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Improving Capacity at School-based Health Centers to Offer Adolescents Counseling and Access to Comprehensive Contraceptive Services



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ABSTRACT

Study Objectives: Many pediatric providers serving adolescents are not trained to offer comprehensive contraceptive services, including intrauterine devices (IUDs) and implants, despite high safety and satisfaction among adolescents. This study assessed an initiative to train providers at school-based health centers (SBHCs) to offer students the full range of contraceptive methods.

Design: Surveys were administered at baseline pre-training and at follow-up 3 months post-training. Data were analyzed using generalized estimating equations for clustered data to examine clinical practice changes.

Setting: Eleven contraceptive trainings at SBHCs across the United States from 2016-2019.

Participants: A total of 260 providers from 158 SBHCs serving 135,800 students.

Interventions: On-site training to strengthen patient-centered counseling and to equip practitioners to integrate IUDs and implants into contraceptive services.

Main Outcome Measures: The outcomes included counseling experience on IUDs and implants, knowledge of patient eligibility, and clinician method skills.

Results: At follow-up, providers were significantly more likely to report having enough experience to counsel on IUDs (adjusted odds ratio [aOR], 4.08; 95% confidence interval [CI], 2.62-6.36) and implants (aOR, 3.06; 95% CI, 2.05-4.57). Provider knowledge about patient eligibility for IUDs, including for adolescents, increased ($P < .001$). Providers were more likely to offer same-visit IUD (aOR, 2.10; 95% CI, 1.41-3.12) and implant services (aOR, 1.66; 95% CI, 1.44-1.91). Clinicians' skills with contraceptive devices improved, including for a newly available low-cost IUD (aOR, 2.21; 95% CI, 1.45-3.36).

Conclusions: Offering evidence-based training is a promising approach to increase counseling and access to comprehensive contraceptive services at SBHCs.

Key Words: Adolescents, Contraception, IUDs, Implants, School-based health centers, Training

Introduction

Providing adolescents with access to comprehensive contraceptive services can empower them to select their preferred method if they want to prevent pregnancy. Many pediatric providers serving adolescents are not trained to offer patients a full range of contraceptives, including intrauterine devices (IUDs) and the contraceptive implant,^{1,2} despite high safety and acceptability for these methods among adolescents^{3,4} as well as high satisfaction and continuation rates.⁵⁻⁷ National survey data of contraceptive providers show that many providers hesitate to offer the IUD to adolescents because of providers' outdated views on patient eligibility.^{8,9} Primary care providers, as compared to

obstetricians and gynecologists, are less likely to have received training regarding IUDs and implants.¹⁰ The American College of Obstetricians and Gynecologists and the American Academy of Pediatrics both recommend that providers include these contraceptive methods in contraceptive counseling for adolescents, alongside other reversible methods.^{11,12} The Centers for Disease Control and Prevention (CDC) also state that IUDs and implants are appropriate for adolescent and nulliparous women.¹³ However, knowledge of contraceptives is incomplete among adolescents, and is particularly low for the IUD and implant.¹⁴

Access barriers represent 1 among several factors that may limit adolescents' ability to use their contraceptive method of choice.¹⁵ Other barriers to access that may be exacerbated for adolescents include high upfront costs and waiting periods in which patients are asked to return for multiple clinic visits to obtain these methods.^{16,17} Access to comprehensive services for adolescents is especially challenging during a time when there is emphasis in federal policies to support abstinence-only education and to restrict contraceptive funding for adolescent health education.¹⁸

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Contraceptive Access Through School-Based Health Centers

Adolescence is an important time to learn accurate reproductive health information. In 2017, 40% of adolescents aged 15–19 years reported having had sexual intercourse, with 20% of students by 9th grade having had sexual intercourse compared to more than half of students (57%) by 12th grade.¹⁹ One promising approach to increase adolescent contraceptive education, counseling, and access to services is through school-based health centers (SBHCs). Indeed, a systematic review of studies on the impact of providing reproductive health services through SBHCs on adolescents' sexual and reproductive health identified some positive effects on condom use and hormonal contraceptive use among the more rigorous evaluations.²⁰ However, SBHCs vary in terms of the reproductive and sexual health services that they offer, which can include contraceptive counseling, pregnancy testing, vaccination against the human papillomavirus, and on-site diagnosis and treatment of sexually transmitted infections (STIs).²¹ However, currently less than 40% of SBHCs nationwide provide contraceptive methods onsite,²² and fewer still offer implants (6%) and IUDs (5%) onsite.^{21,22} Although approximately half of all SBHCs are prohibited from dispensing contraceptives, most commonly because of school district policy, there are many schools with potential to offer high-quality care.²¹ Training providers at SBHCs on patient-centered counseling and full contraceptive services could be an effective strategy to ensure adolescents have access to their method of choice. Offering contraceptive counseling and services on school campuses could be helpful for adolescents who wish to prevent pregnancy and/or STIs. Notably, a majority of adolescents and young adults report that they trust a clinician or a health care provider for birth control information.²³

In addition, SBHCs are considered a highly effective means of providing preventive and comprehensive health services to young people, especially for those who are uninsured, low-income, or underserved by other health care settings.^{20,22} SBHCs often represent the first point of contact with the health care system for many adolescents.²⁴ Providing health services, including contraception, through SBHCs can increase access to comprehensive and non-stigmatizing health services for adolescents, provide links between schools and communities, and reduce transportation costs.²⁰ Furthermore, in light of the COVID-19 pandemic, there are increasing concerns about ensuring access to contraceptive services,²⁵ especially for adolescents who may have limited privacy for telehealth services from home. SBHCs may become even more important in delivering health services,²⁶ and certain SBHCs have remained open through a combination of telehealth visits and triaging in-person visits.²⁷

Description of SBHC Contraceptive Training Intervention

In prior research, we developed and tested a provider contraceptive training intervention in a cluster randomized controlled trial among adolescents and young adults.²⁸ The trial demonstrated significant effects of the training on provider knowledge and clinical practice change.

Specifically, we saw increased counseling on the full range of methods and greater capacity to offer patients IUDs and implants, without compromising patient autonomy in contraceptive decision making or other contraceptive and STI prevention outcomes.²⁸ Adolescents, along with young adults, were more likely to know about and to choose IUDs and implants after being counseled on the full range of contraceptive methods.⁴ Providers demonstrated sustained improvements 1 year after training in knowledge, attitudes, and practice.²⁹

Following the randomized trial, we adapted and scaled the provider training intervention to different practice settings, including SBHCs, in an implementation science phase. As part of the scale-up, we drew on a leading theory in clinical practice change, the Diffusion of Innovation,³⁰ by starting with the experts in specialized care or “early adopters” and expanding out to the “early majority” or those providers willing to adopt evidence-based practice changes. Following the principles of implementation science research,³⁰ we adapted the training to the needs of the practice setting, which in this study comprised SBHCs interested in strengthening their contraceptive services. Specifically, the training that we offered to SBHCs focused on patient-centered counseling for adolescents. The intervention addressed adolescents' access to the full range of contraceptive methods, helping to overcome barriers on the provider side, including a lack of training in counseling and provision of IUDs and implants. This study evaluates the scaling of the provider training intervention to SBHCs to test whether it contributed to enhanced provider capacity to provide full contraceptive services.

Materials and Methods

Our study assessed the effect of an evidence-based provider training on contraceptive counseling and access to the full range of contraceptive services including IUDs and implants on providers' knowledge, skills, counseling, and provision practices (Fig. 1). We implemented the training throughout the United States among providers and health educators at SBHCs and local community referral clinics. A total of 11 trainings were implemented between 2016 and 2019, with 260 health care providers trained from 158 SBHCs that served approximately 135,800 students across Albuquerque, Chicago, Los Angeles, Minneapolis, New York, Portland, San Francisco Bay Area, Seattle, and Washington, DC. This SBHC sample was part of a larger implementation science initiative among a variety of practice settings.³¹ We offered the training to SBHCs meeting the following conditions: they were open to learning new skills and techniques, following our theoretical framework; they were part of networks of SBHCs interested in contraceptive care; and they had the support of their school systems.³⁰ Most of the sites provided contraceptives on-site. Data available from 2017 onward showed that 68% offered IUDs and implants on-site. The training was offered to providers and staff at SBHCs with patient care responsibility; these included physicians, nurse practitioners, and counselors/health educators, as well as support staff, such as medical assistants and social workers. For cost efficiency, the trainings

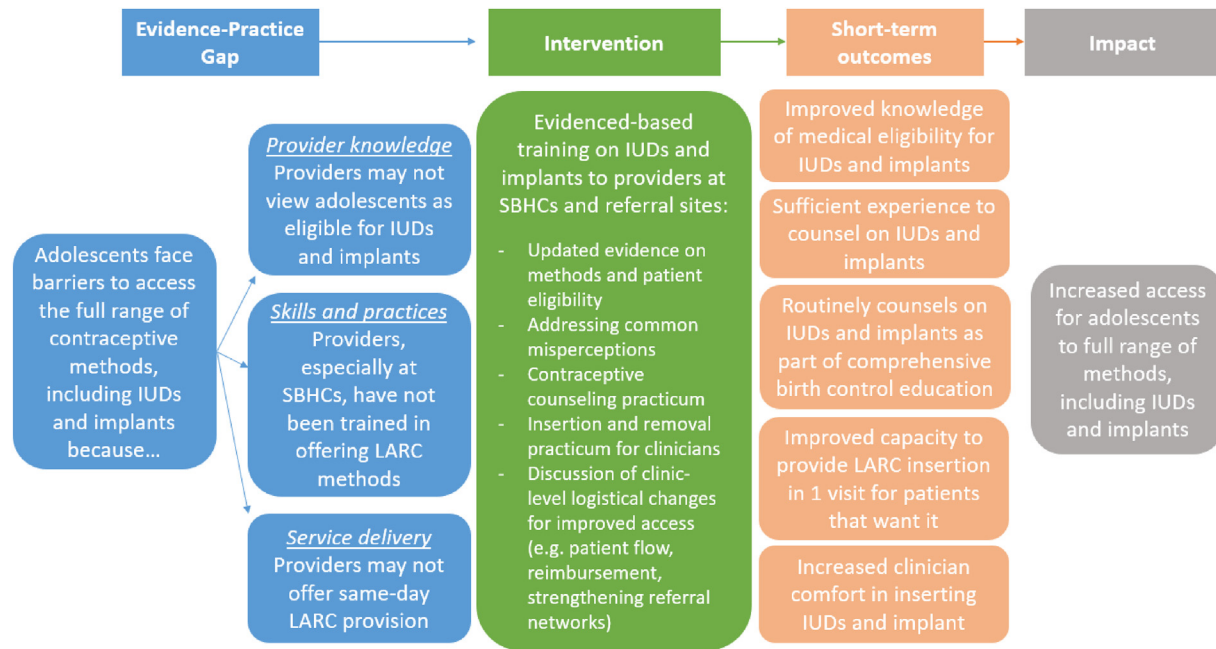


Fig. 1. Conceptual framework for provider training intervention.

typically included several SBHCs operating within a geographic area, through public health departments and/or school districts. To measure training impact on provider knowledge and clinical practice change, we collected data from providers on socio-demographic characteristics, provider type, and contraceptive knowledge, counseling, and provision practices. We collected baseline data before the training and follow-up data 3 months after the training.

Provider Training Intervention

The provider training, which is a Continuing Education–accredited course from the University of California, San Francisco School of Medicine, involved an on-site training to equip participants to use patient-centered counseling and to provide the full range of contraceptive methods, including condoms for STI prevention. The training adopted an all-staff approach to ensure clinic-wide changes in culture and practices, which is particularly important in high turnover settings and low-resource clinics. The trainings also included local referral clinics to strengthen the SBHCs' referral networks, as not all SBHCs were able to offer contraceptive devices on-site. The course was informed by a rights and equity framework³² focusing on ethical issues specific to IUDs and implants, with discussions on the importance of upholding patients' reproductive autonomy, issues around coercion and provider bias, and the importance of method removal upon patient request. The training also covered updated evidence on all methods, including medical eligibility for IUDs and implants. Clinicians were offered a hands-on practicum to practice IUD placement and removal with uterine models, whereas health educators and other staff were offered an interactive contraceptive counseling session. An important component of the training was to address clinic flow and

systems issues including reimbursement to be able to offer same-day services, and strengthening of referral networks to promote the continuum of care.¹⁵ This evaluation was approved by the University of California, San Francisco Institutional Review Board.

Measures

We evaluated the quality of the training using data from the formal Continuing Medical Education (CME) course evaluation. We assessed training quality, educational content, and faculty quality, with responses on a 5-point Likert scale (responses of poor, fair, good, very good, excellent). We asked whether issues of cultural and linguistic competency in diverse populations were adequately addressed (yes/no) and whether attendees intended to change their practice (responses of not at all, unlikely, somewhat likely, highly likely, definitely likely).

Study outcomes included provider knowledge, counseling skills, and provision practices at follow-up. We assessed provider knowledge with a 6-item scale that has been validated and adapted from prior research.^{8–10} The scale measures provider knowledge about IUD eligibility for different patient characteristics (adolescents, nulliparity, history of sexually transmitted infections, history of pelvic inflammatory disease, HIV positive, and post-abortion). The internal consistency reliability of this scale (using the Kuder-Richardson coefficient of reliability) in this sample was 0.79. The scale was calculated as the proportion of correct responses across the 6 items.

To measure changes in provider counseling skills, we collected data from participants on whether they believed that they had enough experience to counsel on IUDs and implants (responses of strongly agree, agree, disagree, strongly disagree). We created dichotomized variables that

take a value of 1 if the provider “strongly agrees” or “agrees” and 0 for “disagrees” or “strongly disagrees.” We assessed changes in clinic practice by asking whether the clinic offered same-day services, as an access measure.³³ Among clinicians, we assessed whether they had acquired the skills to feel comfortable inserting an IUD (including levonorgestrel devices, Mirena® and Skyla® [Bayer, Turku, Finland] and Liletta® [Allergan USA Inc, San Francisco, CA] and the copper IUD) and the implant (Nexplanon® [Merck & Co., Whitehouse Station, NJ]). We used Likert scales (responses of strongly agree, agree, disagree, strongly disagree) and coded the outcome 1 for “strongly agrees” or “agrees” and 0 for “disagrees” or “strongly disagrees.” We included a covariate for provider type (clinician/nonclinician) and year of training.

Data Analysis

The analytic sample included all clinic staff who received the training and had patient care responsibilities (N = 260). To examine training impact on clinical practice outcomes, we used a repeated cross-sectional approach, including data from all providers completing a baseline or follow-up survey.³⁴ This approach is the most appropriate for the study design, allowing us to account for differences in clinical practice before and after training, and for any staff turnover. We used generalized estimating equations (GEEs) to assess changes in study outcomes from baseline to follow-up. We used multivariable regressions to assess changes in provider knowledge, counseling skills, and provision practices, adjusting for provider type (clinicians versus nonclinician) and training year. Observations were clustered by training and within health centers, as trainings were hosted by an organizing agency and included all affiliated SBHCs. We used GEE to account for correlation within trainings and by extension within clinics. For the continuous outcome, the provider knowledge scale, we used an identity link with a Gaussian distribution. For dichotomous outcomes for counseling and provision skills, we used a logit link with a binomial distribution. We used cluster robust standard errors at the training level. We used the Stata option “nmp” to adjust the standard errors for the number of predictors in the model given the relatively small number of trainings (n = 11). We conducted an attrition analysis to assess whether there were differences in key baseline characteristics, including age, sex/gender, race/ethnicity, provider type (clinician), and level of education, between respondents and nonrespondents at follow-up. Analyses were conducted in Stata 16 (StataCorp, College Station, TX) and significance levels reported at $P \leq .05$.

Results

Sample Characteristics

Among the 260 clinic staff participating in the trainings, 238 (92%) completed the baseline survey. The response rate at follow-up was 67% (173/260). Results from the attrition analysis showed that there were no significant differences in characteristics between respondents and non-

respondents at follow-up for age, sex/gender, race/ethnicity, or educational level. However, we found that clinicians were less likely to respond at follow-up compared to nonclinicians. The sample of participants trained included the full care team: 10% were physicians, 9% physician assistants, 32% nurse practitioners, 5% registered nurses, 7% medical assistants, 14% counselors/health educators, and 7% social workers (Table 1). On average, the clinic staff were 38 years old and 93% identified as female. About half identified as white (54%), 14% as black, 11% as Hispanic/Latinx, 9% as Asian/Pacific Islander, and 12% as other race/ethnicity. The majority of participants (72%) had a graduate or professional degree.

Almost all participants (96%) believed that students should have access to the full range of contraceptive methods through SBHCs (Fig. 2). Likewise, almost all SBHC providers (95%) reported routinely counseling on condom use, both at baseline and follow-up. The majority of clinic staff (81%) believed that students had misperceptions about birth control, and only about one-third believed that students were knowledgeable about IUDs (30%) and implants (34%).

Training Quality

Participant had high ratings of overall quality of the training intervention, the faculty, and educational content (4.5, 4.6, and 4.5, respectively, out of a scale of 15). In all, 91% reported that issues of cultural and linguistic competency in

Table 1
Sociodemographic Characteristics of Providers Participating in School-based Health Center (SBHC) Training

	Baseline (n = 238)	Follow-up (n = 173)
	n (%)	n (%)
Gender		
Identified as female*	221 (93)	164 (95)
Age (mean ± SD)	38.2 ± 11.0	38.3 ± 10.9
Race/ethnicity		
White	128 (54)	93 (54)
Black	33 (14)	28 (16)
Hispanic	25 (11)	13 (8)
Asian/Pacific Islander	21 (9)	13 (8)
Other	29 (12)	26 (15)
Provider type		
Physician	23 (10)	15 (9)
Physician assistant	21 (9)	13 (8)
Nurse practitioner	77 (32)	52 (30)
Registered nurse	13 (5)	9 (5)
Medical assistant	16 (7)	13 (8)
Counselor/health educator	33 (14)	27 (16)
Social worker	17 (7)	16 (9)
Other	38 (16)	28 (16)
Education		
High school, GED, technical or vocational	14 (6)	8 (5)
2-Year college degree	16 (7)	9 (5)
4-Year college degree	36 (15)	31 (18)
Graduate or professional	169 (72)	124 (72)
Training year		
2016	45 (19)	34 (20)
2017	80 (34)	62 (36)
2018	91 (38)	71 (41)
2019	22 (9)	6 (3)
Region		
Northeast	56 (24)	36 (21)
Midwest	100 (42)	72 (42)
West	82 (34)	65 (38)

* Reference category includes participants identifying as male/other.

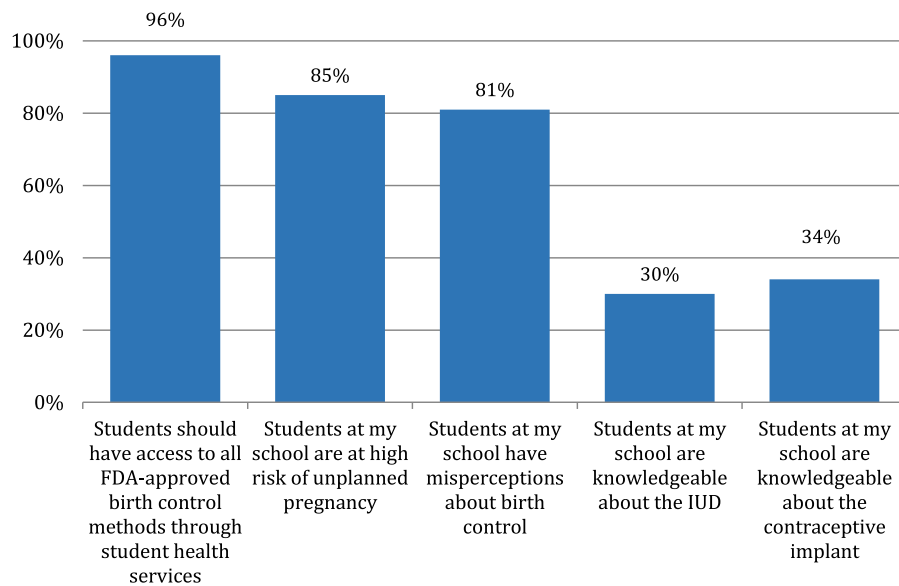


Fig. 2. SBHC provider beliefs at baseline (N = 238).

diverse populations were adequately addressed in the course, and 97% reported an intention to change practice.

Provider Knowledge, Skills, Counseling, and Provision Practices

Provider knowledge about the range of patients who are eligible for IUDs increased significantly. The knowledge scale measuring patient eligibility for IUDs, including adolescents and nulliparous women, increased from 0.85 at baseline to 0.91 at follow-up ($P \leq .001$) (Table 2). Providers were more likely to report having enough experience to counsel IUDs (adjusted odds ratio [aOR], 4.08; 95% confidence interval [CI], 2.62–6.36) and the implant (aOR, 3.06; 95% CI, 2.05–4.57) at follow-up compared to baseline. Among the sample of clinicians, we found significant

improvements in self-reported competency related to IUD and implant provision. Clinicians were more likely to report at follow-up that they felt comfortable placing the Mirena® IUD (aOR, 1.49; 95% CI, 1.01–2.18) and the implant (aOR, 1.53; 95% CI, 1.09–2.16), with particularly significant increases in placing the newly available and low-cost Liletta® IUD (aOR, 2.21; 95% CI, 1.45–3.36). By follow-up, providers were more likely to provide same-day services if desired for IUDs (aOR, 2.10; 95% CI, 1.41–3.12) and the implant (aOR, 1.66; 95% CI, 1.44–1.91) (Table 2).

Discussion

This study identified significant improvements among providers at SBHCs in knowledge, counseling skills, and

Table 2
Changes in Provider Knowledge, Counseling and Provision Practices for IUDs and Implants Post Intervention: Results From Multivariable GEE Regression Models

Outcome Variables	Baseline (%)	Follow-up (%)	Coef	95% CI	n
Knowledge scale (range 0-1)					
Δ scale*					
IUD eligibility	0.85	0.91	0.05 [†]	0.02–0.08	362
Provider counseling skills and provision practices			aOR		
Counseling contraceptive patients					
Counseling skills for IUDs	70	90	4.08 [†]	2.62–6.36	368
Counseling skills for implant	73	90	3.06 [†]	2.05–4.57	370
Same-visit service delivery of contraception					
IUD can be provided at same visit	16	29	2.10 [†]	1.41–3.12	338
Implant can be provided at same visit	27	38	1.66 [†]	1.44–1.91	339
Comfort in placing methods (clinician only)					
Copper IUD	32	35	1.26	0.87–1.81	206
Mirena® IUD	38	47	1.49 [†]	1.01–2.18	206
Skyla® IUD	26	33	1.53	0.95–2.46	205
Liletta® IUD	16	27	2.21 [†]	1.45–3.36	205
Nexplanon® Implant	53	64	1.53 [‡]	1.09–2.16	206

Robust standard errors clustered at training level. aOR, adjusted odds ratio; CI, confidence interval; Coef, coefficient; GEE, generalized estimating equation; IUD, intrauterine device. Models adjusted for provider type and training year.

* This scale has 6 items asking providers whether they would consider a patient eligible for an intrauterine device (IUD) if: nulliparous, adolescent, immediately post-abortion, HIV positive, or with a history of sexually transmitted infection or pelvic inflammatory disease in the last 2 years. The range is from 0–1 and represents the proportion of correct responses.

[†] $P \leq .05$.

[‡] $P \leq .01$.

provision practices, with increased capacity to offer adolescents interested in IUDs or the implant with these methods. The training improved knowledge about these methods and led providers to feel experienced in counseling regarding them. Among the clinicians, the hands-on training practicum also led providers to feel more comfortable providing different methods. In particular, there were substantial increases in skills providing the newly available, low-cost levonorgestrel IUD Liletta®, from 16% of clinicians at baseline to 27% at follow-up reporting that they felt comfortable providing this method. The training also led providers to be more likely to offer same-day IUD and implant services upon patient request, a component to improving access to these methods.

These results showed that this training intervention can be scaled and adapted to different health provider contexts, specifically SBHCs. These positive impacts within SBHCs highlight that the training intervention is an effective way to enable providers who serve adolescents to integrate IUDs and implants into their counseling and contraceptive services.

Adolescents are increasingly more likely to use a contraceptive method at last intercourse.³⁵ The most common methods used by sexually active adolescent women aged 15–19 years is condoms (55%), followed by contraceptive pills (27%), and withdrawal (26%). In contrast, only 7% of sexually active adolescent women aged 15–19 years have used the intrauterine device (IUD) and subdermal implant.³⁶ However, method choice is not necessarily a reliable measure of adolescents' preference, because it assumes that the method was freely chosen over other methods without considering barriers to access.³⁷ Studies on method preference among adolescents find that although there are relatively low rates of use of long-acting reversible contraceptives, up to 61%–69% of adolescents would prefer to use these methods.³ Increasing access to preferred methods is an important component of contraceptive care that respects patient reproductive autonomy.³⁷ Barriers to contraceptive access may play an especially important role in limiting adolescents' ability to access the full range of contraceptive methods and to choose their preferred method.³⁸ Emphasizing patient preferences and voluntary method choice is essential for all age groups, including adolescents.

It is also important to highlight that the training focuses on counseling about IUDs and implants together with condoms, given potential concerns with STI rates. Our randomized controlled trial confirmed that the training intervention did not compromise condom use, nor did it result in increased STI rates,³⁹ in contrast to concerns about increasing access to IUDs and implants among young people.⁴⁰ Although our results highlight that the provider training was effective in improving SBHC providers' knowledge, counseling skills, and provision practices, there remain significant challenges in working with SBHCs to ensure adolescents' access to comprehensive services. Because so many SBHCs face limitations in offering contraceptive services as a result of restrictions at the state, school district, and school level,²¹ training referral clinics is also relevant, as was done in our intervention. Although SBHCs reach an important adolescent population, youth-

friendly clinics outside of schools remain essential points of care, especially in regions where contraceptive services available at SBHCs are restricted.

Our evaluation focuses on specific provider-related barriers to access for contraceptive services. Same-day provision and provider competency are important aspects of access that our intervention targets. Nonetheless, there is also a need to more broadly address other aspects of the continuum of contraceptive care, from community outreach and trust building to follow-up support and identifying interventions that address structural and social contexts.¹⁵

Limitations

Although our sample included trainings across different regional contexts in the United States, it comprised sites supportive of contraceptive education and access, with most providing contraceptives on-site. Implementing the intervention with SBHCs across different geographic regions and school districts requires substantial programmatic effort, as each district has its own requirements and permissions. The sample size for this study was relatively small to measure intervention impact for the clinician-only measures. We cannot rule out external factors that may account for the changes measured in this implementation science scale up to a new practice setting. Nevertheless, the results were similar to the data in our randomized trial showing clinical practice changes.²⁹

This study reflects the counseling practices and clinician skills at the SBHC itself, but we did not collect data on referrals. Although SBHCs often provide referrals for contraceptive services off-site, referrals do not guarantee that adolescents will follow through on referrals because of confidentiality concerns, transportation issues, costs, or capacity to schedule a visit amid other competing priorities.²² Understanding changes in referral patterns after the training, however, could help us to understand the impact of the intervention on SBHCs that work in restrictive environments.

Conclusion

This study demonstrated the impact of adapting a provider training intervention post-randomized trial to the context of SBHCs. Our findings highlight that offering provider training to SBHCs is an effective way to improve adolescents' access to full contraceptive services. This is especially important in the current policy environment, which is increasingly restrictive of contraceptive services and sex education for adolescents,¹⁸ and with access to clinic services further challenged by the COVID-19 pandemic.²⁵ These results show that this provider training is an effective approach that can be scaled and replicated across SBHCs to enable adolescents to have access to the full range of contraceptive methods.

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