PAA Extended Abstract Draft

Title: Training providers at school-based health centers in intrauterine devices and implants: the effect of an evidence-based program on provider knowledge, attitudes, and practices

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Background:

While adolescent pregnancy rates have declined over the last decade, the United States continues to have some of the highest rates amongst developed countries [1]. In 2013, approximately 43 out of 1,000 women aged 15–19 became pregnant, with over three-quarters of these pregnancies unintended [2]. Adolescent pregnancy has substantial health, social, and economic implications [3]. Pregnancy during adolescence can adversely affect women's educational [4] and occupational achievements [5] and negatively impact physical [6] and mental health [7]. Impacts can also extend to the child through adverse birth outcomes [8], lower cognitive development, decreased educational outcomes, and increased behavioral issues [9]. Adolescents already facing significant socioeconomic challenges and racial inequalities face the highest risks of unintended pregnancy, but also often have low knowledge and access to effective birth control methods [10].

Providing adolescents with access to the full range of contraceptive methods, including long-acting reversible contraceptives (LARC),is important for them to be successful in finding a method that works for them. LARCs, including the intrauterine device (IUD) and subdermal implant, are the most effective reversible methods and are suitable for adolescent use [11]. The American College of Obstetricians and Gynecologists and the American Academy of Pediatrics both recommend that providers counsel adolescents on LARC, alongside other reversible methods, given the high efficacy, satisfaction, and continuation rates with LARC methods [12] [13]. Research suggests that LARCs have been accepted by adolescents who desire a simple and effective long-term method of birth control [14]. Despite high efficacy and satisfaction rates with LARC methods, only 7% of female adolescents use LARCs [15]. National survey data of contraceptive providers show that many hesitate to provide the IUD to adolescents or women with common medical conditions such as diabetes, due to exaggerated concerns of safety [16]. While knowledge about LARCs among adolescents contribute to low use [17], lack of access remains a critical barrier to uptake.

One promising approach to support adolescents' access to LARC is school-based health centers (SBHCs), which serve as an important access point for health services, particularly for low-income and uninsured adolescents. SBHCs provide primary care, and in some cases, reproductive health services. Typically, SBHCs offer contraceptive counseling on-site and referrals for contraceptive provision, and about one-third of SBHCs in the United States dispense contraceptives on-site [18]. Currently, there is limited and mixed evidence about SBHCs' impact on adolescents' reproductive health outcomes [19] [20].

This study assesses the impact of conducting an evidence-based training intervention on intrauterine devices and implants with providers at SBHCs at several sites in the United States. In prior research in a randomized controlled trial among family planning clinics, we demonstrated that the provider training significantly improved provider knowledge, attitudes and practices related to LARC, and was the first clinic intervention to successfully reduce unintended pregnancy [21] [22] [23]. This intervention, however, was conducted among specialized providers in reproductive health centers, and its effectiveness in SBHCs has not been demonstrated. We adapted the intervention for replication among SBHCs, following the theory of the Diffusion of Innovation [24]. Our study will demonstrate whether offering this provider training on LARC within the context of SBHCs improves provider knowledge, attitudes and practices, to ultimately impact adolescents' access to comprehensive reproductive services.

Methods

Intervention: Our study assesses the effect of offering an evidence-based provider training on IUDs and implants to providers at SBHCs in New York, Chicago, Minneapolis, Seattle, and the San Francisco Bay Area. A total of 7 trainings were implemented between 2015 and 2018, with a total of 311 providers trained across 180 SBHCs. The training, a Continuing Education-accredited course from the University of California, San Francisco School of Medicine, provides information on medical eligibility for IUDs and implants, common misconceptions about these methods, and counseling skills specific to LARC methods. The training covers cultural competency and ethical issues specific to IUDs and implants, such as the

importance of patient-centered counseling and removal of method upon patient request. Clinicians are also offered hands-on insertion and removal practice with small uterine models. An important component of the training is to address clinic flow and systems issues including reimbursement to be able to offer same-day services.

Measures: We administered a baseline questionnaire to providers, prior to participation in the training, and then a follow-up questionnaire three months after the training. Baseline surveys include basic socio-demographic characteristics (sex, age, race, education level), provider type (physician, advanced practice nurse, counselor/health educator, other), and questions about attitudes, knowledge, and practices related to LARC methods. Similar data on attitudes, knowledge and practice are collected at follow-up. For study outcomes, we measure provider attitudes, knowledge, skills and practice. We assess provider attitudes on method safety with items on whether the provider believes IUDs and implants are safe (strongly agree, agree, disagree, strongly disagree). We create dichotomized variables that take a value of 1 if the provider "strongly agrees" and 0 otherwise (agrees, disagrees, or strongly disagrees). We assess provider knowledge using two scales adapted from prior research [25] [26] [27]. The first scale is a 6-item scale asking providers if they would consider a patient eligible for an IUD for different patient characteristics (ex. Adolescent, nulliparous). The internal consistency reliability of this scale is 0.70. The second scale is a 12-item scale asking providers about patient eligibility for IUD or implant with common medical conditions, such as obesity or hypertension. The internal consistency reliability of this scale is 0.94. Both of the scales range from 0 to 1 and represent the proportion of correct responses. For counseling skills, we ask whether the provider has enough experience to counsel on IUDs and implants (strongly agree, agree, disagree, strongly disagree). We assess practice skills based on whether the provider has acquired the skills to feel comfortable inserting the newer LARC devices, including Liletta, Skyla, and Nexplanon. For practice, we measured whether the provider offers same-day LARC insertion, an important measure of access [28].

Analysis: Our analytical approach uses generalized estimating equations to assess the pre-post change in our outcomes of interest. For dichotomous outcomes, we use a logit link with a binomial distribution. For continuous outcomes, we used an identity link with a Gaussian distribution. We use cluster robust standard errors, clustered at the training level. We measure the effect of our training by assessing the change in provider attitudes, knowledge and practice at follow-up, compared to baseline, controlling for provider type and training year.

Results

About 10% of the providers attending the training are physicians, 10% are physician assistants, half are registered nurses, while 18% are health educators and 6% are social workers. On average, the providers are 37 years and almost all are women (91%). Half identify as white, 14% as black, 11% as Hispanic, 10% as Asian/Pacific Islander, and 13% as other race/ethnicity.

Preliminary findings show that providers are significantly more likely to believe that IUDs are safe as a result of the training (aOR: 1.30 [95 CI: 1.01, 1.67]). Providers are also far more likely to report sufficient experience to counsel on IUDs at follow-up than at baseline (aOR: 3.43 [95 CI: 2.49l 4.75]) and implants (aOR: 2.45 [95 CI: 1.82, 3.31]) (Table 1a). Provider knowledge about the wide range of patients who are eligible for IUDs and implants increased significantly. The knowledge scale measuring patient eligibility for IUDs, including adolescents and nulliparous women, increased from 0.87 at baseline to 0.92 at follow-up (*p<0.01)*. Knowledge of patient eligibility for IUDs and implants by medical conditions also increased from 0.85 at baseline to 0.89 at follow-up (*p=0.02)*.

We find evidence of improvements in provision skills and practice as well. Among the smaller set of physicians and advance practice clinicians who can place these methods (n=184), training participants were significantly more likely to feel comfortable inserting the new levonorgestrel Skyla device (aOR: 1.75 [95 CI: 1.03 – 2.96]), the Liletta (aOR: 1.90 [95 CI: 1.45 – 2.53]) and the implant (aOR: 1.42 [95 CI: 0.99 – 2.02] p<0.10). After the training, providers were also more likely to offer IUD insertion in the same visit (aOR: 1.81 [95 CI: .98 - 3.33], p<0.10) and implant insertion in the same visit (aOR: 1.43 [95 CI: 1.17 - 1.76]) (Table 1b).

Conclusion

This study highlights the successful dissemination of an intervention post-randomized trial to a new context, SBHCs. In this implementation science phase, results showed that offering an evidence-based training on IUDs and implants to providers at SBHCs significantly improves provider knowledge and attitudes about LARC, as well as skills and provision

practices. Our findings demonstrate that offering provider training on LARC to SBHCs is an effective way to ensure that adolescents will have access to comprehensive reproductive health services and be able to prevent pregnancy until they are ready. Especially since the current policy environment is limiting access to contraceptive services and sexual education for adolescents, it is critical to identify effective ways to reach this key population in need of comprehensive reproductive services. These results show that this provider training on LARC is an effective approach that can be scaled and easily replicated across SBHCs to enable adolescents, including low-income and uninsured ones, to meet their reproductive needs.

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Citations

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Table 1a: Attitudes and knowledge about IUDs and implants among SBHC providers

	Believes IUD is safe		Believes implant is safe		Has enough experience to counsel on IUD		Has enough experience to counsel on implant		IUD eligibility		IUD and implant eligibility with medical conditions	
	aOR	CI	aOR	CI	aOR	CI	aOR	CI	Coefficient	CI	Coefficient	CI
Post-training	1.30**	[1.01 - 1.67]	1.30	[0.91 - 1.86]	3.44***	[2.49 - 4.75]	2.45***	[1.82 -3.31]	0.05***	[0.02 - 0.09]	0.06**	[0.01 - 0.11]
Provider Type (reference category is non-clinician)												
Clinician	3.47***	[1.77 - 6.84]	3.12***	[1.47 - 6.61]	4.15***	[1.90 - 9.05]	4.54***	[1.71 -12.08]	0.08***	[0.03 - 0.13]	0.17***	[0.10 - 0.25]
Training year (reference year 2015-2016)												
2016-2017	3.22**	[1.02 - 10.18]	2.68*	[0.90 - 8.04]	0.87	[0.16 - 4.74]	0.75	[0.13 -4.29]	-0.00	[-0.07 - 0.06]	0.13*	[-0.02 - 0.27]
2017-2018	2.50*	[0.91 - 6.87]	2.01*	[0.88 - 4.59]	0.98	[0.39 - 2.48]	0.82	[0.28 -2.42]	-0.01	[-0.07 - 0.06]	0.13*	[-0.00 - 0.26]
Constant	0.43*	[0.16 - 1.16]	0.55	[0.25 - 1.24]	1.21	[0.48 - 3.04]	1.47	[0.59 -3.66]	0.82***	[0.79 - 0.86]	0.63***	[0.46 - 0.80]
Observations	352		351		343		346		333		278	
# of trainings	7		7		7		7		7		7	

Table 1b: Practices related to IUDs and implants among SBHC providers

	IUD insertion requires 1 visit		Implant insertion requires 1 visit		Clinician is comfortable inserting… Skyla IUD		Liletta IUD		Nexplanon Implant	
	aOR	CI	aOR	CI	aOR	CI	aOR	CI	aOR	CI
Post-training	1.81*	[.98 -3.33]	1.43***	[1.17 - 1.76]	1.75**	[1.03 - 2.96]	1.90***	[1.43 - 2.53]	1.42*	[0.99 - 2.02]
Provider Type (reference category is non-clinician)										
Clinician	0.91	[0.43 1.93]	1.12	[0.63 - 2.01]						
Training year (reference year 2015-2016)										
2016-2017	1.33*	[1.00 -1.77]	1.77***	[1.31 - 2.38]	6.08***	[1.58 - 23.34]	6.66***	[2.76 - 16.05]	3.35	[0.59 - 18.90]
2017-2018	1.13	[0.60 -2.13]	2.30***	[1.36 - 3.89]	1.67	[0.56 - 5.02]	2.00*	[0.95 - 4.23]	2.18	[0.47 - 10.18]
Constant	0.22***	[0.12 -0.41]	0.26***	[0.18 - 0.36]	0.11***	[0.04 - 0.31]	0.07***	[0.03 - 0.14]	0.45	[0.11 - 1.80]
Observations	286		285		183		192		184	
# of trainings	7		7		7		7		7	

*** p<0.01, ** p<0.05, * p<0.1

Notes: Robust standard errors are clustered at the training level. The knowledge of IUD eligibility scale uses 6 variables to identify knowledge about eligibility to receive IUD. The knowledge of IUD and implant eligibility with medical conditions scale uses 12 variables to identify knowledge of patient eligibility for IUD or implant with medical conditions.
aOR=Adjusted odds ratio, CI = confidence interval