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Evidence-based IUD Practice: Family Physicians and Obstetrician-Gynecologists

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Abstract

BACKGROUND AND OBJECTIVES—Family physicians and obstetrician-gynecologists provide much of contraceptive care in the United States and have a shared goal in preventing unintended pregnancy among patients. We assessed their competency to offer women contraceptives of the highest efficacy levels.

METHODS—We conducted a national probability survey of family physicians and obstetrician-gynecologists (n=1,192). We measured counseling and provision practices of intrauterine contraception and used multivariable regression analysis to evaluate the importance of evidence-based knowledge to contraceptive care.

RESULTS—Family physicians reported seeing fewer contraceptive patients per week than did obstetrician-gynecologists and were less likely to report sufficient time for counseling. While 95% of family physicians believed patients were receptive to learning about intrauterine contraception, fewer than half offered counseling or the method. Only half were trained to competence to offer intrauterine contraception, while virtually all obstetrician-gynecologists were. Both family physicians and obstetrician-gynecologists were unlikely to have adequate knowledge of the women who would be good candidates for intrauterine contraception—as gauged by the Centers for Disease Control and Prevention Medical Eligibility Criteria for contraception—and consequently did not offer the method to a wide range of eligible patients.

CONCLUSIONS—Most family physicians providing contraceptive care were not offering methods with top-tier effectiveness, although they reported interest in updating contraceptive skills through training. Obstetrician-gynecologists had technical skills to offer intrauterine contraception but still required education on patient selection. Greater hands-on training opportunities for family physicians, and complementary education on eligible method candidates for obstetrician-gynecologists, can increase access to intrauterine contraception by women seeking contraceptive care.

Nearly one half of pregnancies are unintended, with young and low-income women at greatest risk.¹ Many women receive contraceptive care from family physicians as part of

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well woman care or related care for other medical problems. Family physicians have wide geographic distribution and often practice in underserved areas.² The Institute of Medicine (2011) has recommended counseling and provision of all FDA-approved contraceptives as essential preventive care for women.³ It is important to ensure that family physicians be adequately prepared through residency training and continuing medical education to offer patients a broad range of contraceptive methods.

While a wide array of contraceptives are available, long-acting reversible contraceptives with top-tier effectiveness^{4,5} remain unfamiliar to many women.^{6,7} Intrauterine contraception (IUC) is used by only 5% of women in the United States compared to 20%–30% in some European countries.^{8,9} Most young women have not heard of IUC; those who have heard about it from a provider are 2.7 times more likely to be interested in the method.¹⁰ Research has documented low rates of counseling or provision.^{11–13} Virtually all contraceptive providers offer oral contraceptive pills and condoms; however, these methods have high failure and discontinuation rates, especially among low-income populations.^{14–18} Unlike user-dependent methods, IUC has a typical use effectiveness over 99%, similar to its perfect use efficacy.⁵ The Institute of Medicine has included expanding access to long-acting reversible methods as a national priority.¹⁹

A recent study documented low IUC knowledge and provision among family physicians.¹² Many providers are not aware of a large body of evidence on available IUCs, the copper IUD and the levonorgestrel-releasing system,^{11,20,21} and outdated concerns persist.^{12,22,23} Guidelines from the Centers for Disease Control and Prevention (CDC), *US Medical Eligibility Criteria for Contraceptive Use*, indicate that, contrary to the beliefs of many physicians, women with PID history, as well as adolescents and nulliparous women, can use IUC.²⁴

In this study, we used data from a national survey to analyze evidence-based practices for IUC among physicians in family medicine and obstetrics-gynecology. This study builds on previous provider research and is the first to examine both types of physicians together who provide most reproductive health care in the United States.² Our study also evaluated contraceptive counseling, along with provision, which is an important aspect of patient-centered contraceptive care. The research objective was to identify specific knowledge and practice patterns among physicians from these two medical disciplines, which may require varied approaches in training and education to translate evidence to clinical practice.

Methods

We conducted a national probability survey of physicians in family medicine and obstetrics-gynecology in 2008–2009. We used the American Medical Association's Physician Masterfile, a comprehensive database updated weekly, which includes members and nonmembers. Stratified probability samples of 600 family physicians and 600 obstetrics-gynecologists were drawn, using a random number generator. Duplicate names were dropped, and 1,192 unique surveys were mailed. To be eligible, physicians had to spend most of their time in direct patient care, to have completed residency, and to provide family planning or HIV/STI services. Ineligible respondents (n=129) were removed from response rate calculations. A total of 610 eligible physicians responded. We assumed the proportion ineligible among respondents (21.1%) was similar among nonrespondents (n=453) and adjusted the denominator for the response rate (610/1,192-129-78).²⁵ Our aim was for a sample size of at least 500 eligible respondents to achieve population estimates with $\pm 5\%$ precision. For a detailed description of methodology, see Henderson et al.²⁶

We sent selected physicians a letter explaining the study, followed by a survey and cover letter, return envelope, and \$20 cash by US Priority Mail. A reminder postcard was sent 1 week later and another survey to nonrespondents in 3 weeks. Research staff made a maximum of four reminder calls. The study was approved by the University of California, San Francisco Committee on Human Research.

The survey instrument was developed through formative qualitative interviews with clinicians and items validated from previous research.^{11,21,27,28} Survey items covered physician characteristics, professional training, practice factors, patient population, and contraceptive care. A series of patient vignettes, including a nulliparous adolescent, a nulliparous unmarried young adult (age 24), and a parous married 24-year old, were presented to physicians for their recommendations.

Outcome Measures: Counseling and Provision of IUCs

Physicians were asked about the frequency of counseling female contraceptive patients on IUC, using a 4-point Likert scale (never, sometimes, usually, always). We created a dichotomous variable for routine counseling which was usually or always versus sometimes or never. For contraceptive provision, the survey asked which methods the physicians currently offered and included the levonorgestrel-releasing system (Mirena®) and the copper IUD (Para-Gard®). We combined the two devices to one variable measuring provision of IUC (yes/no).

The main predictor variable was physician's professional training (family medicine, obstetrics-gynecology). We also measured residency training in IUC insertion. Independent variables included demographic factors (age, race/ethnicity, gender), practice setting (private office, community clinic, hospital-based practice/other), location (urban versus rural), region (West, Midwest, Northeast, South), and patient population (patient volume, Medicaid patients).

We evaluated physician knowledge based on the World Health Organization medical eligibility criteria for contraceptive use—in place at the time of the survey—from which the CDC criteria were subsequently adapted.²⁹ We created two scale variables to capture knowledge.¹¹ The first was a nine-item scale variable on knowledge of eligible IUC candidates, with a reliability coefficient of 0.79 estimated by Cronbach's alpha. Physicians were asked if they would consider IUC (yes, no, don't know) for different patients, each considered appropriate in evidence-based guidelines: nulliparous, adolescents, unmarried, immediate postpartum (prior to discharge), immediate post-abortion (before leaving clinic), history of ectopic pregnancy, STI in past 2 years, history of pelvic inflammatory disease (PID), and HIV-infected women.^{24,29} Physicians responding yes for these patients were considered to have more accurate, evidence-based views of eligible women.

Knowledge of method indications was measured through questions on whether the physician would consider IUC (yes, no, don't know) for patients with conditions allowed by medical eligibility criteria.^{24,29} For the copper IUD these conditions included: fibroids without distortion of uterine cavity, diabetes, obesity, smoker, and history of hypertension. For the levonorgestrel-releasing system, we used the same list as the copper IUD, as well as menorrhagia, dysmenorrhea, and iron deficiency anemia. This 13-item scale variable for evidence-based knowledge had a reliability coefficient of 0.95.

To assess IUC risk attitudes, we created a six-item scale variable on how often physician concerns about issues would prevent him/her from recommending IUC: uterine perforation at insertion, expulsion, STIs, PID, infertility, and bleeding pattern changes. Responses

(never, sometimes, usually, always) were reverse-coded for scale construction of low risk perception. The scale reliability coefficient on perception of risk was 0.80.

Analysis

The analysis population included physicians who responded to the questions on counseling and provision of IUC. We presented frequencies by physician specialty and estimated odds ratios through bivariate and multivariable analyses, with 95% confidence intervals. We applied stratification design in analyses to account for disproportionate sampling of physicians by specialty. The design-based Pearson chi-square test for overall categorical differences and the Wald test for mean differences were calculated. We conducted multivariable logistic regression analysis to estimate the variation in each outcome variable, routine counseling and provision of IUC, with physician factors, evidence-based knowledge, and attitudes. To create the three scale variables measuring evidence-based knowledge and attitudes, we followed procedures used in previous research to create reliable and valid scales.¹¹ Significance was reported at P .05. Stata 11.1 (Stata Corp., College Station, TX) was used for analyses.

Results

There were 610 eligible physician respondents, 263 from family medicine and 347 from obstetrics-gynecology, with a response rate of 62%. Respondents tended to be slightly younger than nonrespondents, and family physicians were slightly less likely to respond than obstetrician-gynecologists. Results showed significant practice differences between family physicians and obstetrician-gynecologists. Family physicians were less likely to be practicing in urban areas, and saw relatively fewer contraceptive patients. Most family physicians reported training in family planning, but their residency training was less likely to include IUC insertions (63%) than that of obstetrician-gynecologists (94%), and a far lower proportion of family physicians reported that they were comfortable doing insertions (42% versus 99%).

About half of family physicians (47%) routinely discussed IUC with contraceptive patients. However, 96% of physicians believed that their patients would be receptive to learning about IUC, with no differences by specialty. Most physicians reported sufficient time to counsel patients on contraceptive options, although fewer family physicians did. While there was little difference in oral contraceptive provision, there were large differences in IUC (48% of family physicians compared to 95% of obstetrician-gynecologists). There was also a large gap in providing the single-rod etonogestrel implant, another long-acting contraceptive. Many physicians wanted implant training, 29% of family physicians and 31% of obstetrician-gynecologists; 30% of family physicians desired IUC training compared to only 1.5% of obstetrician-gynecologists.

Almost all physicians considered IUC a safe method overall (98%), and most considered it to be underused. More than half of physicians considered cost to be an important obstacle to IUC provision.

Physicians were asked whether they would consider IUC for various patients, all appropriate candidates according to guidelines (Table 2). Figure 1 shows that most physicians considered women at highest risk of unintended pregnancy, the young, nulliparous, and post-abortion, as inappropriate. Obstetrician-gynecologists lacked awareness of appropriate IUC candidates, although family physicians measured lower on the scale variable (P .001). For the patient vignettes, only 12% of physicians reported they would offer the levonorgestrel-releasing system to a nulliparous adolescent—39% to a nulliparous

unmarried 24-year-old (25% family physicians, 52% obstetrician-gynecologists) and 71% to a parous married 24-year-old (60% family physicians, 90% obstetrician-gynecologists).

Family physicians had low familiarity with medical conditions allowed for each device (Table 2). For example, half or less would consider the levonorgestrel-releasing system for a patient with diabetes, obesity, or smoking. Obstetrician-gynecologists had higher knowledge of the use of each device with medical conditions (P .001).

Low familiarity among family physicians was accompanied by a higher score on the risk perceptions scale (P .001). Risks in all areas measured, such as PID, expulsions, or perforation, were higher concerns for family physicians, other than the risk of infertility, which was seen as equally high by specialty (Table 2). Interestingly, perceptions of the more technical risks, such as perforation at insertion or expulsion, were low among both specialties.

Multivariable logistic regression results for counseling showed that family physicians were less likely to discuss IUC with patients than obstetrician-gynecologists; however, IUC residency training increased the practice significantly (Table 3). Younger physicians and those with evidence-based views of appropriate candidates, as well as knowledge of method indications, were significantly more likely to counsel patients on IUC. While a low-risk perception was associated with counseling in the unadjusted models, it was also correlated with evidenced-based views of candidates and knowledge and did not retain significance in multivariable models. For IUC provision, professional skills and training were important, as were evidence-based patient selection and knowledge (Table 4).

Discussion

Family physicians are front-line providers in women's preventative care, with growing importance for contraception.³ Costs are currently a barrier to IUC, although the Patient Protection and Affordable Care Act (2010) may increase contraceptive coverage.^{30,31} These national data identified common areas for education and training among family physicians and obstetrician-gynecologists, as well as certain specialty-specific needs. Results highlighted evidence-based patient selection as an educational need for all physicians. IUC use is still concentrated among parous and married women.^{32,33} Fewer than half of clinicians considered nulliparous women, adolescents, or history of PID as IUC candidates, contrary to medical eligibility criteria.²⁴ Physicians were also largely unaware of the practice of immediate post-abortion and postpartum IUC insertions. An educational component for family physicians and obstetrician-gynecologists focused on the wide range of women who are eligible to use IUC may significantly increase access to the method, including for those women currently bypassed as poor candidates for use.

Education on updated method indications is also needed for family physicians. Our study showed that for common conditions, such as obesity, family physicians were unnecessarily restrictive about IUC use. This is particularly notable for conditions that may be contraindications to combined hormonal pills, including diabetes, hypertension, and smoking. Family physicians see women for a wide variety of medical needs, and it is a necessary skill to connect other medical problems to appropriate contraception. The belief that IUC is not appropriate can deny these women the opportunity to use a high-efficacy method. Counseling is essential given low method awareness; women trust their providers for contraceptive information.⁷ Time constraints for counseling can exist in family medicine settings. Integrating IUC into care will take more time initially, including purchasing and setting up instruments and supplies; clinicians have reported that the practice becomes more

efficient with experience.³⁴ Results showed that counseling was more likely to occur with improved physician knowledge, as well as technical competency.

This study points to increased hands-on training for advancing family physicians' insertion skills and evidence-based knowledge of available devices. More than 60% of family physicians inserted IUC in residency, but far fewer reported current competency. Improvements in residency training are necessary to prepare physicians. A recent study showed higher rates of IUC training in family medicine residencies (80%), which holds promise for future providers.³⁵ Our results showed more frequent counseling among younger physicians. For practicing physicians, continued hands-on opportunities throughout the career, including continuing medical education, could help to build and maintain insertion skills and updated knowledge. Among obstetrician-gynecologists, training is needed in certain areas, such as immediate postpartum or immediate post-abortion. Our data also showed most physicians are not yet skilled in the single-rod implant, a highly effective method with few contraindications.^{24,36} The importance of hands-on training for provision is consistent with previous research.³⁷⁻³⁹ This study has limitations. Social desirability bias can affect survey reporting, so that practice appears more in line with professional norms than it may be. Patient vignettes are considered to have high validity as a measure of physician practice.⁴⁰ Measures of IU knowledge and provision may be unbiased, but reports of contraceptive counseling or skills could be inflated. The response rate was relatively high for a physician survey,^{41,42} but we may have had respondents who were more interested in contraceptive care.

Conclusions

Family physicians see IUC as underused among their patients and are interested in gaining skills. Low provision of contraceptives with top-tier effectiveness contributes to high unintended pregnancy. Study results suggest a need for improved medical education to ensure that women are not restricted from a full range of effective methods. An expanded focus on training in family medicine residency programs is critical, as well as continuing education programs that disseminate evidence-based guidelines and address contraceptive tiers of effectiveness. In the future, there will be even greater need for primary care providers to be able to offer women contraceptive care. To do so, current scientific evidence must be translated into clinical practice through hands-on training and didactics on the CDC Medical Eligibility Criteria. With appropriate education and training, family physicians, as well as reproductive health specialists, can update their practices to offer all women quality and evidence-based contraceptive care.

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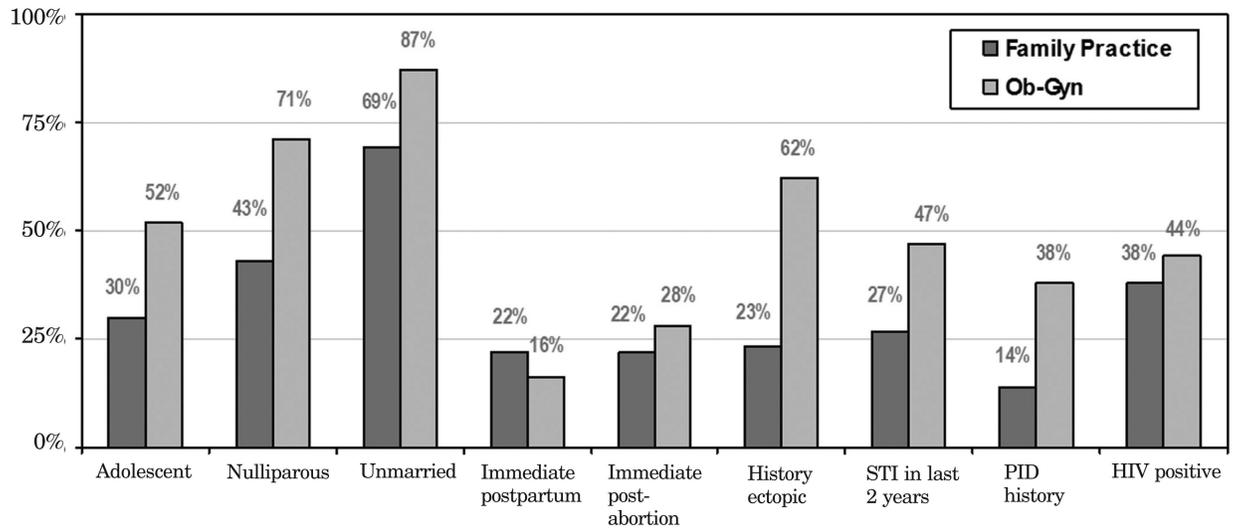
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STI—sexually transmitted infection
 PID—pelvic inflammatory disease

Figure 1.
 Percentage of Physicians Who Would Consider Intrauterine Contraception for the Following Patients

Table 1

Physician Characteristics and Intrauterine Contraception Practices

	Family Medicine (n=261)	Obstetrics-Gynecology (n=344)	Total (n=605)
Clinician characteristics			
Age, mean years (linearized SE) **	47 (.59)	49 (.57)	48 (.43)
Gender, %			
Male	59	56	58
Female	41	44	42
Race/ethnicity, %			
White	74	72	73
African-American	5	5	5
Hispanic/Latino	3	8	5
Asian/Pacific Islander	15	13	14
Multi-racial/other	4	3	3
Practice setting and patient population			
Practice setting, %			
Private office	78	81	79
Community clinic	8	4	7
Hospital-based practice	14	16	15
Urban, % ***	66	85	73
Region ***			
Northeast	12	19	15
South	25	37	29
Midwest	33	29	29
West	30	21	26
Contraceptive patients week, mean (linearized SE)	7 (1.5)	22 (1.0)	13 (1.0)
Medicaid patients seen, %	80	77	79
Training			
Family planning training, % *	84	90	86
Inserted IUC in residency, % ***	63	94	74
Comfortable inserting IUC, % ***	42	99	64
Comfortable inserting single-rod implant, % ***	11	43	23
Contraceptive counseling			
Enough time for contraceptive counseling, % ***	70	87	76

	Family Medicine (n=261)	Obstetrics-Gynecology (n=344)	Total (n=605)
Patients receptive to learning about IUC, % *	95	98	96
Routinely discuss IUC with patients, % ***	47	79	59
Contraceptives offered to patients			
Emergency contraceptive pills, % ***	65	82	72
Oral contraceptive pills, % ***	94	99	96
Injectable, % ***	87	97	90
Implant, % ***	12	50	26
IUC, % ***	48	95	65

IUC—intrauterine contraception

*
P .05

**
P .01

P .001

Table 2

Evidence-based Knowledge and Attitudes on Intrauterine Contraception Among Contraceptive Providers, by Specialty

Scales Based on WHO Medical Eligibility Criteria	Family Medicine	OB-GYN	Total
IUC candidate scale ***			
Would consider IUC for following patients:	%	%	%
Teenager ***	30	52	38
Nulliparous ***	43	71	53
Unmarried ***	69	87	76
Immediate postpartum	22	16	19
Immediate post-abortion	22	28	25
History of ectopic ***	23	62	38
History of STI in last 2 years ***	27	47	34
History of PID ***	14	38	23
HIV positive	38	44	40
IUC knowledge scale ***			
LNG system—would consider for patient with:			
Menorrhagia ***	47	96	65
Dysmenorrhea ***	45	90	62
Iron-deficiency anemia ***	58	95	72
Fibroids without distortion of the uterine cavity ***	40	90	59
Diabetes ***	55	91	68
Obesity ***	57	95	71
Smoker ***	52	92	67
History of hypertension ***	56	93	70
Copper T380A—would consider for patient with:			
Fibroids without distortion of the uterine cavity ***	36	68	48
Diabetes ***	58	88	70
Obesity ***	64	93	75
Smoker ***	65	94	76
History of hypertension ***	66	94	77
Perception of risk scale ***			
Concerns prevent IUC recommendation			

Scales Based on WHO Medical Eligibility Criteria	Family Medicine	OB-GYN	Total
Sexually transmitted infections **	43	30	38
Pelvic inflammatory disease **	51	40	47
Infertility	29	24	27
Expulsion **	8	2	6
Uterine perforation at insertion ***	12	3	9
Changes in bleeding pattern ***	29	16	24

* P .05

WHO—World Health Organization, IUC—intrauterine contraception, PID—pelvic inflammatory disease, HIV—human immunodeficiency virus, LNG—levonorgestrel-releasing intrauterine system

**
 P .01

 P .001

Table 3

Routine Counseling on intrauterine Contraceptives for Female Contraceptive Patients: Multivariable Logistic Regression Results

Routinely Counsel Patients on IUC	Odds Ratio Unadjusted	95% CI	Odds Ratio Adjusted	95% CI
Clinician Characteristics				
Specialty				
MD obstetrician-gynecologist (reference)	—	—	—	—
MD family medicine	0.24 ***	0.17, 0.35	0.53 *	0.29, 0.97
Trained in IUC insertions in residency	4.79 ***	2.44, 5.89	2.18 **	1.24, 3.84
Age (years)	0.97 ***	0.95, 0.98	0.95 ***	0.93, 0.98
White (non-Hispanic)	1.46	0.98, 2.15	1.30	0.78, 2.16
Gender				
Male (reference)	1.28	0.89, 1.84	0.77	0.47, 1.25
Female				
Practice Setting				
Practice setting				
Private office (reference)	—	—	—	—
Community clinic	1.19	0.55, 2.56	1.16	0.43, 3.15
Hospital-based practice	1.45	0.86, 2.47	0.93	0.99, 1.02
Urban location	1.44	0.96, 2.16	1.15	0.66, 2.02
Region				
West (reference)	—	—	—	—
Midwest	0.46 **	0.28, 0.78	0.45 *	0.24, 0.88
Northeast	0.53 *	0.29, 0.95	0.49	0.23, 1.02
South	0.49 **	0.30, 0.81	0.42 *	0.22, 0.81
Female contraceptive patients (#/week)	1.04 ***	1.02, 1.06	1.01	0.99, 1.02
Has Medicaid patients	1.32	0.86, 2.04	1.68	0.89, 3.09
IUC Knowledge/Attitudes				
Low perception of risks	2.34 ***	1.75, 3.11	1.20	0.85, 1.69
Expansive view IUC candidates	4.25 ***	2.90, 6.24	2.61 ***	1.68, 4.06
High level of knowledge	3.09 ***	2.37, 4.02	1.74 ***	1.27, 2.40
Number of observations ^I	600		560	
F (14, 549)			6.92 ***	

IUC—intrauterine contraception

CI—confidence interval

* *P* .050

**
P .010

P .001

¹Number of observations vary with missing data on independent variables.

Table 4

Provision of Intrauterine Contraceptives to Female Contraceptive Patients: Multivariable Logistic Regression Results

Provide IUC to Patients	Unadjusted Odds Ratio	95% CI	Adjusted Odds Ratio	95% CI
Clinician Characteristics				
Specialty				
MD obstetrician-gynecologist (reference)	—	—	—	—
MD family medicine	0.05 ^{***}	0.03, 0.09	0.07 ^{***}	0.03, 0.17
Trained in IUC insertions in residency	4.26 ^{***}	2.74, 6.64	1.54	0.83, 2.84
Age (years)	0.98	0.97, 1.01	0.98	0.95, 1.01
White (non-Hispanic)	1.07	0.70, 1.64	1.31	0.65, 2.65
Gender—female	1.72 ^{**}	1.16, 2.55	1.33	0.75, 2.37
Practice Setting				
Practice setting				
Private office (reference)	—	—	—	—
Community clinic	2.74 [*]	1.06, 7.08	7.06 ^{††}	1.51, 42.9
Hospital-based practice	1.64	0.92, 2.93	1.54	0.72, 3.29
Urban location	1.43	0.94, 2.18	0.70	0.36, 1.34
Region				
West (reference)	—	—	—	—
Midwest	0.63 [*]	0.36, 1.08	.55	0.26, 1.13
Northeast	0.53 [*]	0.29, 0.98	0.24 ^{**}	0.09, 0.62
South	0.51 [*]	0.30, 0.86	0.17 ^{***}	0.07, 0.40
Female contraceptive patients (#/week)	1.11 ^{***}	1.07, 1.15	1.03	1.00, 1.08
Has Medicaid patients	1.31	0.83, 2.06	2.34 [*]	1.13, 4.83
IUC Knowledge/Attitudes				
Low perception of risks	1.97 ^{***}	1.49, 2.62	1.18	0.81, 1.71
Expansive view IUC candidates	3.21 ^{***}	2.18, 4.73	1.66 [*]	1.03, 2.68
High level of knowledge	3.83 ^{***}	2.88, 5.09	1.93 ^{**}	1.31, 2.81
Number of observations	561			
F (16, 544)	7.32 ^{***}			

IUC—intrauterine contraception

* *P* .050** *P* .010*** *P* .001

^aCell size too small to yield stable estimate