



Accessibility of federally funded family planning services in South Carolina and Alabama

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ABSTRACT

This study operationalized the five dimensions of health care access in the context of contraceptive service provision and used this framework to examine access to contraceptive care at health department (HD) (Title X funded) and federally qualified health center (FQHC) (primarily non-Title X funded) clinics in South Carolina and Alabama. A cross-sectional survey was conducted in 2017/18 that assessed clinic-level characteristics, policies, and practices related to contraceptive provision. Provision of different contraceptive methods was examined between clinic types. Survey items were mapped to the dimensions of access and internal consistency for each scale was tested with Cronbach's alpha. Scores of access were developed and differences by clinic type were evaluated with an independent *t*-test. The overall response rate was 68.3% and the sample included 235 clinics. HDs (96.9%) were significantly more likely to provide IUDs and/or Impants on-site than FQHCs (37.4%) ($P < 0.0001$). Scales with the highest consistency were Availability: Clinical Policy (24 items) ($\alpha = 0.892$) and Acceptability (43 items) ($\alpha = 0.834$). HDs had higher access scores than FQHCs for the Availability: Clinical Policy scale (0.58, 95% CL 0.55, 0.61) vs (0.29, 95% CL 0.25, 0.33) and Affordability: Administrative Policy scale (0.86, 95% CL 0.83, 0.90) vs (0.47, 95% CL 0.41, 0.53). FQHCs had higher access scores than HDs for Affordability: Insurance Policy (0.78, 95% CL 0.72, 0.84) vs (0.56, 95% CL 0.53, 0.59). These findings highlight strengths and gaps in contraceptive care access. Future studies must examine the impact of each dimension of access on clinic-level contraceptive utilization.

1. Introduction

Publicly funded contraceptive services help individuals obtain the reproductive health care that they need and want and avoid unintended pregnancies (Frost et al., 2016), yet a full range of contraceptive method options may not be equally accessible for all people (Potter et al., 2019). As such, investigation of health systems and policies that promote equitable access to contraceptive care is warranted (Potter et al., 2019).

The federal Title X Family Planning program provides preventive sexual and reproductive health services to men, women and teens through a network of safety-net clinics. The program prioritizes services for low-income individuals and offers subsidies through a sliding scale fee (Oglesby, 2014). In South Carolina (SC) and Alabama (AL), health departments (HD) are the sole Title X recipient, while federally qualified

health centers (FQHC), also contraceptive service providers, are funded by the Health Resources and Services Administration (HRSA) and do not receive Title X funding (Office of Population Title, 2017). Yet, the allocation of Title X funding is nuanced (Frost et al., 2017). HD systems receiving Title X funds often establish contractual relationships with FQHCs to ensure contraceptive service availability in targeted jurisdictions. Although FQHCs may independently apply for Title X funding, clinics without dedicated family planning programs have challenges meeting programmatic requirements such as for counseling and outreach (Wood et al., 2013).

The role of FQHCs in providing contraceptive care has increased as more women seek services at non-Title X clinics (Frost et al., 2016) due to Medicaid expansion programs and the Affordable Care Act (ACA) (Wood et al., 2014). Twenty-eight percent of the patient population at

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FQHC clinics are women of childbearing age, which is about 24% of all low-income women of child-bearing age in the U.S. (Wood et al., 2013). Title X and non-Title X clinics differ in their inherent capacity to provide services, including the types of health insurance contracts accepted (Zolna et al., 2018) and the on-site availability of contraceptive methods (Wood et al., 2014). Additionally, Title X preempts restrictive state laws ensuring confidential care for minors and delineates comprehensive clinical practice guidelines, both of which may vary at non-Title X providers (Wood et al., 2013). These differences in funding mechanisms have systemic implications for access to comprehensive contraceptive care. Additionally, in SC and AL, other types of publicly funded family planning clinics, including Planned Parenthood, are not widely available.

While access to contraceptive care is complex and may be defined in many ways, the five dimensions of health care access provide a framework to examine distinct components, namely: availability (supply and demand), accessibility (location), accommodation (organization of resources), acceptability (appropriateness), and affordability (cost) (Penchansky and Thomas, 1981; Gulzar, 1999). The five dimensions are interrelated and may contribute to utilization of services, patient satisfaction, and practice patterns (Penchansky and Thomas, 1981; Gulzar, 1999). These dimensions emphasize specific areas of fit between patients and the system (Thomas and Penchansky, 1984). Components of access have been largely examined at the individual level and less well studied at the clinic-level. This study provides a novel application of the access framework to contraceptive service provision at the clinic-level in order to inform our understanding of the breadth of access through clinic-level policies, practices, and resources.

Examining access to contraceptive care at family planning clinics in SC and AL is particularly relevant. SC and AL are among the four states with the lowest prevalence of pregnancies that resulted in live births that were wanted at the time of pregnancy or sooner (47%) (Kost et al., 2014). Both states have similar distributions of contraceptive method use, reproductive health outcomes, and demographic characteristics among women of reproductive age (Hale et al., 2020). While AL and SC did not expand Medicaid under the ACA and continue to rely on publicly funded clinics to help meet the family planning needs of their low-income and uninsured populations, both states extended Medicaid coverage for family planning services only. AL utilizes a Family Planning Waiver to expand coverage for family planning services to women up to 146% of the federal poverty level, whereas SC utilizes a State Plan Amendment to expand coverage for family planning services to women up to 194% of the federal poverty level.

Given the importance of federally funded clinics in providing contraceptive services, it is critical to more fully understand clinic-level policies, practices and resources through the five dimensions of access. This study operationalized each dimension of access as it relates to contraceptive service provision and examined access across HD (Title X) and FQHC (primarily non-Title X) clinics in SC and AL.

2. Methods

2.1. Data and study population

The study used a cross-sectional survey that assessed clinic characteristics and contraceptive provision at the individual clinic-level among federally funded family planning clinics in SC and AL.

Clinics were identified from listings on the state health department and primary health care association websites and via clinic lists provided directly from health departments and primary health care associations in both states. Every clinic on the list was called to verify address information, clinic administrator's name, and eligibility. HD and FQHC clinics that offered any contraceptive service, including contraceptive counseling and/or any birth control method in 2016 were eligible.

The survey instrument measured clinic characteristics including

organizational resources and staffing patterns, staff training related to contraceptive provision, scope of clinical services provided, contraceptive policies and practices, community outreach, patient characteristics and insurance mix, and administrative (billing and collection) practices. The instrument was developed at East Tennessee State University (ETSU) and piloted by clinic administrators in Tennessee and SC, revised and finalized. When the survey was designed, specific clinical characteristics, policies, and procedures were captured as part of a larger evaluation. Additionally, a robust definition of access that would capture the complexities of access was warranted. The five dimensions of access framework was part of the initial survey construction and was reassessed during the analysis phase through item mapping and confirmatory factor analysis.

Data were collected in 2017/18 using a mixed mode approach utilizing paper and web surveys. The Tailored Design Method was used to determine the timing of each round of survey mailings based on the arc of responses from the previous mailing (Dillman et al., 2014). The initial mailing was personalized and sent to clinic administrators identified during the screening process with a pre-incentive valued at \$50. Each clinic administrator was sent a survey up to four times and contacted by email, USPS, FedEx, telephone and in-person follow-up to maximize response rates. The study was approved by the ETSU Institutional Review Board.

2.2. Clinic characteristics

We examined clinic characteristics by state and clinic type (HD or FQHC), including clinic location, staff employed, services offered, and contraceptive method provision, based on an affirmative response to on-site provision of IUDs and implants, short-acting hormonal, and barrier/other methods. Urban/rural classification of clinics was based on Rural-Urban Commuting Area Codes.

2.3. Survey item mapping and internal consistency

The five dimensions of health care access provided a framework to conceptualize the constructs of contraceptive access through clinical and administrative policies (Penchansky and Thomas, 1981; Gulzar, 1999; Levesque et al., 2013). *Availability* referred to the relationship between supply and demand, and included items measuring clinical capacity to provide services, the expertise and training of clinical staff, on-site stocking of contraceptive methods, and availability of administrative support for clinical provision, such as staffing capacity and electronic health record infrastructure. *Accessibility* described the relationship between health care services and patients, and included factors such as distance from public transportation and rural or urban location. *Accommodation* referred to factors of convenience, such as whether clinics had evening or weekend hours, walk-in appointments, and average clinic wait-times. *Acceptability* referred to clinic policy pertaining to cultural competency, language resources, and policy specific to serving patient sub-populations. *Affordability* included clinic policies pertaining to the capacity to bill various types of health insurance and to train administrative staff on billing procedures.

Survey items were mapped to the five dimensions of access based on the definitions of each dimension (Gulzar, 1999) and previous studies (Table 1). After the initial mapping by author GO, authors KB, MS, and LV reviewed and arrived at consensus around the mapping of survey items. Then confirmatory factor analysis was conducted to ensure that survey items mapped to each dimension loaded onto the same construct.

During the item mapping process, distinct themes emerged within the *Availability* and *Affordability* constructs. Each of these constructs was subsequently divided into two subscales. *Availability*: Clinical Policy scale included items pertaining to clinical provision and the *Availability*: Administrative Policy scale focused on administrative support for clinical services and infrastructure. *Affordability*: Insurance Policy scale included measures regarding insurance contracts and the *Affordability*:

Table 1
Survey Items Mapped to each Scale of Access.

Scale of Access	Items
<i>Availability - Clinical Policy</i>	Training on contraceptive counseling is part of new employee orientation for clinicians and/or providers Training staff for how to best serve the needs of each of 12 populations (12 items) ^a Clinic offered training for patient centered contraceptive counseling in the last 3 years Clinic offered training for IUD insertion and removal in the last 3 years Clinic offered training for same-day IUD insertion/removal in the last 3 years Clinic offered training for Implant insertion and removal in the last 3 years Clinic offered training for same-day Implant insertion/removal in the last 3 years Clinic offered training for Implant/IUD counseling in the last 3 years Clinic offered training for injection provision in the last 3 years Implants kept on-site IUDs kept on-site Injectable kept on-site Dispenses any contraceptive method on-site
<i>Availability - Administrative Policy</i>	Has electronic medical record/electronic health record Trained interpreter on-site Easy to recruit family planning providers Easy to retain family planning providers Adequate staffing capacity for family planning services Administrative training for contraceptive counseling Clinic efficiency trainings offered Training for billing and coding of contraceptive services Training for revenue cycle management Stocking/inventory trainings offered
<i>Accessibility</i>	Clinic located within ½ mile from public transportation Clinic located near other clinics that offer contraceptive services Clinic located in an urban environment
<i>Accommodation</i>	Clinic has evening hours of operation Clinic has weekend hours of operation In-clinic wait time to see provider less than 29 minutes Clinic offers same-day appointments for new patients Clinic offers same-day appointments for established patients Patients receives initial supply of oral contraceptives at clinic and refills at clinic or at an outside pharmacy Clinic dispenses oral contraceptives via Quick Start Method Oral contraceptives were [always or often] dispenses via Quick State protocol Clinic usually offers same-day Implant insertion Clinic [always or often] offers same-day Implant insertion Clinic usually offers same-day IUD insertion Clinic [always or often] offers same-day IUD insertion Clinic usually offers same-day injectable provision
<i>Acceptability</i>	Patient intake forms or education materials are available in languages other than English Cultural competency trainings offered Onsite ^a programs are offered for each of 12 populations (12 items) ^a Offsite programs are offered for each of 12 populations (12 items) ^a Outreach programs are offered for each of 12 populations (12 items) ^a IUD/Implant provision is available for adolescents IUD/Implant provision is available for young adults IUD/ Implant provision is available for nulliparous women Confidentiality law disclosure for adolescents Adolescents are made aware of the legal age of consent
<i>Affordability – Insurance Policy</i>	Clinic is registered for 340-B drug pricing program

Table 1 (continued)

Scale of Access	Items
	Clinic has contract with Medicaid plans Clinic has contract with Family Planning Medicaid Clinic has contract with Medicaid for maternity care Clinic has contract with private insurance plans Clinic has contract with private insurance plans for contraceptive services only Clinic has contract with private plans for maternity or primary care Clinic bills through Family Planning Medicaid
<i>Affordability - Administrative Policy</i>	Medicaid application is available for patients to complete at the clinic Staff assist patients to complete the Medicaid application Staff submit the Medicaid application on behalf of the patient Staff receive training to bill for services through Medicaid Staff receive training to bill for services through Family Planning Medicaid Staff receive training to bill for services through private health insurance

^a Adolescents; men; intellectually disabled; physically disabled; substance abuse; homeless; non-English speakers; immigrants; minors; LGBTQ; sex workers; sex trafficking victims.

Administrative Policy scale focused on administrative trainings for billing and support for Medicaid applications. In total, seven scales of access were tested for internal consistency.

All survey items included within each scale were coded as a dichotomous variable and to ensure positive responses were in the direction toward access (i.e., 0 for lack of access and 1 for access). Three scales (Availability: Administrative Policies; Accommodation; Acceptability) contained some survey items with ordinal response options that were collapsed into dichotomous responses so as to maintain consistent bound across all scales of access. Recognizing that collapsing ordinal variables into dichotomous measures limits variability and nuance in these scales, we conducted a sensitivity analysis creating these three scales without dichotomization to assess the impact of this dichotomization on our conclusions.

The reliability of items within each of the seven scales was assessed using Cronbach’s alpha coefficient. Values of 0.60 or greater were considered acceptable, 0.70 and above was considered good, 0.80 and above was better, and 0.90 and above was best (Loewenthal, 2001).

2.4. Scores of access

Scores of access were computed for each scale of access. Responses to all items within each scale were summed and divided by the total number of items within each scale. Each score had a possible value between 0 and 1, with 1 indicating the highest level of access and 0 indicating the lowest level of access.

2.5. Statistical analysis

Differences between HD and FQHC clinics and between states for categorical variables were determined by Chi-square tests of independence (or Fisher’s exact test where categories contained less than five responses), and for access scores, by independent t-tests. Significance was set at P < 0.05.

After testing various methods for data imputation for categorical variables, missing values were imputed with zero. This was a conservative approach to address missing data and did not skew the data toward or away from access. A sensitivity analysis showed no difference in results between data imputation and no imputation. Statistical analyses were performed using SAS (Version 9.4. SAS Institute Inc., Cary, NC, USA) and IBM SPSS Statistics for Windows (Version 25.0. Armonk, NY:

IBM Corp).

3. Results

3.1. Clinic characteristics

Table 2 presents the clinic characteristics overall and by clinic type. Total sample size was 235 clinics including 128 HD and 107 FQHC clinics. In SC, 57 were HD clinics and 68 were FQHC clinics. In AL, 71 were HD clinics and 39 were FQHC clinics. The overall response rate was 68.3% (94.8% among HDs and 51.2% among FQHCs). Among responding clinics, more HD clinics were in a rural location (49.2%)

Table 2
Clinic Characteristics by Clinic Type.

	HD N (%) ¹	FQHC N (%) ¹	Total N (%) ¹		
Sample size					
Total respondents	128 (54.5)	107 (45.5)	235 (100.0)		
South Carolina	57 (45.6)	68 (54.5)	125 (53.2)		
Alabama	71 (64.6)	39 (35.5)	110 (46.8)		
	HD N (%) ²	FQHC N (%) ²	Total N (%) ²		P
Location of clinic					
Rural	63 (49.2)	39 (36.5)	102 (43.4)		0.05 *
Not located within ½ mile of public transportation	90 (70.3)	73 (68.2)	163 (69.4)		0.73
Staff employed at clinic					
Health educators	28 (21.9)	49 (45.8)	77 (32.8)		0.0001 ***
Registered nurses	126 (98.4)	69 (64.5)	195 (83.0)		0.0001 ***
NP/CNM/PA	108 (84.4)	103 (96.3)	211 (89.8)		0.0027 **
Physicians (MD, DO)	10 (7.8)	90 (84.1)	100 (42.6)		< 0.0001 ***
Pharmacists	4 (3.1)	43 (40.2)	47 (20.0)		< 0.0001 ***
Types of services offered at clinic					
Primary care services	3 (2.3)	97 (90.7)	100 (42.6)		< 0.0001 ***
Women, Infant, and Child (WIC)	123 (96.1)	22 (20.6)	145 (61.7)		< 0.0001 ***
Prenatal services	3 (2.3)	28 (26.2)	31 (13.2)		< 0.0001 ***
Well-child visits	15 (11.7)	83 (77.6)	98 (41.7)		< 0.0001 ***
Immunizations	120 (93.8)	88 (82.2)	208 (88.5)		0.006 **
STD/STI testing/treatment	125 (97.7)	96 (89.7)	221 (94.0)		0.01 **
Other services	51 (39.8)	12 (11.2)	63 (26.8)		< 0.0001 ***
Types of contraceptive methods provided on-site at clinic					
IUD and/or Implant On-site	124 (96.9)	40 (37.4)	164 (69.8)		< 0.0001 ***
Any short acting hormonal method on-site ⁺	128 (100.0)	98 (91.6)	226 (96.2)		0.0007 ***
Any barrier/other method on-site	128 (100.0)	80 (74.8)	208 (88.5)		< 0.0001 ***

* P < 0.05

** P < 0.01

*** P < 0.001

¹ Indicates the overall sample size of the study. HD = health department; FQHC = federally qualified health center.

² These results indicate the total number of clinics with an affirmative response to each item. Responses do not include all clinics due to missing data. The percentage indicates the percent of clinics within clinic type that indicated an affirmative response.

compared to FQHC clinics (36.5%) (p = 0.05).

Among SC clinics, 42.7% of responding clinics were located in a rural area compared to 30.3% of non-responding clinics. Similarly, in AL, 59.1% of responding clinics were in a rural area compared to 46.4% of non-responding clinics. Differences between responding and non-responding clinics were not statistically significant in either state (SC p-value = 0.23; AL p-value = 0.12).

Larger proportions of FQHC clinics staffed physicians (84.1%) (p < 0.0001), pharmacists (40.2%) (p < 0.0001), and health educators (45.8%) (p = 0.0001) than HD clinics. HD clinics primarily staffed registered nurses (98.4%) and advanced practice clinicians (nurse practitioners/certified nurse midwives/physician assistants) (84.4%). FQHC clinics were less likely to staff registered nurses (64.5%) compared to HD clinics (p = 0.0001) but more likely to staff advanced practice clinicians (96.3%) (p = 0.0027).

Clinics offered a range of preventive and primary care services. The majority of clinics offered STI testing and treatment (94%), immunizations (88.5%), and Women, Infant and Child (WIC) services (61.7%). Less than half of clinics also offered primary care services (42.6%) and well-child visits (41.7%). HD clinics were more likely than FQHCs to offer WIC services, immunizations, and STI testing and treatment, whereas FQHC clinics were more likely than HD clinics to offer primary care services, prenatal services and well-child visits.

Regarding contraceptive methods provided, FQHC clinics were significantly less likely to offer IUDs or implants (37.4%) compared to HD clinics (96.9%) (p < 0.0001), short-acting hormonal methods (91.6%) compared to HD clinics (100.0%) (p = 0.0007), and barrier/other methods (74.8%) compared to HD clinics (100.0%) (p < 0.0001).

No substantive differences were found in clinic characteristics between states (Appendix 1).

3.2. Internal consistency for scales of access

Items listed in Table 1 were mapped to 7 access scales. Table 3 shows the number of items per scale and the corresponding Cronbach's alpha. All scales had a Cronbach's alpha ranging between 0.607 and 0.892 except the Accessibility scale. The Cronbach's alpha coefficient for accessibility was low, likely due to the small number (N = 3) of items included within this construct.

3.3. Scores of access between HD and FQHC clinics

Table 4 shows the average scores of access overall and by clinic type for each scale. The average score for the Availability: Clinical Policy scale was 0.45 (95% CL 0.42, 0.48), and twice as high for HD than FQHC clinics: 0.58 (95% CL 0.55, 0.61) compared to 0.29 (95% CL 0.25, 0.33) (p < 0.0001). The average score for the Availability: Administrative Policy scale was 0.53 (95% CL 0.50, 0.56) and the same for both clinic types. The average scores for the Accommodation, Acceptability, and Affordability: Administrative Policy scales were 0.29 (95% CL 0.27, 0.32), 0.19 (95% CL 0.18, 0.21), and 0.69 (0.65, 0.73), respectively, and

Table 3
Internal Consistency for each Scale of Access.

Scale and subscales	Number of clinics	Number of items	Cronbach's α
Availability			
Clinical Policy Subscale	235	24	0.892
Administrative Policy Subscale	235	10	0.641
Accessibility	235	3	0.314
Accommodation	235	13	0.607
Acceptability	235	43	0.834
Affordability			
Insurance Policy Subscale	235	8	0.802
Administrative Policy Subscale	235	6	0.802

Table 4
Scores of Access by Clinic Type.

Scale	Clinic Type	Mean Score (CL)	P-value
Availability: Clinical Policy	HD	0.58 (0.55, 0.61)	<0.0001
	FQHC	0.29 (0.25, 0.33)	
	Total	0.45 (0.42, 0.48)	
Availability: Administrative Policy	HD	0.53 (0.49, 0.57)	0.8628
	FQHC	0.53 (0.48, 0.57)	
	Total	0.53 (0.50, 0.56)	
Accommodation	HD	0.36 (0.34, 0.39)	<0.0001
	FQHC	0.21 (0.18, 0.24)	
	Total	0.29 (0.27, 0.32)	
Acceptability	HD	0.23 (0.21, 0.24)	<0.0001
	FQHC	0.16 (0.13, 0.18)	
	Total	0.19 (0.18, 0.21)	
Affordability: Insurance Policy	HD	0.56 (0.53, 0.59)	<0.0001
	FQHC	0.78 (0.72, 0.84)	
	Total	0.66 (0.62, 0.69)	
Affordability: Administrative Policy	HD	0.86 (0.83, 0.90)	<0.0001
	FQHC	0.47 (0.41, 0.53)	
	Total	0.69 (0.65, 0.73)	

greater for HD than FQHC clinics, 0.36 (95% CL 0.34, 0.39) vs 0.21 (95% CL 0.18, 0.24) ($p < 0.0001$), 0.23 (95% CL 0.21, 0.24) vs 0.16 (95% CL 0.13, 0.18) ($p < 0.0001$), and 0.86 (95% CL 0.83, 0.90) vs 0.47 (95% CL 0.41, 0.53) ($p < 0.0001$), respectively. The average score for the affordability: insurance policy subscale was 0.66 (95% CL 0.62, 0.69) and lower for HD than FQHC clinics: 0.56 (95% CL 0.53, 0.59) vs 0.78 (95% CL 0.72, 0.84) ($p < 0.0001$). Due to the low internal consistency, scores for the Accessibility scale were not compared.

3.4. Sensitivity analyses

We conducted a sensitivity analysis in which component ordinal variables for the Availability: Administrative Policy, Accommodation, and Acceptability scales were not dichotomized. Incorporating these variables with their ordinal coding structure resulted in Chronbach's alpha coefficients and differences in scale values across clinic type that were similar to the scale constructed with dichotomized values (see Appendix 2). However, the scales using the ordinal variables were no longer bound between 0 and 1, making comparisons across scales more difficult.

4. Discussion

This study found variation in on-site contraceptive method provision among publicly funded clinics in SC and AL and identified opportunities for improving the delivery of contraceptive services across several dimensions of access. While almost all clinics provided at least one short-acting hormonal method, nearly 1 in 3 clinics did not offer IUDs or implants on-site. On-site provision was assessed as such, because referrals are utilized by FQHC clinics more readily than HD clinics, thus on-site provision consistently captures the method availability component of access across clinic type. This finding has implications for the provision of the full range of contraceptive methods and therefore the ability of people, particularly low-income and uninsured people, to obtain the contraceptive method that best fits their needs and lifestyle.

We observed differences in clinic characteristics, including staffing patterns and primary care service provision, between HD and FQHC clinics in SC and AL, as expected based on national level findings (Frost et al., 2012). Typical of the health care home model, FQHC clinics provided primary care services and were more likely to employ physicians, pharmacists and health educators compared to HD clinics. As Title X recipients, HD clinics were more likely to offer all contraceptive methods on-site. As primary care providers, the most common organizational approach among FQHCs is to provide family planning services in an integrated service delivery model, where family planning services are incorporated within a full scope of primary care. This offers

important advantages for reducing the fragmentation in women's health care. However, while referral networks among FQHC clinics may increase access to contraceptive services beyond what is offered at the clinic site, referrals may create additional barriers for patients, such as transportation, and require additional staff including case managers, outreach workers or referral coordinators (Goldberg et al., 2015). Nonetheless, FQHC clinics are regarded for their quality of care and often have high patient satisfaction and retention (Wood et al., 2013).

This study was unique in the comprehensiveness of access-related items measured in the survey and the aggregation of individual survey items into higher-level constructs. The summary scores produced effectively described the publicly funded contraceptive care landscape in SC and AL for each dimension of access, both overall and by clinic type. Examining contraceptive care through the dimensions of access sheds light on areas of strength and opportunities for improving contraceptive service provision among HD and FQHC clinics.

The affordability scales had the highest access scores, which affirmed existing clinic policies ensuring the affordability of services. FQHC clinics scored higher on the affordability: insurance policy subscale than HD clinics, suggesting that Title X clinics are not constrained by the insurance contracts accepted at the clinic (Boudreaux et al., 2019). Many patients who seek care at Title X clinics are uninsured, and of patients who have health insurance, most do not use health insurance for the visit because insurance may not cover specific services or due to confidentiality concerns (Kavanaugh et al., 2018). Previous findings indicated that HD clinics mainly reported not having health insurance contracts in place, commonly due to low reimbursement rates (Zolna et al., 2018).

While affordability is a key feature of federally funded clinics, the availability of services is critical for providing a full range of contraceptive services. HD clinics had a higher score on the availability: clinical policy subscale than FQHC clinics, likely due to their ability to stockpile contraceptive methods, including IUDs and implants, as well as their ability to provide training for their staff on contraceptive counseling and method provision, including for IUD and implant placement/removal, which requires specialized clinical skills. Our finding is consistent with previous studies that found Title X clinics more likely to offer a greater range of contraceptive methods on-site (Frost et al., 2012; de Bocanegra et al., 2014), whereas FQHC clinics that do not receive Title X funding are less likely to offer IUDs and implants on-site (Bornstein et al., 2018; Beeson et al., 2014). Similarly, staff training and specialty are associated with the availability of IUDs and implants on-site (Bornstein et al., 2018; Beeson et al., 2014; Thompson et al., 2016). Variability in contraceptive service offerings is far greater among FQHC clinics that do not receive Title X funding, suggesting the program impacts more than availability of devices, and extends into critical areas including training and clinical service guidelines (Wood et al., 2014).

Gaps in access across clinic type were found within the Accommodation and Acceptability scales. Accommodation focused on the organization of resources, and the average score was low for both clinic types, suggesting opportunities for expanding operating hours, same-day appointments, and same-visit provision of contraceptives. HD clinics had a higher score than FQHC clinics on the accommodation scale. While Title X clinics are typically less likely to offer expanded hours of operation for clinical services compared to non-Title X clinics (Frost et al., 2012), our scale also included services more likely to be provided by Title X clinics such as same-day method provision and the quick start protocol for oral contraceptives (Frost et al., 2012).

As to the Acceptability scale, the average score across both clinic types was 0.19, indicating an opportunity to increase the appropriateness of services for various populations such as tailored programs, outreach efforts, translation services, and confidentiality practices. Clinics offering specialized family planning services are more likely to provide outreach, but for federally funded clinics to accomplish their mission of providing services to diverse populations, clinics must increase their efforts (Frost et al., 2012).

Importantly, while this study focused on two states that can benefit from expanded access to contraceptive services, findings have implications for the national landscape of contraceptive care among publicly funded clinics. The conceptual and analytic approaches piloted and utilized can be replicated to other states to assess the multi-dimensional components of access to contraceptive care. With additional study and validation of this measurement tool, we hope to apply these scales to assess the granularity of contraceptive care access in other settings cross-sectionally, to regional comparisons, or to monitor on-going trends in access so as to evaluate federal or state-level policies or programs.

5. Limitations

This study is not without weaknesses. The sample size was limited by the finite number of HD and FQHC clinics offering contraceptive services in SC and AL. We maximized the sample size through strategic data imputation methodology. Despite a high overall response rate, the response rate for FQHC clinics, particularly in AL, was lower than for HD clinics. Non-response bias toward rural representation is possible due to an over-representation of rural clinics in the sample.

While the accessibility scale had a low Cronbach’s alpha, accessibility cannot be mitigated through clinic-level policy and is primarily an environmental factor. There were three survey items that mapped to the accessibility domain, contributing to a low Cronbach’s alpha. Future surveys should include additional items to measure a breadth of transportation resources and travel time, distance, and travel cost to and from the clinics for patients (Gulzar, 1999).

Additionally, each component variable, included within the scales of access analyses, was dichotomized. Though some nuance may be lost in dichotomizing response options within each scale, a sensitivity analysis showed that results were largely unchanged. Additionally, through dichotomizing the responses, the bounds for all scales were consistent, allowing our team to assess results across all scales of access.

Appendix 1. . Clinic characteristics by state

	SC N (%) ¹	AL N (%) ¹	Total N (%) ¹	P
<i>Location of clinic</i>				
Rural	48 (38.4)	54 (49.1)	102 (43.4)	0.10
Not located within ½ mile of public transportation	85 (68.0)	78 (70.9)	163 (69.4)	0.63
<i>Staff employed at clinic</i>				
Health educators	45 (36.0)	32 (29.1)	77 (32.8)	0.26
Registered nurses	103 (82.4)	92 (83.6)	195 (83.0)	0.80
NP/CNM/PA	113 (90.4)	98 (89.1)	211 (89.8)	0.74
Physicians (MD, DO)	56 (44.8)	44 (40.0)	100 (42.6)	0.46
Pharmacists	35 (28.0)	12 (10.9)	47 (20.0)	0.001 ***
<i>Types of services offered at clinic</i>				
Primary care services	58 (46.4)	42 (38.2)	100 (42.6)	0.20
Women, Infant, and Child (WIC)	67 (53.6)	78 (70.9)	145 (61.7)	0.007
Prenatal services	17 (13.6)	14 (12.7)	31 (13.2)	0.84
Well-child visits	50 (40.0)	48 (43.6)	98 (41.7)	0.57
Immunizations	109 (87.2)	99 (90.0)	208 (88.5)	0.50
STD/STI testing/treatment	117 (93.6)	104 (94.6)	221 (94.0)	0.76
Other services	21 (16.8)	42 (38.2)	63 (26.8)	0.0002 ***
<i>Types of contraceptive methods provided on-site at clinic</i>				
IUD and/or Implant On-site	89 (71.2)	75 (68.2)	164 (69.8)	0.62
Any short acting hormonal method on-site ⁺	118 (94.4)	108 (98.2)	226 (96.2)	0.18
Any barrier/other method on-site	112 (89.6)	96 (87.3)	208 (88.5)	0.58

¹These results indicate the total number of clinics with an affirmative response to each item. Responses do not include all clinics due to missing data. The percentage indicates the percent of clinics within clinic type that indicated an affirmative response.

* P < 0.05
 ** P < 0.01
 *** P < 0.001

6. Implications for practice, policy, and research

While SC and AL were unaffected by the “domestic gag rule”, which eliminated or reduced funding for Title X clinics in several states nationally (Zolna et al., 2020), these findings have implications for federally funded contraceptive care nationally. Given the uncertainty of Title X funding and the effects of inflation, it is important for HDs to expand contracts with insurance providers so as to increase billing options. Additionally, stocking methods on-site increases timely access to the full range of contraceptive options. As such, funding for all safety-net clinics to pre-purchase and stock IUDs and implants on-site is recommended so as to accommodate same-visit placement. As FQHCs serve an increasingly fundamental role in providing contraceptive services within the health care safety-net, it is important to consider the breadth of HRSA and other funding mechanisms, such as state-level initiatives, to support capacity-building and contraceptive care training opportunities. Professional associations representing medical providers and health centers are encouraged to support clinical training opportunities and to administer best practice guidelines for contraceptive service provision at FQHCs. Research is needed to examine the impact of dimensions of access on contraceptive method utilization at the clinic-level in order to further inform understanding of how each dimension influences method choice and associated behavior.

CRedit authorship contribution statement

Kate E Beatty: Conceptualization, Methodology, Supervision, Writing - review & editing, Investigation. **Michael G Smith:** Methodology, Writing - review & editing. **Amal J Khoury:** Writing - review & editing, Funding acquisition, Supervision. **Shimin Zheng:** Formal analysis, Software, Writing - review & editing. **Liane M Ventura:** Project administration, Writing - original draft, Formal analysis. **Glory Okwori:** Formal analysis, Writing - review & editing.

Appendix 2. . Sensitivity analysis comparing results for dichotomized subscales to results where ordinal coding is retained for component variables.

Subscale	Survey Item with Original Ordinal Coding	Cronbach's Alpha: Dichotomized Variables	Mean Score with Dichotomized Variables		Cronbach's Alpha: Ordinal Values	Mean Score with Ordinal Values			
Availability: Administrative Policy	Q13: Trained interpreters	0.641	HD	0.53 (0.49, 0.57)	P-value	0.539	HD	0.92 (0.86, 0.98)	P-value
	Q21: Recruit providers		FQHC	0.53 (0.48, 0.57)	0.86		FQHC	0.99 (0.93, 1.07)	0.09
	Q22: Retain providers		Total	0.53 (0.50, 0.56)			Total	0.96 (0.91, 1.00)	
Accommodation	Q23: Staff capacity	0.607	HD	0.36 (0.34, 0.39)	P-value	0.644	HD	0.78 (0.74, 0.82)	P-value
	Q56: Oral contraception dispensing		FQHC	0.21 (0.18, 0.24)	<0.0001		FQHC	0.39 (0.34, 0.45)	<0.0001
	Q61a: Quick Start protocol		Total	0.29 (0.27, 0.32)			Total	0.60 (0.56, 0.64)	
Acceptability	Q61i: Same-day implant insertion	0.834	HD	0.23 (0.21, 0.24)	P-value	0.760	HD	0.47 (0.45, 0.49)	P-value
	Q61e: IUD or implant provision to adolescents		FQHC	0.16 (0.13, 0.18)	<0.0001		FQHC	0.29 (0.26, 0.32)	<0.0001
	Q61f: IUD or implant provision to young adults		Total	0.19 (0.18, 0.21)			Total	0.39 (0.37, 0.41)	
	Q61g: IUD provided to nulliparous women								
	Q61o: Confidentiality law disclosure for adolescents Q61p: Adolescents made aware of legal age of consent								

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