Contraception 99 (2019) 10–15

Contents lists available at ScienceDirect

Contraception

journal homepage: www.elsevier.com/locate/con

Original research article

First-trimester aspiration abortion practices: a survey of United States abortion providers☆

Katharine O. White [a], Heidi E. Jones [b], Antonella Lavelanet [a], Wendy V. Norman [c], Edith Guilbert [d], E. Steve Lichtenberg [e], Maureen Paul [f,*]

[a] Boston Medical Center/Boston University, 850 Harrison Avenue, Dowling 4402, Boston, MA, 02118, USA
[b] City University of New York Graduate School of Public Health & Health Policy, 55 W. 125th St., New York, NY 10027, USA
[c] University of British Columbia, 320-5950 University Blvd., Vancouver, Canada, V6T 1Z3
[d] Institut National de Santé Publique du Québec, 945, avenue Wolfe, Québec, Canada, G1V 5B3
[e] Family Planning Medical Associates Medical Group, Limited, 659 West Washington Boulevard, Chicago, IL, 60661, USA
[f] Beth Israel Deaconess Medical Center, Harvard Medical School, 330 Brookline Avenue, KS-3, Boston, MA 02215

ARTICLE INFO

Article history:
Received 4 May 2018
Received in revised form 13 August 2018
Accepted 13 August 2018

Keywords:
Abortion, induced
Abortion techniques
Pregnancy trimester, first
Dilation and curettage
United States
Evidenced-based practice

ABSTRACT

Objectives: To assess whether first-trimester aspiration abortion practices of US providers agree with evidence-based policy guidelines.
Study design: We sent surveys by mail or electronically to all abortion facilities in the United States identified via professional networks and websites from June through December 2013. Administrators reported on the volume of procedures performed at their site(s) through 13 weeks 6 days' gestation and on clinic services. Clinicians reported on personal demographic characteristics and abortion practices. We reviewed guidelines from key US professional organizations to determine how well reported practices aligned with available recommendations and the extent to which guidelines have changed since the time of the survey.
Results: We identified 703 clinical sites in the United States; 383 (54%) sites responded, 256 of which offer first-trimester aspiration abortions. Most providers identified as obstetrician-gynecologists (74%) and female (64%); 52% were less than 50 years old compared to 36% in 2002. Overall, reported practices follow evidence-based guidelines, including routine administration of periprocedure antibiotics (85%), use of misoprostol for cervical ripening in the late first trimester (94%), pain management practices, and same-day contraception provision (98%) including long-acting devices (76%). Less evidence-based practices include routine preprocedure ultrasound (99%), not providing abortion before 5 weeks' gestation (66%), restrictive fasting policies, and prolonged and postprocedure antibiotic provision.
Conclusion: Overall, the first-trimester aspiration abortion practices revealed in our survey agree with professional evidence-based policy guidelines, though some related to preprocedure ultrasound use, very early abortion provision, preanesthesia fasting protocols, and antibiotic regimens deserve attention.
Implications: In this third cross-sectional survey of US abortion practices (prior surveys 1997 and 2002), first-trimester aspiration abortion providers are younger than before, reflecting an improvement in the "graying" of the abortion provider workforce. Research and education are needed to further improve evidence-based practice in abortion care.

1. Introduction

An estimated 1.06 million abortions were provided in the United States in 2011, with most occurring in the first trimester [1]. Nearly one in four women in the United States (23.7%) will have an abortion by age 45 [2]. Given the magnitude of services provided, clinical abortion practices impact a sizable portion of reproductive-aged women and their families.

In its recent comprehensive review of abortion care in the United States, the National Academies of Sciences, Engineering, and Medicine [3] identified evidence-based practice and the availability of trained providers as critical components of quality care. Determining the extent to which abortion practices align with evidence-based guidelines is important to ensure quality, as well as to protect providers against spurious liability claims and forge future research priorities. Previous surveys of National Abortion Federation (NAF) members in 1997 and

☆ Declarations of interest: none.
* Corresponding author.
E-mail addresses: katharine.white@bmc.org (K.O. White), heidi.jones@sph.cuny.edu (H.E. Jones), wendy.norman@ubc.ca (W.V. Norman), edith.guilbert@inspq.qc.ca (E. Guilbert), DMaracich@fpachicago.com (E.S. Lichtenberg), mepaul@bidmc.harvard.edu (M. Paul).

https://doi.org/10.1016/j.contraception.2018.08.011
0010-7824/

2002 show uniform practice where evidence is strong and more variability in practice where evidence is poor or lacking [4,5]. These surveys revealed a "graying" of abortion providers over time and changing practice trends including increased provision of early abortion, particularly using manual vacuum aspiration (MVA); greater use of preprocedure ultrasound and cervical preparation; shorter courses of periprocedure antibiotics; and reduced use of uterine sounding and postsuction sharp curettage. Changes in abortion practices and the extent to which they are standardized have not been documented since 2002.

This study represents the third wave of data regarding abortion provider demographics and practices in the United States. It documents first-trimester aspiration abortion practices among clinicians and facilities in 2012 and how such practices accord with evidence and guidelines. Where practices varied, we assessed variability by provider characteristics.

2. Materials and methods

Previous surveys conducted in 1997 [4] and 2002 [5] included providers from a single professional network, NAF. In this study, we included all abortion-providing facilities identified via known legitimate websites and professional provider networks in both the United States and Canada; the sample included ambulatory clinics, physicians' offices and hospital-based clinics.

Our methods have been previously reported [6]; in brief, we sent two separate surveys by mail or electronically to 797 abortion facilities in the United States and Canada from June through December 2013, inquiring about abortion policies and practices in the calendar year 2012. We asked the facility administrator to complete one survey and distribute the second survey to up to five aspiration abortion providers who performed the most procedures in 2012. The Institutional Review Boards of the City University of New York and the University of British Columbia approved the study.

This analysis presents results on US first-trimester aspiration abortion practices through 13 weeks 6 days' gestation. We have published Canadian results elsewhere [7,8], as well as results on medication abortion [6] and second-trimester procedures [9]. We use *facilities* as the unit of analysis for results from the administrative survey and use *clinicians* as the unit of analysis for results from the clinician survey.

The administrators' survey inquired about the volume of abortions provided at their facilities in 2012, gestational age limits for abortion, staffing issues, ultrasound availability and anesthesia services. We categorized facilities by the reported volume of first-trimester aspiration abortions: small (fewer than 250), medium (250–749), large (750–1999) and very large (2000 or more). We asked administrators to estimate the percentage of procedures that took place using different anesthesia regimens. We defined intravenous (IV) moderate (conscious) sedation as intravenous medications with or without local cervical anesthesia. We classified a regimen as used for most cases if the proportion of procedures performed using that regimen exceeded 50%. Clinicians reported on personal demographic characteristics and numerous abortion practices including those pertaining to use of ultrasound, cervical preparation, antibiotic provision, pain management, procedural techniques and postprocedure care.

To examine alignment of reported practices with evidence-based guidelines, we reviewed relevant guidelines of US professional societies, including NAF, the Society of Family Planning (SFP) and the American College of Obstetricians and Gynecologists (ACOG), that were available in 2012 [10–13]. To determine if guidelines have changed substantially since the time of our survey, we reviewed updated guidelines published after 2012 [14–18].

We present frequencies of practices with 95% confidence intervals (CIs). We explored differences in clinical practices by facility size and clinician demographics using Student's t test and χ^2 test for continuous and categorical outcomes, respectively. Analysis of clinician characteristics included age, gender, specialty and years of abortion provision since training. We compared respondents and nonrespondents by geographic location, but lack of data on other variables and assurances of confidentiality precluded additional comparisons. We performed analyses using IBM SPSS Statistics for Windows, Version 19.0 (Armonk, NY, USA).

3. Results

We identified 703 facilities in the United States, and 383 (54%) participated; of these facilities, 256 offered aspiration abortions. Together, these 256 facilities provided 247,042 first-trimester aspiration abortions in 2012. Facilities were well distributed between small (22%), medium (20%), large (24%) and very large (33%) (Fig. 1). Most facilities identified as ambulatory health centers (52%) or private offices (31%), with fewer identifying as hospital-affiliated sites (13%) or facilities with equal practice in outpatient and hospital-based settings (4%). Responding sites were located more frequently in the eastern (35%) or western (32%) United States than in the southern (20%) or midwestern (13%) regions; nonresponding sites were situated primarily in the southern (42%) region, followed by the Midwest (21%), West (21%) and East (17%, $p<.01$). This difference reflects both the geographic distribution of the facilities identified during sampling (West 33%, South 27%, East 24%, Midwest 16%) and higher response rates in the East (68%) and West (72%) than in the Midwest (41%) and South (29%).

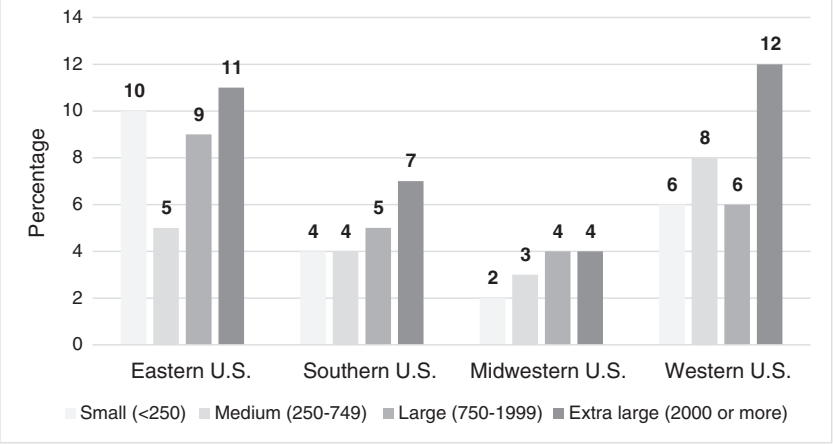

Fig. 1. Percentage of responding US first-trimester aspiration abortion facilities by size (based on annual procedure volume*) and region, 2012 (N=235**). *Annual procedure volume by region (number of procedures, percent of all reported procedures): Eastern 72,602 (29%); Southern 46,809 (19%); Midwestern 36,484 (15%); Western 91,147 (37%). **Twenty-one administrators did not provide their annual procedure volume.

Table 1
Characteristics of US first-trimester aspiration abortion clinician respondents, by sex, in the United States in 2012

	Total[a] (*N*=259)	Male (*n*=93)	Female (*n*=166)	p
Age (years)				<.001
<30	1 (0)	0 (0)	1 (1)	
30–39	62 (24)	5 (6)	57 (35)	
40–49	73 (28)	11 (12)	62 (38)	
50–59	35 (14)	13 (15)	22 (13)	
60–69	53 (20)	33 (37)	20 (12)	
≥70	27 (10)	26 (30)	1 (1)	
Missing data	8 (3)			
Provider degree				.006
Physician (MD, DO)	228 (88)	90 (99)	138 (90)	
Advance practice clinician (NP, CNM, PA)	17 (7)	1 (1)	16 (10)	
Missing data	14 (5)			
Specialty				<.001
Obstetrician gynecologist	193 (74)	80 (88)	113 (67)	
Family medicine	51 (20)	6 (7)	45 (27)	
Other	13 (5)	5 (5)	8 (5)	
Missing data	2 (1)			
Board certified, yes	222 (86)	82 (93)	140 (88)	.135
Missing data	11 (4)			
First-trimester abortion cases in 2012				<.001
0–100	70 (27)	18 (22)	52 (32)	
101–250	42 (16)	7 (8)	35 (22)	
251–500	46 (18)	18 (22)	28 (18)	
501–1000	47 (18)	17 (20)	30 (19)	
≥1001	38 (15)	23 (28)	15 (9)	
Missing data	16 (6)			
Years of abortion experience				<.001
≤5 years	56 (22)	5 (5)	51 (31)	
6–10 years	55 (21)	6 (7)	49 (30)	
11–15 years	44 (17)	15 (17)	29 (18)	
16–25 years	31 (12)	10 (11)	21 (13)	
>25 years	68 (26)	54 (60)	14 (8)	
Missing data	5 (2)			
Proportion of work that is abortion care				.429
<25%	42 (16)	19 (21)	23 (14)	
25%–49%	29 (11)	9 (10)	20 (12)	
50%–74%	47 (18)	17 (19)	30 (18)	
75%–89%	33 (13)	8 (9)	25 (15)	
≥90%	102 (39)	36 (40)	66 (40)	
Missing data	6 (2)			
Location				.002
East	69 (27)	25 (27)	44 (26)	
South	45 (17)	27 (29)	18 (11)	
Midwest	45 (17)	14 (15)	31 (19)	
West	99 (38)	27 (29)	72 (44)	
Missing data	1 (1)			

[a] Data are presented as *n* (%). Clinicians with missing data are included in the total distribution but are excluded from the distributions of sex by characteristics. P values compare male and female provider results in each category.

We received surveys from 259 clinicians affiliated with 251 facilities that provided first-trimester aspiration abortions. Characteristics of responding clinicians are presented in Table 1. Of note, respondents were primarily younger than 50 years of age (52%) and female (64%). However, 25% of responding clinicians in the South are age 70 years or greater as compared to 14% in the East, 9% in the Midwest and 2% in the West (p=.001).

3.1. Preprocedure practices

Nearly all facilities (99%, 95% CI 99–100) report that they offer patients an on-site preprocedure ultrasound. When gestational age by patient-reported last menstrual period (LMP) and ultrasound differs, 76% of clinicians routinely rely on the ultrasound estimate, while 21% use it only if the discrepancy with LMP is 1 week or greater.

Most facilities (66%, 95% CI 60–71) offer aspiration abortion starting at 5 weeks or greater; only 24% (95% CI 19–30) offer procedures beginning at 4 weeks, and 10% (95% CI 6–14) do so at less than 4 weeks. Smaller facilities were more likely to provide procedures before 5 weeks (55%) as compared to medium (30%), large (28%) and very large (33%) sites (p=.015). Private offices were less likely to provide aspiration procedures before 5 weeks (17%) as compared to hospital-affiliated sites (39%), ambulatory health centers (41%) and facilities with equal practice in outpatient and hospital-based settings (54%, p=.001).

Nearly all clinicians (94%, 95% CI 89–96) routinely use misoprostol for cervical preparation in the later first trimester, particularly in nulliparous patients (Fig. 2). Buccal administration predominates (66%); other routes include vaginal (17%) and oral or sublingual (11%). The most common dose is 400 mcg (71%) administered the day of the procedure (89%). Most clinicians (81%) will administer misoprostol in patients with prior cesarean section. Clinicians less than 50 years old were more likely to use misoprostol for these patients than clinicians age 50 years or older (92% vs 79%, respectively, p=.01, OR 2.7, 95% CI 1.2–6.0); we found no association with gender, specialty or years of experience. Clinicians do not routinely use osmotic cervical dilators for first-trimester procedures (≤5% for LMP of 11, 12, or 13 weeks).

3.2. Pain management

Clinicians most often use oral nonsteroidal anti-inflammatory drugs (71%), presented as a general category in the survey, or anxiolytics (51%) for premedication prior to aspiration abortion. Clinicians less frequently use acetaminophen with or without codeine (10% and 8% respectively), ketorolac (8%) and antiemetics (18%).

Most clinicians (95%, 95% CI 92–98) utilize lidocaine for cervical anesthesia. Many clinicians (38%, 95% CI 32–44) add a buffer (e.g., bicarbonate) to the solution, a practice that is more common among female than male providers (28% vs. 9%, p=.005) and among family medicine providers compared to obstetrician-gynecologists (OB/GYNs, 63% vs. 31%, p=.001). Less than half of clinicians (43%) routinely use vasopressin for first-trimester procedures, but of those that do, 80% begin adding vasopressin to the anesthetic solution at less than 6 weeks' gestation. Family medicine providers are more likely to use vasopressin routinely compared to OB/GYNs (60% vs. 37%, p=.011); this practice did not differ by age, gender or years of experience. Most clinicians do not wait after administration of cervical anesthesia before starting the procedure (60%) or wait 1–2 min (33%); we found no differences by clinician characteristics.

The types of anesthesia used most often for first-trimester aspiration abortions are IV moderate sedation (38%, 95% CI 32–44) and local anesthesia plus oral medication (33%, 95% CI 27–39); administration of local-only, deep sedation or general anesthesia for a majority of procedures is less common (4%, 5% and 10%, respectively). We asked clinicians about specific anesthesia practices. Forty-one percent (95% CI 35–47) of clinicians reported that deep sedation or general anesthesia is available on site. Clinicians most commonly use fentanyl and midazolam (88% for both) for moderate sedation and diprivan (84%) for deep sedation. Fasting status policies for clinicians providing moderate and deep sedation with first-trimester aspiration abortion are presented in Table 2. Notably, one third (33%, 95% CI 26–39) of clinicians do not require patients to fast before receiving moderate sedation.

We asked clinicians about nonpharmacological pain-relieving techniques ever used during first-trimester aspiration abortion. Eighty-five percent reported using adjunctive techniques, including focused breathing (76%), playing music (55%) and visualization techniques (24%). Clinicians over age 50 years use these techniques more often than younger clinicians (91% vs 80%, p=.037); we found no differences by gender or specialty. When asked if patients could have a support person present during their abortion, 62% of clinicians reported that support persons are not allowed, 26% routinely allow them and 13% permit them upon patient request.

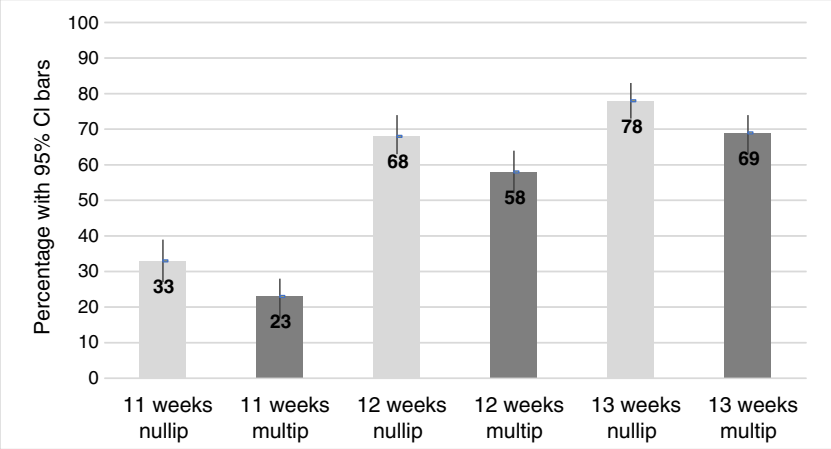

Fig. 2. US clinicians' routine use of misoprostol for cervical preparation prior to first-trimester aspiration abortions in the later first trimester, 2012 (n=256*). *Three clinicians did not answer this question.

3.3. Procedural practices

Most clinicians (80%, 95% CI 75–85) use MVA for early first-trimester aspiration abortion. Routine MVA use is more common at earlier gestations, with peak use (69%) occurring at 6–7 weeks, than at later gestations (13% of providers at 12 to 13 weeks). Clinicians who use MVA are more likely to be less than age 50 years, be female and have less than 10 years of abortion experience (all p<.001); there was no association with specialty.

For first-trimester procedures, clinicians most often use ultrasound when clinically indicated (intraprocedure 75%, postprocedure 81%). Only a small proportion of clinicians employ ultrasound routinely during (11%, 95% CI 7–15) or after (9%, 95% CI 5–12) procedures. Routine ultrasound use did not differ by clinician characteristics.

3.4. Postprocedure practices

Eighty-five percent (95% CI 80, 89) of clinicians routinely prescribe periprocedure antibiotics, most often doxycycline (72%), azithromycin (11%) or metronidazole (9%). Timing of antibiotic initiation varied, including immediately preprocedure (30%), immediately postprocedure (45%) and at home the day of the procedure (18%). Duration of therapy varied, from single dosing (27%) to one dose each preprocedure and postprocedure (18%), postprocedure for 2–3 days (18%) or postprocedure for 1 week (32%).

Table 2
US clinician policies regarding patient fasting status prior to first-trimester aspiration abortion, for moderate and deep sedation, 2012[a]

Reported policy	Moderate sedation (n=196)[b]	Deep sedation (n=102)[c]
Fasting not required	64 (33) 95% CI 26–39	3 (3) 95% CI 0–6
No clear liquids 2 h before procedure	38 (19) 95% CI 14–25	9 (9) 95% CI 3–14
No solid food 6–8 h before procedure	61 (31) 95% CI 25–38	27 (26) 95% CI 18–35
Fasting after midnight before procedure	56 (28) 95% CI 22–35	83 (81) 95% CI 74–89
Varies/other	29 (15) 95% CI 10–20	1 (1) 95% CI 0–3

[a] Data are presented as n (%). Respondents were permitted to check all that apply.
[b] One hundred ninety-six clinicians offered moderate sedation; 5 participants did not respond.
[c] One hundred two clinicians offered deep sedation; 5 participants did not respond.

Clinicians frequently offer contraception on the same day as aspiration abortion, including placement of an intrauterine device (74%, 95% CI 68–79) or contraceptive implant (61%, 95% CI 55–67). Clinicians also offer the contraceptive pill (97%), injection (91%), ring (87%) and patch (80%). The likelihood of offering any long-acting reversible (LARC) method (76%) was higher among female clinicians (85% vs. 60%, p<.001) and newer clinicians, i.e., those younger than age 50 years (86% vs. 65%, p<.001) or those with less than 10 years of abortion experience (86% vs. 79% vs. 57%, p<.001); LARC provision was not associated with specialty. Almost all clinicians (98%) offer at least one non-LARC method, with no association with clinician characteristics.

Sixty-one percent (95% CI 55–67) of clinicians do not require a routine postprocedure visit. Those that do are less likely to be family medicine clinicians than OB/GYNs or other providers (22% vs. 33% vs. 31%, p=.02), and are more likely to have 25 years or more of experience (46% vs. 25%, p=.005) or spend less than 25% of their time on abortion care (56% vs. 26%, p=.002).

Comparison of US guidelines available in 2012 with more recent ones revealed a strengthening of some recommendations related to practices in our survey but few substantial changes. The 2018 guidelines from NAF [14] and ACOG [16] expand on earlier recommendations for universal antibiotic prophylaxis [10,13] by supporting single-day administration starting before the abortion procedure, which aligns with SFP guidelines [12]. At the time of our survey, NAF guidelines did not comment on LARC, fasting status for moderate sedation or routine postabortion follow-up [10], but current NAF guidelines address these topics [14]; SFP did not issue guidelines on pain management until 2018 [18]. When SFP updated its 2007 guideline on cervical preparation in 2016 [11,15], the authors enriched the evidence base but did not change the recommendations pertaining to use of misoprostol. Likewise, NAF did not alter its classification of misoprostol as optional for first-trimester cervical preparation in 2011 and 2018 [10,14].

4. Discussion

This study of US first-trimester aspiration abortion practices in 2012 found that facilities and clinicians largely follow evidence-based guidelines, including those available at the time of the survey as well as more recent ones. The widespread use of periprocedure antibiotics reflects research showing benefit in patients regardless of risk factors and accords with longstanding recommendations of several professional organizations [10,12–14,16]. Most providers offer postabortion contraception, including immediate initiation of LARC methods, as currently recommended by NAF [14]. Pain management practices, including the use of effective anesthesia methods, administration of preprocedure NSAIDs and buffering lidocaine to decrease the pain of injection, align with

contemporary SFP guidelines [18]. Although the common use of nonpharmacological adjuncts seemingly contradicts a recent review of research showing lack of efficacy in reducing pain or anxiety during aspiration abortion [19], patients in these studies rated nonpharmacologic interventions highly and recommended their use. SFP guidelines published in 2018 state that while these techniques do not necessarily reduce pain, they may help patients cope with the procedure [18].

In 2012, the proportion of clinicians reporting use of misoprostol for cervical preparation in the later first trimester (94%) is considerably higher than that found in the 2002 survey of solely NAF providers (55%). Although different sampling frames may account for this observation, accumulated research in the decade between the two surveys confirmed misoprostol's efficacy for cervical dilation and established optimal first-trimester dosing regimens [11]. In addition, the first study large enough to assess the effect of preprocedure misoprostol on first-trimester complication rates emerged in 2012 [20]. Although this placebo-controlled randomized trial showed no effect on the rare occurrence of uterine injury, it did find significantly reduced rates of incomplete abortion requiring reevacuation in the misoprostol group. On the other hand, side effects occur commonly with misoprostol [15,20,21]; studies comparing misoprostol to placebo have shown no clinically significant differences in procedure time or blood loss [21], and cervical priming does not reduce pain before, during or after aspiration abortion [15,20]. Weighing the advantages of misoprostol for cervical preparation against these drawbacks, SFP guidelines published in 2007 [11] and updated in 2016 [15] do not recommend routine cervical preparation for first-trimester abortion, but they do recommend consideration of its use in the late first trimester and other select circumstances. The World Health Organization (WHO) also recommends cervical preparation before abortion at 12 to 14 weeks [22]. Interestingly, practice variations based on parity persist despite evidence from the WHO that parity does not significantly impact the rate of complications [22].

Misoprostol dosing regimens of most providers align with recommendations of SFP [11,15], NAF [14] and the Royal College of Obstetricians and Gynaecologists [23]; the latter recommends misoprostol 400 mcg vaginally 3 h prior to surgery or sublingually 2 to 3 h beforehand. Most providers (81%), and particularly those less than 50 years old, also are comfortable using misoprostol in patients with a previous uterine incision.

Our study demonstrates variability in clinical practice where evidence is limited and reveals areas that warrant further investigation. For example, data are inconclusive regarding whether waiting after administration of cervical anesthesia reduces procedure pain [18,24,25], although the trend toward no waiting among our respondents aligns with the evidence to date. Variations in periprocedure antibiotic protocols in part reflect lack of evidence to establish an optimal regimen; however, reported practices that initiate antibiotics postprocedure or use prolonged dosing do not align with current SFP [12], ACOG [16] or NAF [14] recommendations for antibiotic prophylaxis. Policies permitting support persons in procedure rooms varied considerably, reflecting the limited evidence available to assess the benefits and drawbacks of this practice [26].

Some less evidence-based practices found in our survey may affect patient convenience or access and deserve reconsideration. Although evidence is lacking to support routine use of ultrasound before first-trimester abortion [14,27], most US facilities employ it regularly for dating purposes. Fewer than half of responding facilities offer abortion before 5 weeks' gestation even though this practice is effective and safe with appropriate protocols in place [17]. Many providers routinely require a postprocedure visit despite evidence that “as indicated” follow-up suffices [14,28,29]. Two thirds of respondents require some degree of fasting before abortion using IV moderate sedation. Two studies, one involving over 47,000 cases, have not found increased complications in patients who had a light meal before receiving low-dose midazolam and fentanyl for abortion up to 18 weeks' gestation [30,31]. Current NAF guidelines state that for patients receiving moderate sedation who are not at increased risk of aspiration, time from last meal should not limit access to abortion care [14].

Clinician respondents were younger than in the 2002 survey, when 64% of providers were at least 50 years old [5]. Although this finding may be attributable to different sampling frames, it more likely reflects a reassuring age trend. Since 2002, the Ryan program and Fellowship in Family Planning program have increased the pool of younger abortion providers; moreover, NAF and non-NAF facilities are unlikely to recruit different age distributions of providers. Notably, “graying” of providers continues to be a problem in the South, which already bears a disproportionate burden of restrictions on abortion access [32]. Additionally, OB/GYNs and physicians still constitute the bulk of aspiration abortion providers despite evidence supporting safe provision by other types of clinicians [33,34].

Our study has limitations. Given the facility response rate of 54% and the incomplete sampling of individual clinicians at the sites, our findings may not represent practices in nonparticipating facilities, especially in the South, or the range of practices among clinicians. However, this response rate compares favorably with other abortion provider surveys [35,36], and our respondents performed over one third of reported first-trimester aspiration abortions in the United States in 2012 [37], thus representing a sizeable proportion of abortion practice. Moreover, we utilized publicly available information to identify abortion providers, reflecting the process many women seeking an abortion would undertake. Our sample includes many of the highest-volume abortion clinics as well as Fellowship in Family Planning and Ryan residency sites involved in training the next generation of providers. We asked administrators to estimate the proportion of abortions provided using various anesthesia methods, so the responses represent approximations only. Because we asked individual clinicians to report their current practices, the risk of recall bias is low. Our sampling method differed from that used in the previous surveys in 1997 and 2002; therefore, we limited comparisons to provider age and later first-trimester misoprostol use only. Notwithstanding arguments in favor of the findings representing true trends, we cannot exclude the possibility that they reflect changes in the sampling frames. Our study gathered information on clinical practices in 2012; since that time, some practice guidelines have been updated, but very few have changed substantially.

5. Conclusion

Overall, first-trimester aspiration abortion practices in the United States accord with current evidence-based guidelines. The increasing number of younger abortion providers holds promise for the future provision of abortion. Continued research is necessary to guide practice in several areas including very early abortion provision, pain management, optimal antibiotic prophylactic regimens and the impact of allowing support persons to accompany patients during abortion procedures.

Acknowledgments

We received support from the Society of Family Planning Research Fund (SFPRF6-3) for this work. The views and opinions expressed are those of the authors and do not necessarily represent the views and opinions of the Society of Family Planning Research Fund. Dr. Norman is supported by a Canadian Institutes for Health Research and Public Health Agency of Canada Chair in Applied Public Health Research (CPP137902) and as a Scholar of the Michael Smith Foundation for Health Research. The authors gratefully acknowledge the support of participant recruitment by the Consortium of Abortion Providers program at Planned Parenthood Federation of America and the Fellowship in Family Planning and Ryan Residency programs. We are grateful to all the participating facilities, their staff and providers for taking the time to complete these surveys.

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