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Provision of DMPA-SC for self-administration in different practice settings during the COVID-19 pandemic: data from providers across the United States

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Abstract

Objectives: Depot medroxyprogesterone acetate-subcutaneous (DMPA-SC) can be prescribed through telemedicine and self-administered, but data about availability particularly during COVID-19 pandemic are limited. This study assessed changes in availability of DMPA-SC for self-administration during the pandemic.

Study Design: This study used survey data from a convenience sample of US providers engaged in contraceptive care and participating in a CME-accredited contraceptive training (April 2020-April 2022; n=849). Measures included availability of DMPA-SC for self-administration pre-pandemic and during the pandemic and use of telemedicine. We used Poisson regression models and cluster robust errors by clinic, adjusting for region, time of survey, and clinic size, to assess clinic availability of DMPA-SC for self-administration by practice setting.

Results: Compared to pre-pandemic (4%), availability of DMPA-SC for self-administration increased significantly during the pandemic (14%) (adjusted prevalence ratios [aPR] 3.43, 95% CI [2.43-4.85]). During the pandemic, independent abortion clinics were more likely to offer DMPA-

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Declarations

JK is a consultant for Afaxys pharmaceutical LLC

Ethics approval and consent to participate

All study materials were approved by UCSF Institutional Review Board. All study participants provided informed consent for study participation.

Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests.

SC for self-administration compared to primary care clinics (aPR 2.44, 95% CI [1.10-5.41]). Clinics receiving Title X funds were also more likely to provide DMPA-SC for self-administration during the pandemic compared to other clinics (aPR 2.32, 95% CI [1.57-3.43]), and more likely to offer DMPA-SC for self-administration through telemedicine (aPR 2.35, 95% CI [1.52-3.63]). Compared to the early pandemic (April-September 2022), telemedicine access to DMPA-SC for self-administration was highest during the later pandemic time-period (October 2021-April 2022) (aPR 2.10, 95% CI [1.06-4.17]).

Conclusions: Availability of DMPA-SC for self-administration significantly increased during the pandemic with differences by practice setting and Title X funding. However, overall method availability remains persistently low.

Keywords

contraception; DMPA-SC; COVID-19; provider training; injectables

1. Introduction

The injectable contraceptive depot medroxyprogesterone acetate-subcutaneous (DMPA-SC) provides certain advantages over the original intramuscular formulation, including ease of self-administration and prescription through telemedicine (1–3). Its relevance has grown during the COVID-19 pandemic given fewer on-site clinic services (4–7) and the CDC’s recommendation that it be offered as an at-home option (8). A self-administered option among a broad range of contraceptive methods may improve contraceptive continuation and enhance equity in access given the increase of clinic closures and contraceptive access challenges reported after the fall of *Roe v. Wade* (9–11).

Substantial evidence shows patients find self-administration of DMPA-SC to be safe, effective, feasible, and acceptable, with high rates of continuation (1, 2, 12–15). While DMPA-SC was approved for pregnancy prevention by the FDA in 2004, the label is approved for administration health care professionals only. Following the requests for expansion of DMPA-SC for self-administration during the pandemic, and the wealth of studies showing the safety and efficacy of self-administration of DMPA-SC, the CDC and other national organizations added into their guidelines recommendations that DMPA-SC for self-administration be included as an additional option for contraception (8, 16). Patients have noted that benefits of DMPA-SC for self-administration include privacy and accessibility, reducing in-person clinic visits, and visit-related time, transportation costs and scheduling challenges (1–3, 17). Features of the method include increased autonomy and may improve health equity as DMPA-SC for self-administration may be appealing to individuals who may have experienced pressure to use long-acting methods (18, 19) and who prefer methods allowing for control over when and where to use them. For example, the literature reports that Black and Latina patients prefer methods allowing for more patient control, including the ability to choose whether and when to use them (20).

Despite these benefits, data on provider familiarity with DMPA-SC for self-administration and US method availability remain limited, with most of the focus on low-resource global settings (21–23). As U.S. family planning and abortion providers become more scrutinized,

less resourced, or even shuttered post-*Dobbs*, primary care and youth-serving facilities are likely to become more important sources of contraceptive provision (24, 25). Provider training in these practice settings is important to ensure availability of DMPA-SC for self-administration as part of the range of methods offered to patients.

To address this evidence gap in the current US context, we surveyed healthcare providers (including clinicians and clinic staff) engaged in contraceptive education and service provision in a range of practice settings across the country. We also assessed method availability by whether the facility was supported by Title X funds, a public contraceptive funding program (26, 27). To help inform healthcare provider training efforts and meet patient preferences, we examined the integration of DMPA-SC for self-administration and through telemedicine visits, before and during the COVID-19 pandemic.

2. Materials and methods

2.1. Study design and setting

We administered a cross-sectional survey (April 2020- April 2022) among a convenience sample of US providers who participated in a University of California San Francisco (UCSF) Continuing Medical Education (CME) contraceptive course from 2015-2022. The course is designed to improve providers' capacity to offer high-quality, comprehensive contraceptive services through evidence-based training and patient-centered counseling approaches (28). Starting in April 2020, providers were sent an online survey to collect data on clinic and provider characteristics, contraceptive provision including DMPA-SQ for self-administration before and during the pandemic, and telemedicine use for contraceptive care. The email sent to providers included a description of the study; clicking on the survey link served as implied consent for participation. Providers who had participated in the training course pre-pandemic (before March 2020 [n=308]) did not receive content on self-administered DMPA-SC; whereas those trained during the pandemic (April 2020-April 2022 [n=541]), received this content. Data from providers trained during the pandemic were collected *pre*-training; therefore, their outcomes would not be affected by training content.

Study eligibility included participation in the UCSF CME-accredited course and currently providing contraceptive clinic care, counseling, or education. We recruited study respondents who practice in various practice settings, including primary care and family planning clinics, public health departments, college and school-based health centers, independent abortion care clinics, and outpatient clinics in hospital settings. Respondents include physicians, advanced practice clinicians, nurses, and clinic staff including health educators, social workers, and medical assistants.

We sent a total of 3,998 surveys to providers, including 3-5 reminder emails. To calculate the survey response rate, we follow the methods proposed by the American Association for Public Opinion Research (29). A total of 1,256 providers responded to the survey. Among them, 1,076 were eligible to participate. The providers who were not eligible for the survey (n=180, 14%) were not currently providing contraceptive care. A total of 2,742 providers did not respond to our survey. Among this sample, we can assume a similar rate of ineligible individuals (14%, n=384). From the total number of surveys sent (n=3,998), we therefore

removed 180 who responded and were ineligible and 384 who did not respond, leaving a target sample of 3,434. Our response rate is thus estimated at 31% (1,076 respondents out of 3,434 to eligible participants). Since providers completed the survey at different times during the COVID-19 pandemic, we assumed that providers completing the survey early in the pandemic (e.g., April 2020) would have had less time to integrate services such as DMPA-SC for self-administration whereas those who completed the survey later in the pandemic (e.g., April 2021) would have had more time to integrate these methods into contraceptive services. We created a dummy variable representing a 6-month time period across the 2-year time period of the study to adjust for these potential differences in timing of survey completion. The time periods included: April-September 2020, October 2020-March 2021, April-September 2021, and October 2021-April 2022. Respondents who completed the survey were entered into a drawing to win one of five \$250 Amazon gift cards. The study was approved by the UCSF Institutional Review Board.

2.2. Study measures

The primary outcomes included measures of clinic availability of DMPA-SC for self-administration 1) pre-pandemic, 2) during the pandemic, and 3) through telemedicine visits. While providers could offer DMPA-SC but not for self-administration, the focus of this analysis and the wording of survey questions was specifically focused on provision of DMPA-SC for self-administration. Additional outcomes included provider familiarity with DMPA-SC for self-administration, and telehealth contraceptive visit use (phone and/or video visit), all measured as binary variables. Respondents unfamiliar with DMPA-SC for self-administration were coded 0 (No) for method provision.

The main independent variable of interest was practice setting, with primary care and health department clinics as the reference category. We hypothesized that family planning and abortion sites would be more readily able to integrate availability of DMPA-SC for self-administration due to specialization in reproductive health. We also assessed whether the practice received Title X funding (1 if “Yes”, and 0 if “No” or “Don’t know”). We hypothesized that clinics received Title X funding may be more able to integrate DMPA-SC for self-administration because prior research has shown greater practice innovation in these clinics (30, 31). A categorical variable was included to account for time-period of survey completion. Other covariates were region (categorized as Northeast, Midwest, Southeast, Southwest, and West), and clinic size (categorized as small [<750 annual contraceptive clients] or large [≥ 750 annual contraceptive clients] with threshold based on median sample value).

2.3. Statistical analyses

We presented descriptive statistics comparing study outcomes by practice setting and Title X funding. We then presented multivariable regression analyses using generalized linear models with log link and Poisson distribution, interpreting estimated incidence rate ratios as prevalence ratios. Analyses were conducted at the provider level, to capture differences in familiarity with DMPA-SC for self-administration by provider and provision, including within clinics. Our sample included a total of 503 clinics, with median number of providers by clinic equal to 1. For both the descriptive statistics and regression analyses, we used

cluster robust standard errors, clustered by clinic, to account for potential similarities of participants by clinic.

We also included covariate adjustment for region, time of survey, and clinic size. Our first regressions compared changes in provision of DMPA-SC for self-administration before versus during the pandemic, adjusting for covariates. The next regressions assessed provision of DMPA-SC for self-administration by clinic characteristics pre-pandemic and during pandemic.

We restricted the analytical sample to those who responded to our study outcome: survey questions about DMPA-SC for self-administration (n=849). Our analysis comparing respondents who were missing outcome data (n=849 non-missing versus n=227 missing on outcome data) showed no differences by provider gender, race/ethnicity, provider type, practice setting, Title X clinic funding, or patient volume. Missing outcome data were more likely among providers in the Northeast and Southwest. Missing outcome data were more likely among providers completing the survey in October 2020-March 2021 and in April 2021-September 2021. Among the 149 providers not reporting clinic size, we used dummy variable imputation to avoid excluding them (32).

3. Results

3.1. Descriptive characteristics

The study sample consisted of physicians (18%), physician assistants (5%) nurse practitioners and certified nurse midwives (37%), registered nurses (14%), medical/nurse assistants (9%), health educators and social workers (10%), clinic managers and others (7%) (Table 1). Almost one-third of providers worked in primary care or health department settings (28%), while another third in youth/college or school-based health centers (35%), 23% in family planning clinics, 5% in abortion care clinics, and 10% in outpatient hospital and other settings. One-third of provider's clinics (34%) received Title X funding. The sample spanned all U.S regions, including 42 states, Washington D.C., and 3 territories.¹ Almost two-thirds of the providers (57%) completed the survey during the early-pandemic period, one-third completed the survey during the middle part of the pandemic (28%; October 2020-March 2021), and 15% completed the survey during the later part of the pandemic (5% during April 2021-September 2021 and 10% during October 2021-April 2022).

3.2. Provision of DMPA-SC for self-administration during COVID-19 pandemic

Forty-four percent of providers were familiar with DMPA-SC for self-administration (Table 2a), but only 4% offered this method for self-administration pre-pandemic and 13% during the pandemic. Those in family planning and independent abortion clinics were more familiar with DMPA-SC for self-administration compared to those in primary care settings (52% and 56% vs. 35%, p=0.011).

¹US states included: AK, AZ, AR, CA, CO, CT, DE, FL, GA, HI, ID, IL, KS, KY, LA, ME, MD, MA, MI, MN, MS, MO, MT, NE, NJ, NM, NY, NC, OH, OK, OR, PA, RI, SC, TN, TX, UT, VA, WA, WV, WI, WY. US territories included GU, MP and PR.

Two-thirds of providers increased telehealth offerings during the pandemic (64%). Nearly all providers offering DMPA-SC for self-administration during the pandemic (13%) reported its availability for self-administration through telehealth visits (11%). While availability of DMPA-SC for self-administration did not differ by Title X funding pre-pandemic (Table 2b), providers at clinics receiving Title X funding were far more likely to offer DMPA-SC for self-administration (22 vs. 9%, p -value <0.001) and offer DMPA-SC for self-administration via telehealth (19% vs. 7%, $p = 0.001$) during the pandemic.

3.3. Pandemic provision of DMPA-SC for self-administration and variation by clinic characteristics

Multivariable regression results confirmed that provision of DMPA-SC for self-administration significantly increased during the pandemic. Providers were far more likely to provide DMPA-SC for self-administration during the pandemic than pre-pandemic (adjusted prevalence ratios [aPR] 3.43, 95% CI [2.43-4.85]) (Table 3). Analyses also confirmed differences by practice setting. Providers working at independent abortion care clinics were significantly more likely to offer DMPA-SC for self-administration than those in primary care centers both pre-pandemic (adjusted relative risks [aRR] 5.31, 95% CI [1.70-16.54]), and during the pandemic (aPR 2.44, 95% CI [1.10-5.41]) (Table 3). There were no significant differences among providers in other practice settings. Regression-adjusted means showed that 4% of providers offered DMPA-SC for self-administration pre-pandemic compared to 14% during the pandemic. Furthermore, during the pandemic, 32% of providers at independent abortion care clinics were offering DMPA-SC for self-administration, compared to 16% in family planning clinics and 13% in primary care settings (Figure 1).

While there were no significant differences by Title X funding pre-pandemic, providers at Title X clinics during the pandemic were far more likely to offer DMPA-SC for self-administration than their counterparts (22% vs. 9%) (aPR 2.32, 95% CI [1.57-3.43]; Table 3) (Figure 1).

Results also showed that providers at clinics receiving Title X funding were more likely than other providers to offer DMPA-SC for self-administration through telemedicine (aPR 2.35, 95% CI [1.52-3.63]; Table 3). Compared to early in the pandemic (April-September 2022), provision of DMPA-SC for self-administration through telemedicine was highest during the later pandemic time-period (October 2021-April 2022) (aPR 2.10, 95% CI [1.06-4.17]). Table 4 also showed that overall contraceptive provision by telemedicine increased over time during the pandemic, Oct 2020-March 2021 (aPR 1.20, 95% CI [1.05 - 1.38]), April 2021-Sept 2021 (aPR 1.60, 95% CI [1.29 - 1.98]), Oct 2021-Apr 2022 (aPR 1.29, 95% CI [1.04 - 1.59]), as well as in clinics receiving Title X funding (aPR 1.15, 95% CI [1.02 - 1.31]).

Table 4 multivariable results showed providers in family planning-, youth-, and independent abortion care clinics were all significantly more likely to be familiar with DMPA-SC for self-administration compared to providers in primary care settings (aPR 1.42, 95% CI [1.15-1.77], aPR 1.40, 95% CI [1.11-1.77], aPR 1.66, 95% CI [1.16-2.37]). There were no

significant differences in provider familiarity with DMPA-SC for self-administration by Title X funding.

4. Discussion

This study showed that DMPA-SC provision for self-administration increased significantly during the COVID-19 pandemic, with US providers becoming 3.4 times more likely to provide it (8), increasing from 4% pre-pandemic to 14% during the pandemic. Providers interviewed later in the pandemic were even more likely to offer this method through telemedicine versus on-site or not at all, compared to providers surveyed earlier in the pandemic. Expanding provider awareness and training as well as patient awareness could increase accessibility. Importantly, coverage of DMPA-SC for self-administration by Title X, public, and private insurance could all increase accessibility. Additionally, pharmacies are a crucial outlet for method availability, and not all pharmacies have supplies or pharmacists ready to dispense the method (33, 34). Despite increased availability during the pandemic and recommendations by the WHO, CDC and SFP (8, 16, 35), most providers in our convenience sample still do not offer the method to their patients.

Regarding differences by practice setting, only those in independent abortion care clinics were more likely to offer DMPA-SC for self-administration before and during the pandemic compared to primary care settings. Despite providers in family planning and youth-serving clinics having more familiarity, they were no more likely to be providing DMPA-SC for self-administration compared to providers in primary care. The significant lack of both provider familiarity (44%) and provision (14%) of DMPA-SA for self-administration in our study highlights that several barriers exist in integrating provision of this method across different practice settings. The findings suggest a need for training programs across different practice settings to improve provider familiarity. Our findings help to fill a gap in the US literature on DMPA-SC provider familiarity (21–23). However, our findings also suggest that other important operational and policy barriers, beyond provider knowledge of methods exist, potentially related to cost, billing, insurance and pharmacy access (33, 34) and suggest the need for interventions to target these barriers.

We identified DMPA-SC for self-administration availability differences by Title X funding, which supports a network of over 4,000 service sites serving over 1.5 million family planning clients annually, including individuals with generally low access to healthcare (26, 27). Title X clinics were also more likely to offer curbside contraceptive services (4). It is especially important for Title X clinics to offer a wide range of methods, including self-administered contraceptives, to support reproductive autonomy and preferences in historically marginalized patient populations.

Strengths of this study include the varied practice settings in all US regions, assessment of Title X coverage, and comparisons across pandemic periods. The sample, however, was not a probability sample, and providers interested in taking contraceptive training courses may be more likely to offer high-quality care. While the data span the initial two-years of the COVID-19 pandemic, surveys were disproportionately administered early in the

pandemic. Covariate adjustments were used to reflect changes in provision over time as both telemedicine and DMPA-SC became easier to integrate into service provision.

Initiation of DMPA-SC for self-administration without in-person clinic visits became vital during COVID-19 pandemic and is even more relevant during the post-*Dobbs* era with patients seeking out-of-state services (36) and needing “on-the-go” methods without additional barriers. Few studies have examined the increased availability of DMPA-SC via telemedicine during the pandemic. A recent nationally representative study among US obstetricians and gynecologists found few providers (approximately 3%) were offering DMPA-SC for self-administration via telemedicine early in the pandemic (5). Our findings further confirm that providers were rarely offering DMPA-SC via telemedicine and greater availability in clinics receiving Title X funding perhaps demonstrates early innovation. Although contraceptive provision via telemedicine, including for DMPA-SC for self-administration, increased dramatically during the pandemic (4), this approach is still not widespread (37–39) likely due to lack of patient and provider awareness, provider perceptions that patients are not interested, and lack of clinic workflows for injection instruction.

The post-*Dobbs* era has entailed closure of abortion clinics in a large number of states (40) with associated increases in travel and waiting time for services (36). With patient surges anticipated in abortion clinics nearby restrictive states, it is especially timely to train providers in other clinic settings to offer the full range of contraceptives. With previous studies showing significant patient interest and successful first injection of DMPA-SC [3], integration of this method may help serve those patients challenged by repeat clinic visits.

5. Conclusion

This study suggests some providers were successfully able to expand provision of DMPA-SC for self-administration during the COVID-19 pandemic, although most have yet to integrate this option. Providers at Title X clinics and independent abortion care clinics stand out as early adaptors. Given post-*Dobbs* access considerations, expanded provider training is crucial to increase method availability through telemedicine, and across practice settings especially in primary care, family planning, and youth-serving clinics. Provider capacity to offer the full range of contraceptive options, including DMPA-SC for self-administration, remains essential so patients can choose methods matching their preferences and reproductive needs.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

List of abbreviations:

CDC	Centers for Disease Control and Prevention
CME	Continuing Medical Education
DMPA-SC	depot medroxyprogesterone acetate-subcutaneous
FDA	Food and Drug Administration

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Implications:

Despite increased availability of DMPA-SC for self-administration among US contraceptive providers during the COVID-19 pandemic, there remains a need to train providers, educate patients, and remove barriers to ensure broader availability of this method across different practice settings.

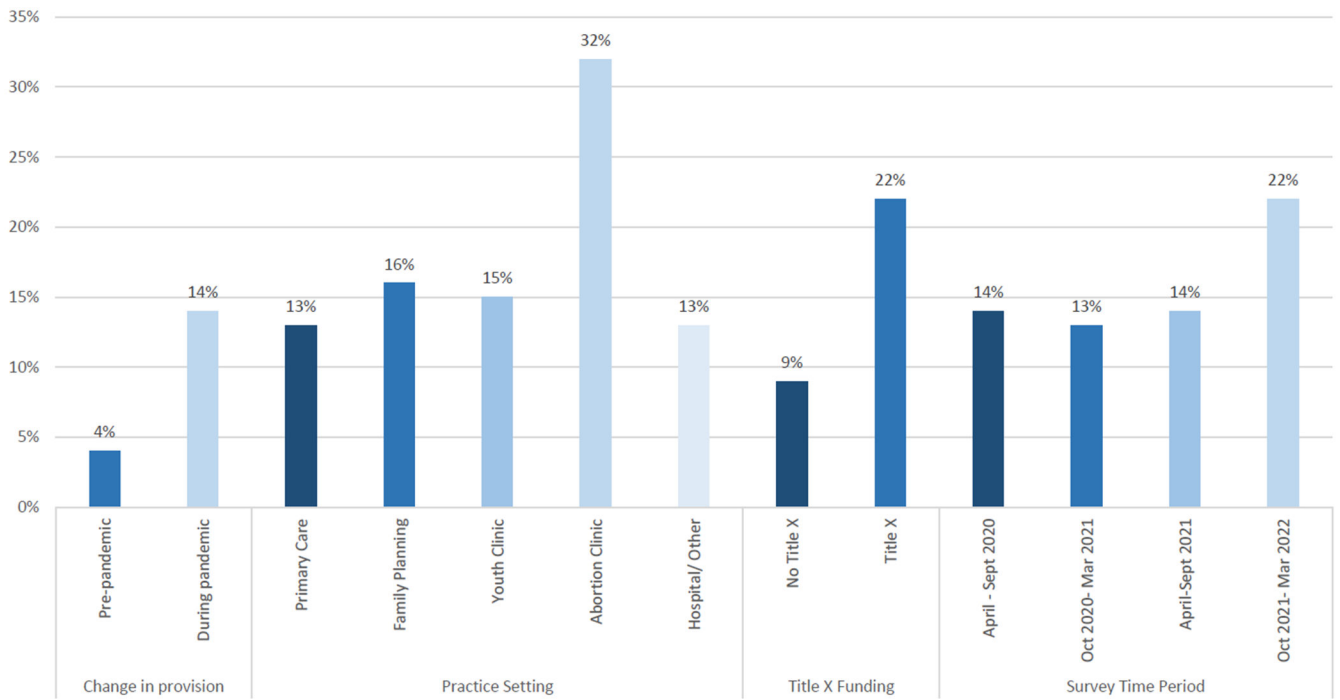


Figure 1.
 DMPA-SC provision during pandemic by characteristics among US providers in 2020-2022
 Note: Results represent predictive margins adjusting for practice setting, title X funding, region, clinic size and time of survey

Table 1.

Summary characteristics of contraceptive providers in United States in 2020-2022 (n=849)

	n	%
Sex, n (%)		
Female	744	94
Male	34	4
Other/Non-binary	13	2
Race/ethnicity, n (%)		
White	461	59
Hispanic/Latinx	118	15
Black	108	14
Asian/Pacific Islander	67	9
Native American	19	2
Other	10	1
Provider type, n (%)		
Physician	147	18
Physician Assistant	41	5
Nurse Practitioner/CNM	312	37
Registered Nurse	117	14
Other Nurse/Medical Assistant	77	9
Health Educator/Social Worker	86	10
Manager/Director	21	3
Administrative Staff	32	4
Medical/ Nursing Student	4	1
Practice setting, n (%)		
Primary care/Health department	234	28
Family planning	190	23
Youth/School-based health center/College clinic	299	35
Independent abortion care clinics	39	5
Hospital/Other	83	10
Clinic receives Title X funding		
Yes	264	34
No	292	37
Does not know	224	29
Clinic size (contraceptive client volume per year), n (%)		
Smaller clinic (volume <750)	330	47
Larger clinic (volume >=750)	370	53
Region, n (%)		
Northeast	139	16
Midwest	92	11
Southeast	209	25
West	203	24

	n	%
Southwest	200	24
Date at survey		
April – Sept 2020	483	57
Oct 2020 – Mar 2021	240	28
April – Sept 2021	45	5
Oct 2021 – Mar 2022	81	10

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DMPA-SC provision and telehealth visits by practice setting among US providers in 2020-2022

Table 2a.

	Primary care / health department	Family planning clinics	Youth/School-based health center/College clinic	Independent abortion clinics	Hospitals/ other practice settings	Overall	Test of joint significance p-value
Total	n (%) 234 (28%)	n (%) 190 (22%)	n (%) 299 (35%)	n (%) 39 (5%)	n (%) 83 (10%)	845 (100%)	
DMPA-SC provision							
Familiar with DMPA-SC for self-administration**	83 (35%)	99 (52%)	138 (46%)	22 (56%)	33 (40%)	375 (44%)	p=0.011
Offering DMPA-SC prior to COVID-19 pandemic‡	7 (3%)	7 (4%)	10 (3%)	5 (13%)	3 (4%)	32 (4%)	p=0.091
Offering DMPA-SC during COVID-19 pandemic	27 (12%)	31 (16%)	34 (11%)	9 (23%)	8 (10%)	109 (13%)	p=0.141
Increased telehealth visits in COVID-19 pandemic****	159 (69%)	89 (47%)	189 (68%)	17 (53%)	47 (73%)	502 (64%)	p=0.002
Offering DMPA-SC via telehealth visits	23 (10%)	28 (15%)	30 (10%)	3 (8%)	7 (9%)	91 (11%)	p=0.419

Notes: Last column represents results from tests of joint significance after modelling the outcome by the parameter of interest (practice setting) using generalized linear models with clustered standard errors by training.

‡ Abortion clinics were significantly more likely to offer DMPA-SC prior to the pandemic (13%) than primary care (3%) (p=0.054).

DMPA-SC provision and telehealth visits by Title X funding among US providers in 2020-2022

Table 2b.

Sample by Title X funding	Clinic receives Title X funding	Clinic does not receive Title X funding/Does not know	Test of joint significance p-value
DMPA-SC provision	264 (34%)	516 (66%)	
Familiar with DMPA-SC for self-administration	126 (48%)	226 (44%)	p=0.409
Offering DMPA-SC prior to COVID-19 pandemic	9 (3%)	21 (4%)	p=0.633
Offering DMPA-SC during COVID-19 pandemic	58 (22%)	46 (9%)	p=0.0001
Increased telehealth visits during COVID-19 pandemic	167 (67%)	303 (63%)	p=0.294
Offering DMPA-SC via telehealth visits	50 (19%)	36 (7%)	p=0.0001

Notes: Last column represents results from tests of joint significance after modelling the outcome by the parameter of interest (Title X funding) using generalized linear models with clustered standard errors by training.

Table 3. Provision of DMPA-SQ for self-administration prior to and during COVID-19 pandemic among US providers in 2020-2022

VARIABLES	Provision of DMPA-SC (pre-post)			Provision of DMPA-SC prior to COVID-19 pandemic			Provision of DMPA-SC during COVID-19 pandemic			Provision of DMPA-SC through telehealth		
	APR	95% CI	APR	95% CI	APR	95% CI	APR	95% CI	APR	95% CI	APR	95% CI
Change in provision of DMPA-SC												
Pre-COVID-19 pandemic (<i>Ref group</i>)	--	--	--	--	--	--	--	--	--	--	--	--
During COVID-19 pandemic	3.43 ^{***}	[2.43 - 4.85]	--	--	--	--	--	--	--	--	--	--
Practice setting												
Primary care/health departments centers (<i>Ref group</i>)	--	--	--	--	--	--	--	--	--	--	--	--
Family planning clinics	1.23	[0.74 - 2.04]	1.26	[0.40 - 3.95]	1.22	[0.77 - 1.92]	1.31	[0.81 - 2.13]				
Youth clinics/SBHCs/college health	1.14	[0.69 - 1.86]	1.13	[0.44 - 2.89]	1.17	[0.73 - 1.85]	1.18	[0.72 - 1.95]				
Abortion clinics	3.11 ^{**}	[1.32 - 7.35]	5.31 ^{**}	[1.70 - 16.54]	2.44 [*]	[1.10 - 5.41]	0.86	[0.28 - 2.59]				
Hospitals/other practice settings	0.91	[0.40 - 2.09]	0.84	[0.19 - 3.71]	0.96	[0.44 - 2.07]	0.96	[0.43 - 2.17]				
Clinic does not receive Title X funding / doesn't know (<i>Ref group</i>)--	--	--	--	--	--	--	--	--				
Clinic receives Title X funding	1.95 ^{***}	[1.32 - 2.88]	1.00	[0.47 - 2.16]	2.32 ^{***}	[1.57 - 3.43]	2.35 ^{***}	[1.52 - 3.63]				
Region												
Northeast (<i>Ref group</i>)	1.22	[0.52 - 2.87]	--	--	--	--	--	--				
Midwest	1.60	[0.89 - 2.85]	1.93	[0.36 - 10.41]	1.16	[0.48 - 2.80]	1.33	[0.52 - 3.39]				
Southeast	1.27	[0.64 - 2.49]	1.29	[0.26 - 6.34]	1.75	[0.94 - 3.24]	1.85	[0.92 - 3.71]				
West	0.92	[0.44 - 1.92]	3.02	[0.71 - 12.88]	1.04	[0.52 - 2.07]	1.02	[0.49 - 2.14]				
Southwest	1.22	[0.52 - 2.87]	2.27	[0.53 - 9.75]	0.72	[0.32 - 1.60]	0.43	[0.16 - 1.15]				
Clinic size												
Smaller clinic (< 750 contraceptive clients/year)	--	--	--	--	--	--	--	--				
Larger clinic (>= 750 contraceptive clients/year)	1.01	[0.68 - 1.50]	1.64	[0.74 - 3.63]	0.90	[0.62 - 1.32]	1.05	[0.71 - 1.55]				
Time of survey												
April 2020 – Sept 2020 (<i>Ref group</i>)	--	--	--	--	--	--	--	--				
Oct 2020 – March 2021	1.06	[0.67 - 1.68]	1.47	[0.72 - 2.97]	0.96	[0.61 - 1.52]	0.80	[0.48 - 1.35]				
April 2021 – Sept 2021	1.42	[0.51 - 3.96]	2.73	[0.80 - 9.31]	1.06	[0.39 - 2.89]	0.66	[0.16 - 2.68]				

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VARIABLES	Provision of DMPA-SC (pre-post)		Provision of DMPA-SC prior to COVID-19 pandemic		Provision of DMPA-SC during COVID-19 pandemic		Provision of DMPA-SC through telehealth	
	APR	95% CI	APR	95% CI	APR	95% CI	APR	95% CI
Oct 2021 – Apr 2022	1.34	[0.77 - 2.34]	0.41	[0.05 - 3.28]	1.67	[0.95 - 2.96]	2.10*	[1.06 - 4.17]
Constant	0.02***	[0.01 - 0.04]	0.01***	[0.00 - 0.06]	0.07***	[0.04 - 0.15]	0.06***	[0.03 - 0.12]
Observations	1,510		755		755		754	

p<0.001,

**
p<0.01,

*
p<0.05;

APR = adjusted prevalence ratios

Table 4. Familiarity with DMPA-SQ and availability of contraceptive visits via telehealth among US providers in 2020-2022

VARIABLES	Familiarity with DMPA-SQ for self-administration		Increased contraceptive visits via telehealth	
	APR	95% CI	APR	95% CI
Practice setting				
Primary care/health departments centers (<i>Ref group</i>)	--	--	--	--
Family planning clinics	1.42**	[1.15 - 1.77]	0.71***	[0.58 - 0.85]
Youth clinics/SBHCS/college health	1.40**	[1.11 - 1.77]	0.96	[0.83 - 1.10]
Abortion clinics	1.66**	[1.16 - 2.37]	0.74	[0.48 - 1.14]
Hospitals/other practice settings	1.15	[0.77 - 1.72]	1.02	[0.85 - 1.22]
Title X funding				
Clinic does not receive Title X funding / doesn't know (<i>Ref group</i>)	--	--	--	--
Clinic receives Title X funding	1.02	[0.87 - 1.21]	1.15*	[1.02 - 1.31]
Region				
Northeast (<i>Ref group</i>)	--	--	--	--
Midwest	1.12	[0.79 - 1.58]	1.11	[0.91 - 1.35]
Southeast	1.41**	[1.10 - 1.81]	0.86	[0.69 - 1.08]
West	1.04	[0.78 - 1.38]	0.91	[0.74 - 1.11]
Southwest	0.75	[0.55 - 1.02]	0.90	[0.74 - 1.09]
Clinic size				
Smaller clinic (<750 contraceptive clients)	--	--	--	--
Larger clinic (>=750 contraceptive clients)	1.11	[0.94 - 1.31]	1.26***	[1.11 - 1.43]
Time of survey				
April 2020 – Sept 2020 (<i>Ref group</i>)	--	--	--	--
Oct 2020 – March 2021	0.84	[0.71 - 1.01]	1.20**	[1.05 - 1.38]
April 2021 – Sept 2021	0.90	[0.60 - 1.35]	1.60***	[1.29 - 1.98]
Oct 2021 – April 2022	0.83	[0.61 - 1.15]	1.29*	[1.04 - 1.59]
Constant	0.35***	[0.25 - 0.47]	0.59***	[0.48 - 0.72]
Observations	755		711	

APR = adjusted prevalence ratios

* p<0.05;

** p<0.01;

*** p<0.001;

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