowship	
	First	70 (29.9)
	Second	89 (38.0)
	Third	69 (29.5)
	Fourth, fifth or sixth	5 (2.1) ^a
	Not specified	1 (0.4) ^a

^aExcluded from analysis

Table 3

Program characteristics *

Characteristic	n (%)	95% CI
Percentage female faculty		
0	11 (12.0)	(6.4, 20.8)
1–10	21 (22.8)	(15.0, 33.0)
10–25	36 (39.1)	(29.3, 49.9)
25–50	24 (26.1)	(17.7, 36.5)
50	0 (0.0)	(0–5.0)
Faculty with interest in GI women's health	48 (52.8)	(42.1, 63.2)
Teaching sessions dedicated to GI women's health topics	63 (69.2)	(58.6, 78.3)
Inpatient obstetrics at main teaching hospital	79 (85.89)	(76.7, 92.0)
GI continuity clinic at a Veterans Administration hospital		
All fellows	28 (30.4)	(21.5, 41.0)
Some fellows	13 (14.1)	(8.0, 26.3)
No fellows	51 (55.4)	(44.7, 65.7)
Average number of pregnant patients seen over 3 years		
0–5	13 (14.1)	(8.0, 23.3)
6–10	28 (30.4)	(21.5, 41.0)
11–15	24 (26.1)	(17.7, 36.5)
16–20	9 (9.8)	(4.9, 18.2)
>20	18 (19.6)	(12.3, 29.4)
Percentage of female patients seen over 3 years		
0–25%	0 (0.0)	(0, 5.1)
25–50%	41 (44.1)	(35.1, 56.4)
50–75%	49 (54.9)	(43.6, 64.9)
75–100%	0 (0.0)	(0, 5.1)

* Per program director responses

Table 4

GI women's health survey scores per item and per domain

Training domain	Survey item	Mean GIF item score (95% CI)	Mean PD item score (95% CI)	Mean GIF domain score (95% CI)	Mean PD domain score (95% CI)
Didactic teaching	Colonoscopy referral rates and completion rates in women	2.2 (2.1, 2.3)	2.6 (2.5, 2.8)	2.3 (2.2, 2.4)	2.6 (2.5, 2.7)
	Impact of menstrual cycle on GI tract physiology	1.7 (1.6, 1.8)	1.9 (1.8, 2.1)		
Clinical experience	Evaluation and management of fecal incontinence in women	2.2 (2.0, 2.4)	2.4 (2.3, 2.6)		
	Safety of GI drugs during pregnancy and lactation	2.4 (2.3, 2.5)	2.7 (2.5, 2.8)		
	Safety of endoscopy in pregnancy	2.3 (2.2, 2.4)	2.7 (2.6, 2.8)		
	Risk of maternal-fetal transmission of viral hepatitis and best practice recommendations for management of viral hepatitis during pregnancy	2.6 (2.4, 2.7)	2.9 (2.8, 3.0)		
	Management of general GI disorders during pregnancy	2.4 (2.3, 2.5)	2.6 (2.6, 2.8)		
Self-competence	Management of pregnancy-unique GI disorders during pregnancy	2.2 (2.1, 2.3)	2.3 (2.1, 2.4)		
	Evaluation and management of fecal incontinence in women	2.8 (2.5, 3.0)	3.2 (3.1, 3.4)	2.5 (2.4, 2.8)	2.9 (2.8, 3.0)
	Counseling on colon cancer risk in women with personal or family history of endometrial or ovarian cancer	1.9 (1.8, 2.1)	2.9 (2.7, 3.4)		
	Evaluation and management of chronic abdominal or chronic pelvic pain in women	2.7 (2.5, 2.9)	3.3 (3.1, 3.6)		
	Provision of pre-conception counseling to women with a chronic GI disorder	2.6 (2.4, 2.8)	2.3 (2.1, 2.5)		
	Management of a pregnancy-unique GI disorder	2.8 (2.6, 3.0)	3.2 (3.1, 3.4)		
	Endoscopy on a pregnant woman	1.9 (1.8, 2.1)	2.5 (2.3, 2.7)		
	Management of GI medications in a lactating woman	1.9 (1.7, 2.0)	2.4 (2.2, 2.6)		
	Evaluation and management of fecal incontinence in women	2.4 (2.2, 2.6)	2.8 (2.7, 3.0)	2.5 (2.4, 2.6)	3.1 (3.0, 3.2)
	Counseling on colon cancer risk in women with personal or family history of endometrial or ovarian cancer	2.4 (2.2, 2.5)	3.1 (2.9, 3.2)		
Attitudes	Evaluate and manage chronic abdominal or chronic pelvic pain in women	2.7 (2.5, 2.9)	3.1 (3.0, 3.3)		
	Prescription of medications for GI disorders during pregnancy	2.4 (2.3, 2.6)	3.0 (2.8, 3.2)		
	Endoscopy on a pregnant woman	2.3 (2.1, 2.5)	3.0 (2.8, 3.2)		
	Evaluation and management of general GI disorders during pregnancy	2.7 (2.5, 2.8)	3.4 (3.2, 3.5)		
	Management of pregnancy-unique GI disorders during pregnancy	2.4 (2.3, 2.6)	3.2 (3.0, 3.3)		
	Evaluation of the safety of medications in a lactating woman	2.1 (2.0, 2.3)	2.6 (2.4, 2.8)		
	Gastroenterologists should know how to evaluate and manage pre-existing GI disorders during pregnancy	2.5 (2.4, 2.6)	3.7 (3.6, 3.9)	3.2 (3.2, 3.3)	3.1 (3.0, 3.2)
	Gastroenterologists should know how to evaluate and manage newly arising GI disorders during pregnancy	3.6 (3.5, 3.7)	3.7 (3.6, 3.9)		
	I would have liked more training in general GI women's health issues during fellowship	3.1 (3.0, 3.3)	2.8 (2.6, 3.0)		
	I would have liked more training about GI disorders in pregnancy during fellowship	3.2 (3.0, 3.4)	2.8 (2.6, 2.9)		

Training domain	Survey item	Mean GIF item score (95% CI)	Mean PD item score (95% CI)	Mean GIF domain score (95% CI)	Mean PD domain score (95% CI)
	I would have like more training about the safety of GI medications in lactating women	3.1 (3.0, 3.3)	2.6 (2.5, 2.8)		
	Obstetricians are primarily responsible for managing GI disorders during pregnancy ^a	2.4 (2.3, 2.6)	2.3 (2.1, 2.4)		

Didactic teaching rated using 5-point Likert scale (1 = far too little to 5 = far too much). Frequency of *clinical experiences* graded as follows: 1 = never, 2 = less than once/year, 3 = yearly, 4 = monthly, 5 = greater than once/month. *Self-competence* rated using 5-point Likert scale (1 = very unprepared to 5 = very prepared). *Attitudes* rated using 4-point Likert: 1 = strongly disagree to 4 = strongly agree

GIF GI fellow, PD program director

^aNot included in mean domain scores

Table 5

Barriers to women's health training after adjusting for fellow gender and year of training

Barrier	Prediction coefficient (<i>P</i> value)			
	Didactic teaching	Clinical experience	Self-competence	Attitudes
Fellow gender = male ^{**a}	0.30 (<0.01)	0.13 (0.21)	0.31 (<0.01)	-0.25 (<0.01)
Year in training ^{*b}	0.09 (0.17)	0.08 (0.44)	0.11 (0.25)	-0.03 (0.60)
Number of female faculty [*]	0.02 (0.71)	-0.01 (0.83)	-0.02 (0.73)	0.04 (0.29)
Faculty with interest in GI Women's Health ^{**}	0.08 (0.03)	0.07 (0.13)	0.08 (0.09)	-0.01 (0.74)
VA hospital continuity clinic ^{**}	-0.12 (0.14)	-0.23 (0.02)	-0.26 (<0.01)	0.00 (0.97)
Teaching sessions dedicated to GI women's health ^{**}	0.28 (<0.01)	0.25 (0.01)	0.28 (<0.01)	-0.06 (0.36)
Percentage of female patients treated [*]	0.13 (0.06)	0.19 (0.03)	0.14 (0.11)	0.03 (0.63)
Number of pregnant patients treated [*]	0.08 (<0.01)	0.21 (<0.01)	0.17 (<0.01)	-0.02 (0.43)
Number of referrals from Ob/Gyn [*]	0.11 (<0.01)	0.21 (<0.01)	0.18 (<0.01)	-0.01 (0.75)

* For continuous variables, the prediction coefficient is the change in the response for each unit change in the barrier variable

** For dichotomous variables, the prediction coefficient is the change in the response when the barrier variable changes from no to yes or from female to male

Significant values shown in bold

^a Adjusted for year of training only

^b Adjusted for fellow gender only