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Provider knowledge, attitudes and treatment preferences for early pregnancy failure

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Abstract

Objective—To describe health care provider knowledge, attitudes and treatment preferences for early pregnancy failure (EPF).

Study Design—We surveyed 976 obstetrician/gynecologists, midwives and family medicine practitioners on their knowledge and attitudes toward treatment options for EPF, and barriers to adopting misoprostol and office uterine evacuations. We used descriptive statistics to compare practices by provider specialty and logistic regression to identify associations between provider factors and treatment practices.

Results—Seventy percent of providers have not used misoprostol and 91% have not used an office uterine evacuation to treat EPF in the past 6 months. Beliefs about safety and patient preferences, and prior induced abortion training were significantly associated with use of both of these treatments.

Conclusions—Increasing education and training on the use of misoprostol and office uterine evacuation, and clarifying patient treatment preferences may increase the willingness of providers to adopt new practices for EPF treatment.

Key Words/Phrases

Early pregnancy failure; Provider attitudes; treatment patterns

Introduction

During their lifetime, about 25% of women will experience an early pregnancy failure. The term early pregnancy failure (EPF) refers to an abnormal first trimester intrauterine pregnancy, including anembryonic gestation, and embryonic or fetal demise. Effective and safe EPF

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treatment includes expectant management, medical treatment with misoprostol, or surgical evacuation in either an office or operating room setting.¹ Previous studies have demonstrated that all treatment options are accepted by women.²⁻⁶ As all the treatment options are reasonable, patient preferences should play a dominant role in treatment choice.

Adherence to evidence-based practices or widely available published care guidelines is suboptimal in general,^{7, 8} and in women's health specifically.⁹⁻¹¹ Practitioners are often slow to adopt new treatments, even when such options are known to be effective, safe, and even superior to conventional treatments. This is troubling because clinicians are a powerful influence on treatment selection in many clinical situations¹², including EPF.^{2, 13} In the case of EPF treatment, it is not clear that all treatment options are routinely offered or available to women experiencing pregnancy loss.¹⁴ Reluctance to offer misoprostol or office uterine evacuation may come from attitudes and beliefs about treatment safety, beliefs about patient acceptance of these options, provider comfort with office procedures, or reimbursement concerns. Alternatively, environmental factors such as office space and staff comfort might also pose barriers to practice change.⁸ Fostering practice change requires a better understanding of provider barriers to adopting misoprostol and office uterine evacuations for EPF.

This study aims to describe health care provider knowledge, attitudes, and treatment preferences for EPF and, to identify provider factors associated with misoprostol and office uterine evacuation use. We hypothesized that most providers do not routinely offer patients all effective treatment options. Our secondary hypothesis was that knowledge, attitudes and perceived barriers to change are associated with sex, specialty, years in practice, and provider training.

Materials and Methods

We obtained approval for this study from the University of Michigan Institutional Review Board. We identified current EPF treatment practices using a cross-sectional survey of providers in the United States. Potential participants were randomly selected from membership lists of the American College of Obstetricians and Gynecologists, the American College of Nurse Midwives, and the American Academy of Family Physicians. After accounting for the proportion of providers practicing obstetrics¹⁵⁻¹⁷ and non-response rates¹⁸, we mailed 3591 surveys in order to enroll 300 providers from each specialty. We used repeat mailings, limited the survey length, and provided a small financial incentive (\$2.00) to encourage response.¹⁹⁻²¹ Questionnaires were initially mailed in January 2008, and two follow-up mailings were sent to non-responders between March and June 2008. Providers were excluded if they were not practicing in one of the targeted specialties, or had not evaluated or treated anyone with EPF in the past 6 months.

We developed questionnaire items by consensus and a literature review. We drew heavily from previous work on provider behavior change and adherence to evidence-based practices.^{7, 8} To assure the questionnaire was applicable to targeted provider types, an interdisciplinary group of investigators contributed to its development. Survey items addressed several areas including: 1) provider and practice characteristics such as age, sex, and practice setting, 2) use of office procedures in general 3) current treatment practices for EPF 4) knowledge and attitudes about different treatment options, and 5) barriers to adopting misoprostol use and office uterine evacuations.

The survey consisted of 3 types of questions. Closed ended/forced choice questions were used to elicit practice patterns, experience with office procedures, and provider knowledge of different treatment options. Ranking (1 = most preferred, 4= least preferred) was used to assess provider treatment preferences and provider perception of patient treatment preferences. Level

of agreement with a series of statements was used to assess attitudes and beliefs about the different treatment options, and perceived barriers to adopting misoprostol and office uterine evacuations. The questionnaire was pretested among physicians and midwives employed at the University of Michigan Health System. The survey was amended for clarity and length as needed.

We planned to enroll 300 providers from each specialty for a total of 900 respondents. With a sample size of 900, or 300 in each subgroup, we would have 90% power to detect a 10% difference in the proportion of providers that use a particular treatment option. Descriptive statistics were used to describe our sample population with regard to age, sex, years of practice, and specialty. Overall treatment patterns were compared initially between specialties. Using Pearson's Chi-Square and t-tests, our initial analyses focused on testing for differences in knowledge, attitudes, barriers, and treatment patterns among groups of respondents defined by independent variables like practice specialty, years in practice, and practice setting (e.g., university hospital or private practice). Since misoprostol and office uterine evacuations were the least commonly used treatment options, we focused our multivariate analysis on identifying factors associated with using these treatment modalities. We used logistic regression to identify which provider characteristics and attitudes were associated with misoprostol and office uterine evacuation use over the past 6 months. Prior to bivariate testing, we planned to include provider sex, specialty and prior abortion training in the model since we expected these factors to be associated with practices. We used bivariate testing to identify other covariates significantly ($p < 0.05$) associated with use of misoprostol or office uterine evacuation to include in the model. Finally, attitudes specific to misoprostol use and those specific to office uterine evacuation use were included in their respective regression models. Data were analyzed with SPSS 16.0 (SPSS Inc, Chicago, IL)

Results

In total, 2040 out of 3591 contacted participants responded to our mailings for an overall response rate of 56.8%. Within each specialty, responses rates were 51.1, 70.9, and 53.5% for obstetrician/gynecologists (Ob/Gyns), certified nurse midwives/certified midwives (CNMs/CMs) and family physicians (FPs). Of these, 1040 were excluded because they had not evaluated or treated a patient for early pregnancy failure in the past 6 months. An additional 24 respondents were excluded because they were not employed as one of our targeted practitioner groups. This process left 976 respondents eligible for further analysis.

Table 1 presents the demographic and practice characteristics of our study population. Participants were predominately white, between 14 and 18 years since completing training, and currently practicing in a single specialty practice setting. Almost all Ob/Gyns identified at least one office procedure performed in their practice but only 21.7% reported offering office uterine evacuations. FPs were least likely to offer any of the listed office procedures.

Table 2 presents the reported treatment patterns among the three specialties. These patterns reflect how patients were ultimately managed and does not necessarily indicate that the respondent themselves provided the service. As expected, practices differed significantly between provider specialties. For instance, Ob/Gyns were much less likely than other providers to report that their patients were managed expectantly (12.3 vs. 36.3% respectively, $p < 0.001$). Misoprostol use was most commonly reported among Ob/Gyns ($p < 0.001$) but only 19.3% of Ob/Gyns reported that more than 25% of their patients were treated with misoprostol. In fact, most providers had not used misoprostol at all in the past 6 months for EPF treatment. Similarly, office uterine evacuations were uncommon among all groups, even Ob/Gyns. Only 16.2% reported ever using office evacuations to treat EPF in the past 6 months. Finally, referrals were

also an important feature of services: 32.7% of CNMs/CMs and 37.4% of FPs reported referring over 25% of patients to specialists for EPF treatment.

Personal rank of the four treatment options differed by provider specialty. Expectant management was the most commonly reported “*most preferred*” treatment by both CNMs/CMs (55.2%) and FPs (64.5%). Only 24.4% of Ob/Gyns reported expectant management as “*most preferred*”. A uterine evacuation in the operating room was reported to be the “*most preferred*” option by 137 (45.7%) of Ob/Gyns. Treatment with misoprostol was frequently ranked second best treatment: 33.2%, 61.8% and 60.7% of Ob/Gyns, CNMs/CMs and FPs respectively. Office uterine evacuations were most frequently cited as “*least preferred*” among Ob/Gyns (37.2%) and CNMs/CMs (43.9%), while operating room uterine evacuations were most commonly the “*least preferred*” option among FPs (41.8%). As provider ranking of misoprostol and office uterine evacuation increased, the likelihood of misoprostol and office uterine evacuation use in the last 6 months increased, respectively. ($p<0.001$)

In addition to their own preferences, participants also reported how they believed *patients* rank the four treatment options. Perceived patient preferences followed the same overall pattern as provider personal preference: expectant management was most commonly believed to be “*most preferred*” treatment by both CNMs/CMs and FPs and uterine evacuation in the operating room was most frequently believed to be the “*most preferred*” option by Ob/Gyns. However, there was some evidence that providers believe their patients' treatment preferences differ from their own. For example, fewer health care providers believed that their patients would consider uterine evacuation as the “*most preferred*” treatment than they would personally (15.6% vs. 28.4%, $p<0.001$, perceived patient and provider rank respectively). Further, more providers believed that their patients consider expectant management as “*most preferred*” than they would personally. (62.3% vs. 48.1%, $p<0.001$ patient and provider rank respectively).

Views toward misoprostol and office uterine evacuation use in EPF treatment were similar among the 3 groups of providers with a few exceptions. (Table 3) FPs were most likely to identify barriers to implementing misoprostol use in their practice. ($p<0.01$) Although Ob/Gyns reported the most favorable views towards office uterine evacuations, 65.7% agreed that most women preferred general anesthesia and 46.4% agreed that the best treatment for EPF is an operating room uterine evacuation. Office space limitations was the most frequently identified barrier to offering office uterine evacuations identified.

Bivariate tests concluded that provider specialty, practice setting, years in practice, and prior training in induced abortion were significantly associated with ever using misoprostol and with performing office uterine evacuations, while provider sex and race were not. When we examined misoprostol use, our multivariate analysis concluded that a health care provider's belief that misoprostol is safe was associated with misoprostol use ($OR=2.68$, $p<0.001$), while a belief that patients would not accept treatment with misoprostol is negatively associated with its use. ($OR=0.16$, $p<0.001$) after controlling for provider sex, specialty, years in practice, practice type and prior induced abortion training. Prior induced abortion training was not significantly associated with misoprostol use in the multivariate model. (Table 4)

During our examination of office uterine evacuation use, we limited our analysis to Ob/Gyns with dilation and curettage privileges. (Table 4) In this model, prior induced abortion training ($OR=5.12$, $p<0.05$) was associated with office uterine evacuation use after controlling for provider sex, specialty, years in practice, practice type and provider attitudes. A belief that operating room procedures are safer ($OR=0.20$, $p<0.01$), or that women prefer to be under general anesthesia was inversely associated with use. ($OR=0.16$, $p<0.01$)

Comment

Beliefs about the relative safety of treatment options, perceived patient preferences, and prior training experiences were associated with treatment patterns for EPF in this multidisciplinary group of health care providers. Our findings also suggest that providers perceive that their personal treatment preferences are different than their patients. Whether this discordance results in more women undergoing operating room uterine evacuations than is either needed or preferred could not be assessed by this study, largely because we do not know how much patient preferences explain current treatment patterns. However, given that providers affect treatment choice greatly,^{2, 12, 13} it is plausible that provider treatment preferences are an important influence on current treatment patterns.

The generalizability of our study may be limited by a few factors. Our findings may not apply to all clinicians providing care to women with EPF as we did not include all types, such as nurse practitioners. Our response rate of 56% was similar to other health care provider surveys¹⁸ and it is possible that our survey participants may not reflect the views of non-responders. This would be particularly problematic if non-responders use office uterine evacuations and misoprostol to a greater degree than responders. Based on age and sex, our respondents were very similar to members of the three sampled organizations. (Mean age and % female of ACOG, ACNM and AAFP members was 50.9, 48.9 and 49.2 years and 46.9, 97.8 and 43.6% respectively.) This similarity suggests that our sample is a reasonable representation of members overall.

Additionally, since we were unable to assess whether early adoption of misoprostol and/or office uterine evacuations is occurring, we could be underestimating current use. Finally, we could not exclude the possibility that patient preferences are entirely responsible for current treatment patterns. For instance, we could not determine if patients were offered office uterine evacuations but almost always chose operating room evacuations. However, fewer than 10% of providers reported offering office uterine evacuations in their practices and previous work has shown that women often prefer clinic evacuations for EPF over operating room procedures. Therefore, we concluded that service availability is an important factor.

Misoprostol and office uterine evacuation use for EPF was less than one might expect based on available studies on safety^{1, 22} and patient acceptance.²⁻⁶ About a third or more of providers in this study indicated concern about the safety of misoprostol and office uterine evacuations for EPF treatment, though their safety and efficacy have been consistently demonstrated.^{22, 23} Similarly, the safety and efficacy of office uterine evacuations has been established by clinical studies of women undergoing induced abortion and EPF treatment.^{2, 3, 24} Misinformation about the safety of misoprostol and/or office uterine evacuations may be contributing to the apparently slow adoption of these options for women seeking treatment for EPF despite the solid evidence base to support these treatment options.

A belief that women will not accept misoprostol treatment or office uterine evacuations may also be preventing adoption of these options. In truth, we know relatively little about what women desire in EPF care. However, various clinical trials designed to primarily assess efficacy and safety indicate that misoprostol and office uterine evacuations are acceptable, and may be preferred by many women.²⁻⁶ Other work suggests that a substantial proportion of women will choose to avoid general anesthesia for surgical uterine evacuations for EPF and induced abortion.^{2, 25, 26} From this work, it appears that women's treatment preferences for EPF are diverse.

Because misoprostol and office procedures are techniques frequently used in induced abortion care, we anticipated that those with induced abortion training may behave differently than others. However, only one fifth of the Ob/Gyns in this sample reported having had formal

induced abortion training. Increasing access to induced abortion training is one approach to improve EPF care. However, recognizing that some trainees will opt out of induced abortion training, office uterine evacuation skills and misoprostol use should still be taught in training programs as effective methods of EPF treatment. This training is especially important because EPF is one of the most common clinical problems encountered by health providers for women and training may be an important predictor of future practice.

The greater reliance on surgical treatment by Ob/Gyns in our study sample is probably misleading since they are often seeing women who request surgical management after “failed” expectant or medical management or prefer primary surgical treatment. However, it may also be the case that practitioners trained as surgeons perceive surgical management strategies to be optimal, and non-surgeons perceive non-surgical options to be optimal, even though all approaches are equivalent from a safety and efficacy standpoint. Differences in misoprostol use among provider types, however, are more important because its use does not require surgical privileges. It was somewhat unexpected that misoprostol use was so uncommon among FPs. This may be explained by the fact that CNMs/CMs often have consulting arrangements in place with Ob/Gyns, so they may perceive fewer barriers to misoprostol use, such as having surgical back-up available. Targeting the apparent reluctance to use misoprostol among FPs could greatly improve access for women desiring medical treatment.

Women are diverse in their treatment preferences^{2-6, 25, 26} and assuring access to a range of services is probably the most important thing we can do to improve care. Even though the efficacy of misoprostol and office uterine evacuations is well established, our study suggests that EPF care patterns are still largely dominated by expectant management and operating room uterine evacuations. These findings are consistent with other studies examining practices regionally.^{14, 27, 28} Targeting inaccurate beliefs about the safety of misoprostol and office uterine evacuation and clarifying patient preferences may increase the willingness of providers to adopt new practices to meet patient needs. EPF is one of the most common clinical problems faced by health care providers caring for reproductive aged women; therefore improving services in this area will have a large impact on patient experience and satisfaction.

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Table 1

Respondent Characteristics

PROVIDER TYPE

CHARACTERISTIC	Obstetrician/ gynecologist (n=309)	Certified nurse midwife/ midwife (n=368)	Family medicine practitioner (n=299)	p value
Mean years in practice [*] , (SD)	18.8 (9.21)	14.3 (9.32)	17.0 (9.02)	
Mean age, years (SD)	50.9 (10.1)	48.9 (10.5)	49.2 (8.7)	
Provider sex ^{**} , n (%)				
Male	161 (52.1)	3 (0.8)	166 (55.7)	<0.001
Female	145 (46.9)	360 (97.8)	130 (43.6)	
Race/Ethnicity ^{**} , n (%)				
White	253 (81.9)	350 (95.1)	261 (87.9)	<0.001
Black	12 (3.9)	6 (1.6)	9 (3.0)	
Native American	0	1 (0.3)	2 (0.7)	
Asian	30 (9.7)	2 (0.5)	18 (4.7)	
Pacific Islander	2 (0.6)	0	0	
Hispanic or Latino	13 (4.2)	8 (2.2)	10 (3.4)	
County population ^{**} , n (%)				
<50,000	24 (7.8)	41 (11.1)	89 (29.8)	<0.001
50,001-100,000	40 (12.9)	57 (15.5)	46 (15.4)	
100001-250000	55 (17.8)	76 (20.7)	51 (17.1)	
250001-750000	76 (24.6)	72 (19.6)	60 (20.1)	
750000	111 (35.9)	106 (28.8)	48 (16.1)	
Practice type ^{**} , n (%)				
University	54 (17.5)	49 (13.3)	50 (16.7)	<0.001
Multi-specialty	34 (11.0)	38 (10.3)	54 (18.1)	
Single specialty	193 (62.5)	183 (49.7)	134 (44.8)	
Other	28 (9.1)	98 (26.6)	61 (20.4)	
% Medicaid patients ^{**} , n (%)				
0	53 (17.2)	26 (7.1)	30 (10.0)	<0.001
1-25%	151 (48.9)	86 (23.4)	166 (55.5)	

CHARACTERISTIC	PROVIDER TYPE			p value
	Obstetrician/ gynecologist (n=309)	Certified nurse midwife/ midwife (n=368)	Family medicine practitioner (n=299)	
Office procedures offered ^{**} , n (%)	26-50	63 (20.4)	93 (25.3)	77 (25.8)
	51-75	32 (10.4)	82 (22.3)	15 (5.0)
	76-100	9 (2.9)	69 (18.8)	8 (2.7)
	none	23 (7.4)	64 (17.4)	130 (43.5)
	IUC/IUD	264 (85.4)	269 (80.4)	157 (52.5)
	LEEP	194 (62.8)	48 (13.0)	32 (10.7)
	Hysteroscopy/Esure	81 (26.2)	15 (4.1)	0 (0)
	Uterine evacuations/D&C	67 (21.7)	8 (2.2)	18 (6.0)
	Endometrial ablation	63 (20.4)	11 (3.0)	0 (0)
	No. with D&C privileges (%)	307 (99.4)		
Any prior training in office uterine evacuations (%)		206 (67.3)		
	Prior induced abortion training	61 (19.9)		

SD= Standard deviation.

IUC= intrauterine contraception

Continuous variables* were compared using t-tests, and categorical variables** were compared using Pearson's Chi-Square Numbers may not add up to 100% due to missing items, or more than one response

Table 2

EPF treatment patterns by provider type in the last 6 months*

Percentage of patients treated with treatment type, n (%)	Obstetrician/ gynecologist (n=301)	Certified nurse midwife/midwife (n=352)	Family medicine practitioner (n=291)	p-value
Expectant management	0	43 (12.2)	56 (19.3)	<0.001
1-25%	157 (52.2)	98 (27.8)	43 (14.8)	
26-50%	75 (24.9)	104 (29.5)	65 (22.4)	
51-100%	37 (12.3)	107 (30.4)	126 (43.4)	
Misoprostol	0	239 (67.9)	244 (84.1)	<0.001
1-25%	84 (28.0)	72 (20.5)	28 (9.7)	
26-50	43 (14.3)	30 (8.5)	17 (5.9)	
51-100%	15 (5.0)	11 (3.1)	1 (0.3)	
Office uterine evacuation	0	334 (91.5)	284 (95.6)	<0.001
1-25%	26 (8.5)	9 (2.5)	1 (0.3)	
26-50	12 (3.9)	6 (1.6)	3 (1.0)	
51-100%	12 (3.9)	0 (0)	1 (0.3)	
Operating room uterine evacuation	0	224 (63.6)	232 (80.0)	<0.001
1-25%	75 (25.0)	47 (13.4)	39 (13.4)	
26-50	67 (22.3)	41 (11.6)	13 (4.5)	
51-100%	117 (38.9)	40 (11.3)	6 (2.0)	
Referral	0	141 (40.4)	116 (39.9)	<0.001
1-25%	13 (4.3)	94 (26.9)	66 (22.7)	
26-50	6 (2.0)	53 (15.2)	44 (15.1)	
51-100%	1 (0.3)	61 (17.5)	65 (22.3)	

Numbers may not add up to 100% due to missing items, or more than one response Treatment practices were compared among provider types using Pearson's Chi-Square

Table 3
Provider Attitudes and Beliefs towards EPF treatment

	Number (%) of providers in agreement			
	Obstetrician/ gynecologist (n=301)	Certified nurse midwife/midwife (n=352)	Family medicine practitioner (n=290)	p-value
Provider attitudes and beliefs towards EPF treatment				
Best treatment is operating room D&C	142 (46.4)	125 (35.1)	81 (28.6)	<0.001
Best treatment is D&C as soon as possible	69 (22.9)	99 (27.7)	53 (18.8)	NS
Trial of expectant management is safe	238 (77.5)	265 (74.0)	212 (75.2)	NS
Misoprostol treatment is safe	213 (70.3)	229 (63.8)	176 (62.2)	NS
Office D&C is riskier than operating room D&C	94 (30.7)	114 (32.0)	108 (38.3)	NS
Office D&C should not be offered	28 (9.2)	53 (14.8)	41 (14.6)	<0.001
Most patients want D&C under general anesthesia	201 (65.7)	165 (46.2)	122 (43.1)	<0.001
Barriers to misoprostol use in EPF				
Lack surgical or nursing back-up	22 (7.3)	44 (12.4)	101 (34.7)	<0.001
Lack nursing support	56 (18.5)	63 (17.9)	131 (45.0)	<0.001
Too little patient demand	55(18.2)	55 (15.7)	101 (34.7)	<0.001
Barriers to office uterine evacuations for EPF**				
Office space limits	142 (46.4)			
Reimbursement concerns	66 (21.8)			
Nurses or office staff oppose	60 (19.7)			
No support in the literature	10 (3.3)			
Lack appropriate training	40 (13.3)			
Too few patients prefer office uterine evacuations	71 (23.3)			

Proportion of providers in agreement with each statement was compared using Pearson's Chi-Square

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Barriers to office uterine evacuations was limited to Ob/Gyn respondents

Numbers may not add up to 100% due to missing items

Table 4
Predictors of misoprostol and office uterine evacuations for EPF In the past 6 months

Ever use misoprostol for EPF in the past 6 months		Adjusted Odds Ratio *	95%CI	p-value
Years in practice		1.01	0.98-1.04	NS
Provider sex				
	Male	1.00	(reference)	
	Female	1.39	0.83-2.32	NS
Provider specialty				
	Ob/Gyn	1.00	(reference)	
	CNM/CM	0.44	0.15-1.27	NS
	FP	0.69	0.40-1.22	NS
Practice type				
	University	1.00	(reference)	
	Multi-specialty	0.39	0.16-0.94	<0.05
	Single specialty	0.30	0.15-0.60	<0.01
No prior induced abortion training		1.00	(reference)	
Prior induced abortion training		1.59	0.88-2.87	NS
Attitudes towards misoprostol for EPF treatment				
	Consider misoprostol to be safe for EPF treatment			
	Disagree	1.00	(reference)	
	Agree	2.68	1.55-4.66	<0.001
	Perceive low patient demand for misoprostol			
	Disagree	1.00	(reference)	
	Agree	0.16	0.07-0.38	<0.001
	Lack support from office staff			
	Disagree	1.00	(reference)	
	Agree	0.42	0.20-0.90	<0.05
Ever use office uterine evacuations for EPF in the past 6 months		Adjusted Odds Ratio	95% CI	p-value
Years in practice		1.060	1.01-1.11	<0.05
Provider sex				
	Male (reference)			
	Female	0.51	0.22-1.18	NS
Practice type				
	University (reference)			
	Multi-specialty	1.29	0.34-4.80	NS
	Single specialty	0.88	0.35-2.47	NS
Prior induced abortion training		5.12	2.35-11.17	<0.05
Attitudes towards office uterine evacuations				
	Office uterine evacuations are riskier than operating room evacuations	0.20	0.06-0.65	<0.01

Ever use misoprostol for EPF in the past 6 months	Adjusted Odds Ratio [*]	95%CI	p-value
Patients prefer general anesthesia during uterine evacuations	0.16	0.07-0.36	<0.01
Office space limited	0.29	0.1-0.83	<0.01

* Adjusted for all covariates in the model using logistic regression