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Provision of HIV pre-exposure prophylaxis to female patients seeking family planning services in the United States

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Abstract

Objective: We conducted a scoping review to assess barriers to and facilitators of integrating HIV pre-exposure prophylaxis (PrEP) and family planning (FP) at the patient, provider, and implementation levels, and to identify gaps in knowledge.

Methods: We conducted a search of five bibliographic databases from database inception to March 2022: PubMed, CINAHL, Embase, Web of Science and Scopus. Two reviewers screened

abstracts and full texts to determine eligibility based on *a priori* inclusion and exclusion criteria. We categorized studies by their relevance to patient, provider, and implementation barriers, and extracted data based on pre-specified elements.

Results: Our initial search strategy yielded 1151 results, and 34 publications were included. Barriers to PrEP implementation in family planning settings included low PrEP knowledge among patients, hesitance to take PrEP due to perceived stigma, decreased willingness of providers unfamiliar with PrEP to prescribe PrEP, and limited financial and staffing resources that make prescribing and monitoring PrEP difficult. Facilitators included robust training for providers, stigma reduction efforts, leadership engagement, and increased resources specifically in settings with processes in place that ease the process of prescribing and monitoring PrEP.

Conclusions: Advances in implementation strategy development, stigma reduction, and drug development will be essential to reinforcing PrEP care in family planning settings and thereby reducing the incidence of HIV in women through highly effective pharmacologic HIV prevention methods.

Keywords: Pre-exposure prophylaxis, Family Planning, Contraception, Human Immunodeficiency Virus

Introduction

Cisgender women account for nearly 20% of new human immunodeficiency virus (HIV) infections in the United States (US), but comprise only 7% of patients receiving pre-exposure prophylaxis (PrEP). [1–6]. Only 10% of cisgender women eligible for PrEP were prescribed PrEP in 2020 compared to 28% of cisgender men eligible for PrEP who were prescribed PrEP.[6] Implementation efforts to increase PrEP uptake have the potential to decrease new HIV infections in cisgender women in the US. Tenofovir-based PrEP is highly effective in females and reduced HIV infection by up to 85% among individuals adhering to PrEP, according to three randomized controlled trials.[7] Newly approved injectable cabotegravir for PrEP is even more effective in this population.[8] HIV PrEP is recommended by the Centers for Disease Control and Prevention (CDC) and the American College of Obstetricians and Gynecologists (ACOG) for women at high risk for acquiring HIV which could include the following: participating in sexual engagements in high HIV-prevalence areas/social networks, inconsistent or limited condom use, history of sexually transmitted infections, exchanging sex for commodities, services or other remuneration, use of intravenous drugs, alcohol dependence, incarceration, or sex partners who have HIV or other characteristics above.[9–11]

The CDC and Office of Population Affairs identify HIV prevention as a core family planning service.[12] Prior research has demonstrated that women expect HIV prevention counseling during family planning visits, and 40% of women exclusively access healthcare through sexual and reproductive care visits.[13] A significant proportion of patients seeking abortion are also interested in PrEP.[14] Integration of PrEP care into the family planning setting has the potential to increase awareness and uptake of the medication. With nearly 1 million patients a year seeking induced abortion and 1.5 million people attending Title X family planning clinics in 2020,[15,16] and over 90% of women aged 15-44 who had one sexual encounter used some form of effective contraception such as birth control pills, injectable methods, contraceptive patches, or intrauterine devices in their lifetimes,[17] this is a way to reach many women. While family planning clinics offer a unique opportunity for women to receive counseling and PrEP prescriptions,[9,13,18,19] implementation barriers include limited knowledge among family planning providers regarding PrEP, worries regarding cost of PrEP, and insurance policies in regards to PrEP.[13,20–22]

The PrEP care cascade includes screening for HIV risk, educating patients about PrEP, assessing candidacy via labs, prescribing PrEP, and providing ongoing monitoring.[23] In this research, we conducted a scoping review of the literature to assess the breadth of evidence pertaining to individual-level, provider-level, and practice-level barriers and facilitators to the PrEP care cascade in the family planning setting, and to identify gaps in the knowledge base.

Methods

Protocol and registration

We publicly registered the protocol for this scoping review with Open Science Framework (DOI: 10.17605/OSF.IO/25ZPU).

Eligibility criteria

We included both qualitative and quantitative articles or abstracts in English, with participants including patients, providers, staff or clinics, assessing factors associated with PrEP care in a family planning setting in the United States.

Search and screening strategy

We conducted a search of five bibliographic databases from database inception to March 2022: Pubmed, CINAHL, Embase, Web of Science and Scopus (Table 1). Two reviewers independently screened literature search results and selected abstracts of articles meeting the inclusion criteria based on the title and abstract. We completed full text screening with the remaining literature results to confirm eligibility. We uploaded the full text to Covidence[24] for

data extraction from the text. For each manuscript, one reviewer extracted the data into a standardized form, and a second reviewed and validated this extraction. We pre-specified the following data extraction elements: study aim, study design, funding sources, potential conflicts of interest, population, inclusion and exclusion criteria, and demographic characteristics of the study population. Manuscripts were categorized as addressing patient, provider, and/or implementation factors related to PrEP provision in the family planning setting. For studies that focused on patients or providers, we categorized findings into personal/individual factors, structural factors, or other factors related to PrEP care. For studies that assessed implementation, we categorized findings into implementation outcomes of feasibility, reach, acceptability, fidelity, adoption, and sustainability.[25]

Results

Our search strategy yielded 1151 results, and we included 71 results for further evaluation based on the title and abstract. After the full text review, we included data from 30 full-text manuscripts, 3 abstracts, and 1 poster presentation, representing 29 distinct studies (Figure 1). The published findings had a variety of methodologies with 19 cross-sectional survey studies, 5 qualitative, 7 mixed methods studies, and 3 with other designs including implementation research designs. (Table 2). We classified the reports into those primarily addressing patient factors, provider factors, or implementation factors related to PrEP care in family planning settings, although several studies addressed more than one of these categories.

Patient Factors

We identified 18 full text articles, 1 abstract, and 1 poster presentation that evaluated patient-level factors with provision of PrEP in family planning care settings for female patients. Overarching individual-level findings included low baseline awareness of PrEP, low perceived risk of HIV, and HIV and PrEP stigma; however, despite these barriers, patients had generally positive attitudes toward PrEP.

Nearly all published reports identified low PrEP awareness among this population; in an online survey administered to 597 patients seen at Planned Parenthood facilities in Connecticut, only 23% of them had heard of PrEP before the study.[26] Misconceptions and misinformation about how PrEP worked, the transmission of HIV and perceived risk about HIV acquisition all served as barriers to using PrEP. A cross-sectional survey of African-American cis-gender women seeking care at a family planning clinic in Chicago found that 83% did not take the medication because they did not know it was available.[27]

Another study assessed the eligibility of those seeking induced abortion and early pregnancy loss management for PrEP as well as the awareness and uptake of PrEP in these patients. No difference was found in PrEP eligibility between those presenting for intended

versus unintended pregnancy. Over half of the patients enrolled were not aware of PrEP before their first visit and 93% stated it was unlikely that they acquire HIV. Of 33 study participants who were PrEP eligible, 11 accepted same day start and 1 continued PrEP at 30 days.[28] Low patient eligibility for PrEP in this sample may have been related to either a low risk population; however, it is also likely that use of the 2017 CDC PrEP eligibility criteria, which includes questions that require disclosure of risk behaviors, excluded women due to stigma.[29]

Self-perceived stigma of PrEP and HIV also affects patients' likelihood of using PrEP. In a study at Planned Parenthood clinics in Connecticut, 37% of heterosexual women felt that in using PrEP, people would assume they were promiscuous. Many women also believed that they would not receive approval from their family (36%), friends (25%), or sexual partners (34%).[26] Factors that correlated with less PrEP interest and less comfort talking about PrEP included higher perceived stereotypes about PrEP and higher expected disapproval from friends and family. Forty-four percent of female study participants who had at least one sexual encounter with a male partner in the previous 12 months stated in a mixed methods study in Pittsburg that concerns that their partner would think they were cheating or did not trust them deterred these women from taking PrEP.[30]

Despite the limited prior knowledge of PrEP, women were more likely to consider initiating PrEP after learning more about it. In a cross sectional study by Johnson et al, after being given information about PrEP, 74% of the participants expressed interest in taking the medication.[27] Haider et. al found that 83% of women would probably or definitely take PrEP after learning about its effectiveness, despite having concerns about side effects and perception that the drug was "new."[31]

Structural barriers to PrEP included concerns about cost, ability to adhere to a daily regimen, and transportation for clinic and laboratory visits. The majority of participants in a study by Haider et al were supportive of a networking intervention provided African American women in order to increase PrEP awareness and uptake.[31] In studies done in Georgia and Atlanta, participants suggested that clinics should use emails, text messages, phone calls, posters and brochures to spread information about PrEP, with brochures and posters being available in clinic waiting rooms.[32,33] Some women emphasized the importance of the topic of PrEP being brought up by their healthcare providers, rather than them waiting for the patient to ask about it, and believed that everyone should be talked to about PrEP, not just those considered high-risk for acquiring HIV.[32]

Provider Factors

We included 10 full text manuscripts that reported about provider knowledge and attitudes about PrEP as well as regarding provider perceptions about the structural and logistical components of PrEP implementation in family planning settings. Baseline provider knowledge

about PrEP was minimal. Seidman et al. found that only 38% of potential PrEP providers from the Title X listserv were able to define PrEP. Those who did answer correctly were more likely to be aged less than 35 years, practice in the Northeast or West, work in a clinic that offers HIV testing, and have some familiarity with PrEP guidelines. However, only 36% of potential providers had seen any PrEP guidelines. Not only was a need for training identified, but 87% of potential providers also wanted more education about PrEP.[34,35] The willingness to prescribe PrEP increased with higher PrEP knowledge scores, older age, and in those who agreed that "PrEP would empower women".[36] Other gaps in knowledge include information related to medication adherence and medication regimen.[37]

Provider and staff knowledge and confidence about PrEP delivery in a family planning setting increased with specific trainings on this topic, but few staff reported having been trained about PrEP screening and delivery[9,22,37–39]. In one study, despite promising results at a 3-month time point, comfort with screening for PrEP eligibility, and physician comfort with prescribing PrEP decreased after 6 months. This could indicate a need for longitudinal training and follow up to original staff training on this topic.[41]

Provider-level barriers to PrEP care included competing clinical priorities such as time constraints, sensitivity to the emotional needs of patients seeking abortion, and the importance of addressing the patient's primary reason for the visit rather than HIV prevention, insurance-related issues, lack of on-site psychosocial support for risk reduction and adherence counseling, and lack of education materials for patients.[9,41] In another study, barriers included lack of a formal screening tool, lack of integration into electronic medical record, lack of support staff to screen prior to an appointment, and funding barriers for lab testing.[42] One study also endorsed concerns about competing priorities with other family planning goals, time constraints, lack of psychosocial support, discomfort with increased visits and monitoring, and interference with STI and long-acting reversible contraception counseling.[43] Facilitators included partnering with local experts, continuing education, clinical tools for providers, and patient education materials.[9,41,42]

Implementation

We included 2 abstracts and 2 full-text studies that reported on implementation outcomes of reach, acceptability, fidelity, adoption, appropriateness, and sustainability. Two papers reported on analysis of data from a cross-sectional study of clinical staff, providers, and administrators in Title X clinics in 19 Southern states.[44,45] In the full study sample, authors found that 12 of 285 clinics provided all PrEP implementation cascade steps onsite including screening for HIV risk, education regarding PrEP and PrEP use, assessing candidacy via labs, prescribing PrEP, and monitoring PrEP use through follow up visits,[23] and 24 conducted at least one step on the cascade (screen for HIV risk, educate, assess candidacy via labs, prescribe, monitor).

Among those clinics that did not provide PrEP, authors examined readiness to provide PrEP, and barriers and facilitators at the clinic level. Readiness for PrEP implementation was associated with an implementation climate that was specific to HIV care, leadership engagement, access to resources, providing primary care services, and percent of clinic's county living in poverty. A negative association between readiness for PrEP implementation was associated with negative attitudes of personnel to PrEP.

In a quasi-experimental study testing the feasibility of integrating routine PrEP counseling into a high-volume family planning clinic without prior PrEP experience, two different counseling methods were evaluated: unguided counseling, and a checklist-based counseling strategy, in addition to a half-day PrEP training.[39] Through surveys and interviews, the authors found that PrEP implementation was deemed feasible by staff members, and acceptable in that the counseling tool was useful and allowed for smooth implementation. Additionally, another study compared a web-based PrEP educational video implemented at one Planned Parenthood center to standard PrEP counseling at another Planned Parenthood to determine the acceptability and impact of this intervention. More than 90% of cis-gender women enrolled reported that the video helped them understand what PrEP is, how PrEP works, and how to take PrEP. One month after the intervention, women who were enrolled in the web-based counseling method were more likely to be comfortable discussing PrEP with a provider (82% vs. 48%) and were more likely to be thinking about PrEP (36% vs. 4%). However, no women in this study initiated PrEP at one year follow up.[46] In a study evaluating 515 encounters in a family planning clinic, 76% of which were for abortion care, authors found the screening rate of their implementation strategy to be 51.3%, with those who were African American or who presented for abortion care to be more likely to be screened.[41] Another studied implementation strategy including a clinical practice alert through the electronic medical record, that would be initiated for patients who triggered the highest risk of acquiring HIV based on sexual health history. Of 686 encounters evaluated, the alert was triggered 11 times; the reach of a provider counseling script prompted through the alert was 9 of 11. Qualitative data revealed that staff found the script increasingly acceptable over time, but perceived that patients experienced discomfort with the length and content of the script, and felt that the alert may have missed patients who could benefit from PrEP.[47] Finally, one study comparing two versions of the 2017 CDC PrEP eligibility criteria evaluated state PrEP eligibility criteria as compared with each of the two versions of the 2017 CDC PrEP eligibility criteria, and found variability in which of the two CDC guidance criteria adopted. Importantly, they found that the two versions of the 2017 CDC criteria were disparate in their ability to identify women who might benefit from PrEP.[29]

Discussion

The purpose of this scoping review was to examine the existing literature that pertained to the provision of PrEP for women in family planning clinics. The concept of care integration of PrEP and family planning is being increasingly explored in the scientific literature, with our scoping

review identifying 34 articles, 30 of which were published in 2018 or later. We found that most studies evaluated patient factors associated with PrEP implementation in family planning settings, followed by provider factors, and implementation. Findings that were common across studies included low PrEP awareness by patients, perceived PrEP and HIV stigma, and unfamiliarity with PrEP by providers but high satisfaction with PrEP training. PrEP implementation was found to be overall feasible, particularly in locations with leadership engagement, access to resources, and perceived need by the community.

Our research has some similarities with prior reviews, including one that reviewed multi-level interventions to promote oral PrEP in adolescent girls and young women,[48] another that described the literature on PrEP among cisgender and transgender women in the U.S,[49] and a third that evaluated primary care provider knowledge and attitudes about PrEP.[50] Our review narrows the scope in its focus specifically on family planning clinics, high-yield settings to increase awareness and uptake of PrEP in women. By focusing specifically on this population and practice setting, we can identify opportunities for interventions and gaps in the literature for future study.

Elevation of cisgender women's voices and suggestions is essential for understanding how to be successful in normalizing PrEP and expanding PrEP delivery. Recommendations for PrEP care from patients included delivery of information about PrEP in pamphlets and learning about this medication outside the clinical encounter, such as through community-based networking interventions, email, text messages, phone calls, posters, brochures. In addition, recommendations emerged that all patients rather than "high risk" patients should be informed about PrEP, which is concordant with the 2021 Centers for Disease Control and Prevention PrEP guidance,[10] and that healthcare providers have the responsibility to start discussions about this topic as opposed to patients needing to address PrEP first. It is critical to test and refine standardized, inclusive screening and counseling tools that are both appropriate for the family planning setting and minimize stigma, considering that stigma related to PrEP and HIV negatively influences women's desire to start in PrEP. In addition, given that all sexually active persons should be informed about PrEP, disclosure of specific risk factors for potential HIV exposure is not likely to be necessary; eliminating disclosure of risk factors may reduce stigma associated with discussions about PrEP.[51,52]

Providers reported gaps in their knowledge about PrEP and a desire for more PrEP education.[34,35] Barriers to PrEP delivery included competing clinical priorities, sensitivity to emotional needs of patients, addressing patient's primary complaint, insurance related issues, lack of psychosocial support, and lack of educational materials for patients; however, educational interventions were impactful. Facilitators included partnering with local experts, increased patient and provider education, and clinical tools for providers.[9,41] Across studies, trainings about PrEP delivery were effective in increasing provider knowledge about PrEP, confidence to counsel regarding PrEP, and confidence in identifying potential PrEP candidates.[39,40] Future

research may assess the effect on PrEP care of strong society guideline recommendations for PrEP care integration into family planning settings, community-academic partnerships, patient navigation, and partnership between family planning and Infectious Disease experts.

Implementation research reports addressed some of the barriers identified by providers. One study determined that a checklist-based counseling strategy and unguided counseling were found to be feasible and acceptable by staff members.[39] Another study determined the usefulness of a clinical practice alert through the electronic medical record that would initiate a provider counseling script for patients at highest risk for HIV. Future research should focus on comparisons of implementation strategies, and development of multi-level implementation strategies that incorporate checklists and nudges with provider education and counseling tools. Research is necessary to understand strategies for overcoming HIV and PrEP stigma and addressing the relevance of PrEP care in a population with low perceived risk. Further research is necessary to understand the intersection of stigma and implementation, and to identify stigma-reducing implementation strategies.[52] Finally, understanding and incorporating patient-centeredness as a component of PrEP care is essential, particularly the manner in which implementation strategies interface with patients, incorporating a trauma-informed, anti-racist, culturally humble approach.

Family planning researchers may be an appropriate group to develop these implementation strategies. Many parallels exist between PrEP and pregnancy prevention. Drug delivery systems including oral pills, injectables and implants have long been used in pregnancy prevention, and decades of implementation and stigma reduction were necessary to increase uptake of each of these methods. With the approval of the cabotegravir injectable, and a PrEP implant in investigation, existing family planning implementation strategies could be appropriate to transfer to PrEP care. Even wider implementation is likely if contraception is paired with HIV prevention in multipurpose technologies; it is likely that pairing with contraception will destigmatize the coupled HIV prevention, with HIV prevention being considered as an added benefit to contraception. Given that 65% of reproductive age women currently use a contraceptive method, developing and disseminating multipurpose HIV/pregnancy prevention is a high yield strategy. This is further supported by research showing that the modality of contraception women use corresponds to the modality of PrEP that they would be most interested in using.[1]

We conducted a robust, replicable, and comprehensive search of the literature related to PrEP care in the United States family planning setting, with a publicly available search strategy that spanned multiple databases. Limitations include the heterogeneity of the studies, and as such we did not incorporate a critical appraisal of the literature; furthermore, we limited our extraction to English manuscripts. Due to the recent Supreme Court decision allowing many states to severely restrict or ban abortion, family planning care is likely to change significantly, with some centers experiencing much higher or much lower volume, and other centers experiencing closures. However, PrEP care will continue to be relevant, and implementation strategies can and

should be tailored to changing context. In addition, many strategies described in family planning clinics can be used in other relevant settings including family and sexual health centers.

Conclusion

In conclusion, research on PrEP care in family planning settings is advancing, and PrEP care is likely to be feasible as a standard of care practice in family planning settings. Advances in implementation strategies, stigma reduction, and drug development will be essential to reinforcing PrEP care in family planning settings and thereby reducing the incidence of HIV in women through highly effective pharmacologic HIV prevention methods.

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Author confirmation/ contribution statement

The authors confirm contribution to the paper as follows: study conception and design: S.So, S.Sa., L.B., A.M.; data collection: S.So, S.Sa, L.B., A.M., analysis and interpretation of results: S.So, S.Sa., L.B., A.M., A.T.; draft manuscript preparation: S.So, S.Sa, L.B., A.M., A.T.. All authors reviewed the results and approved the final version of the manuscript.

Conflict of interest statement

The authors report no conflicts of interest.

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Figure Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Diagram

Legend: Numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage

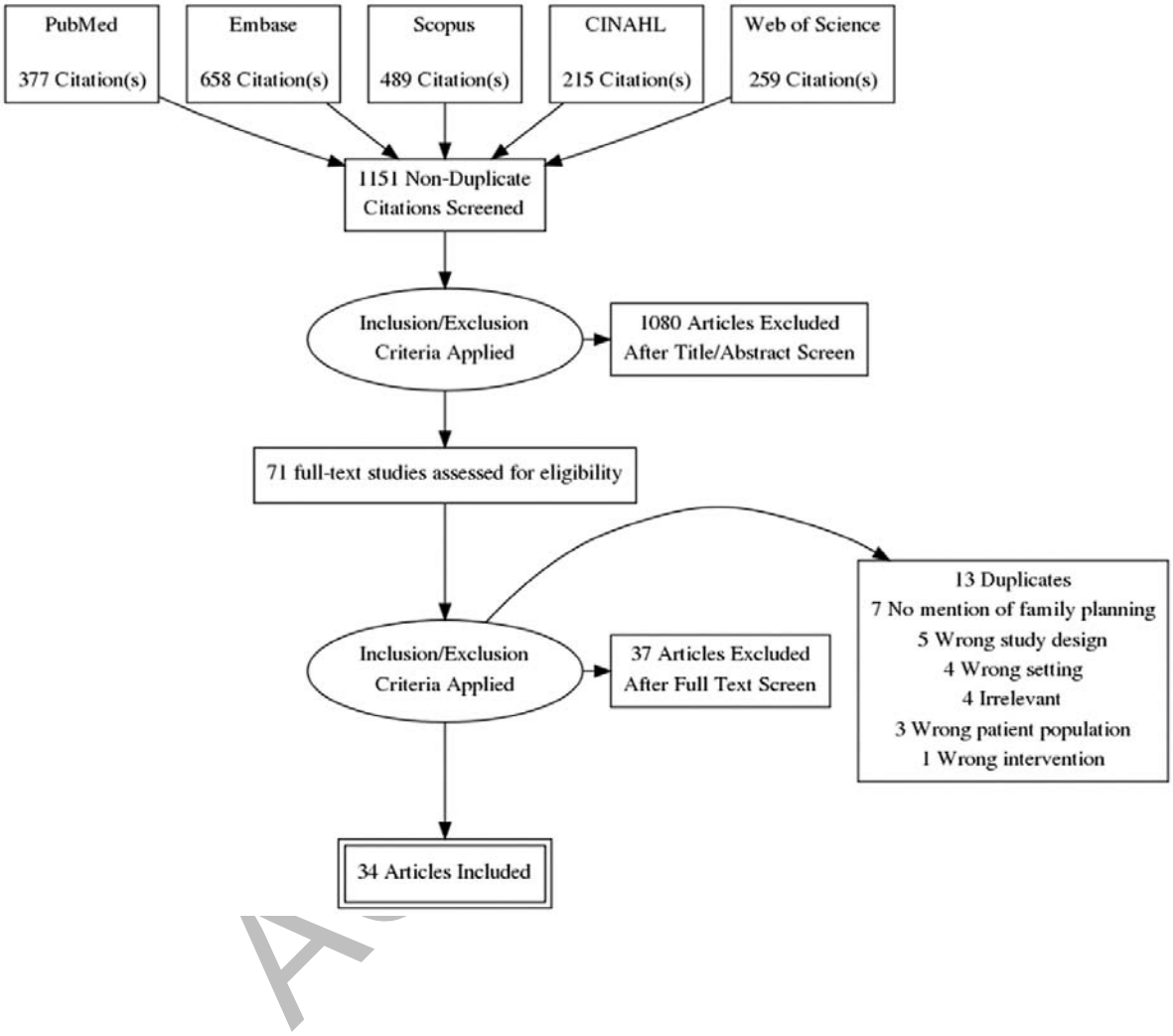

Table 1. Search strategy for identifying literature for “Provision of HIV pre-exposure prophylaxis to female patients seeking family planning services in the United States: A scoping review”

Database	Search Strategy	Number of Results
PubMed	(Pre-Exposure Prophylaxis[MeSH] OR "Pre-exposure prophylaxis" OR "Preexposure prophylaxis" OR "Pre exposure prophylaxis" OR "Prep" OR "truvada" OR "Emtricitabine" OR "Tenofovir" OR Tenofovir[MeSH] OR Emtricitabine [MeSH] OR "descovy") AND (Family planning services [MeSH] OR "Family planning" OR Contraception[MeSH] OR "contracept*" OR induced abortion[MeSH] OR "abortion" OR "International Planned Parenthood Federation"[Mesh] OR "planned parenthood")	377
Embase	('pre-exposure prophylaxis'/exp OR 'pre-exposure prophylaxis' OR 'emtricitabine plus tenofovir disoproxil'/exp OR 'emtricitabine plus tenofovir disoproxil' OR 'emtricitabine plus tenofovir alafenamide'/exp OR 'emtricitabine plus tenofovir alafenamide' OR 'emtricitabine'/exp OR emtricitabine OR 'tenofovir'/exp OR tenofovir OR 'tenofovir disoproxil'/exp OR 'tenofovir disoproxil') AND ('family planning'/exp OR 'family planning' OR 'contraception'/exp OR contraception OR 'induced abortion'/exp OR 'induced abortion' OR 'abortion'/exp OR abortion OR 'planned parenthood' OR (planned AND ('parenthood'/exp OR parenthood)))	658
Scopus	TITLE-ABS-KEY ("family planning" OR "contraception" OR "abortion" OR "family planning services" OR “planned parenthood” OR “induced abortion” OR “International Planned Parenthood Federation”) AND TITLE-ABS-KEY ("pre-exposure prophylaxis" OR "preexposure prophylaxis" OR "pre exposure prophylaxis" OR "truvada" OR "Emtricitabine" OR "Tenofovir" OR “descovy”)	489
CINAHL	((MH "Pre-Exposure Prophylaxis") OR (MH "Tenofovir+") OR (MH "Emtricitabine+") OR "pre-exposure prophylaxis OR prep OR preexposure prophylaxis OR Truvada OR Emtricitabine OR Tenofovir") AND((MH "International Planned Parenthood Federation") OR (MH "Family Planning+") OR (MH "Planned Parenthood Federation of America") OR (MH "Contraceptive Agents+") OR (MH "Contraceptive Devices+") OR "family	215

	planning" OR "contraceptive method" OR "contraception" OR "abortion" OR "Planned Parenthood")	
Web of Science	TOPIC: (family planning or contraception or abortion or planned parenthood) AND (pre-exposure prophylaxis or prep or preexposure prophylaxis or Truvada or Emtricitabine or Tenofovir)	259

Table 2. Studies included in "Provision of HIV pre-exposure prophylaxis to female patients seeking family planning services in the United States: A scoping review"

Author & Year	Objective(s)	Methods	Results
Patient factors			
Calabrese 2018[25]	To explore PrEP stigma and its implications for uptake among HIV-negative, sexually active adult women recently engaged in care at Connecticut Planned Parenthood centers	Online survey of Planned Parenthood patients in 3 cities in Connecticut: Bridgeport, New Haven, and Hartford (N=597 heterosexually active, HIV-negative women).	High incidence of negative stereotypes about PrEP use, these were associated with reduced comfort in discussing PrEP with a provider.
Calabrese 2020[1]	To investigate women's preference across 10 PrEP modalities currently available or under study and examine associations between this preference and contraceptive practices.	Online survey of Planned Parenthood patients (N=563 heterosexually active women); same population as Calabrese 2018.	Daily pills (24.3%), injections (24.3%), and implants (14.9%) were preferred most commonly. Current use of analogous contraception modality was associated with preferring each PrEP modality.
Calabrese 2021[54]	To adapt and disseminate a PrEP educational video and evaluate its acceptability and impact among patients relative to PrEP education delivered by a clinician in person.	Implementation study at 2 Planned Parenthood centers in Southern New England; non-randomized (N=126 sexually active, HIV-negative women receiving video intervention (n=76) or standard condition (n=50)).	Video associated with a higher level of comfort discussing PrEP with provider (82% vs 48%) and commonly thinking about PrEP (36% vs. 4%).
Garfinkel 2017[55]	To explore individual, behavioural, and structural factors associated with HIV risk perception and PrEP acceptability among young adult female FP patients.	Cross-sectional survey of women aged 18-35 (N=146) seeking care at 2 FP clinics in the greater Baltimore, Maryland area.	22% of women worried about HIV risk, and 60% reported they would consider taking a daily pill to prevent HIV. Associations with demographic factors and PrEP acceptability reported.

Haider 2018[31]	To examine PrEP knowledge and attitudes among African American women in Chicago.	Mixed-methods (quantitative survey and semi structured qualitative interview) of sexually active Black women aged 19-64 attending a FP clinic (N=30).	Prep awareness at 50%, 83.3% reported they would probably or definitely take PrEP. Majority in favor of a social networking intervention to increase awareness and uptake.
Johnson 2019; abstract[56]	To examine PrEP knowledge and attitudes among young African American women in Chicago.	Mixed-methods study (quantitative survey and semi structured qualitative interview) of Black women aged 18-29 attending a FP clinic (N=50).	44% moderately to extremely concerned about getting HIV, 66% unaware of PrEP; 74% would probably or definitely take it. Barriers reported of drug too new (52%), payment concerns (52%), side effects (42%).
Johnson 2020[26]	To describe the awareness of and interest in PrEP among African American cisgender women and document the barriers and facilitators to PrEP uptake among these women.	Cross-sectional survey conducted with sexually active Black women attending a FP clinic (N=109); same setting as Johnson 2019.	Primary reason for not taking prep was lack of awareness of PrEP (>80%), 70% would probably or definitely like to take PrEP.
Koren 2018[57]	To determine the knowledge, attitudes, and beliefs among women at a FP clinic in Philadelphia, PA.	Self-administered of survey of adult women patients (N=389).	73% unaware of PrEP, 57% stated they would take a medication to prevent HIV, 64% comfortable discussing with their doctor. Concerns re: cost (44%) and side effects (39%).
O'Connell 2021[39]	To test feasibility of integrating routine PrEP counseling in a high-volume FP clinic in Philadelphia with no previous PrEP experience.	Implementation of PrEP counseling training & counseling checklist; patient (N=399) and provider (N=19) surveys. 335 patients counseled without checklist and 64 patients with checklist.	Staff self-efficacy for PrEP counseling increased after training, and patient knowledge and acceptability increased regardless of checklist, higher gains with checklist use.
O'Malley 2021[30]	To explore HIV risk, PrEP acceptability, and attitudes about PrEP use and examine the impact of recent IPV experience on PrEP acceptability and attitudes	Cross-sectional survey of women seeking care at urban FP clinic in Pittsburgh, PA (N=145).	70% women willing to use PrEP, women with recent IPV reporting barriers to PrEP as drug effects, access/affordability, adherence, and concerns around partner reaction.
Ralph 2021[58]	To assess the knowledge, attitudes, and preferences of women seeking abortion care regarding HIV risk and PrEP use among women seeking abortion, and identify individual and system barriers to PrEP access.	Cross-sectional survey of women at freestanding abortion clinic in Chicago (N=198).	32.3% had indications for PrEP; 84% unaware of PrEP. 27.8% would consider starting PrEP in next 6 months, most interested in receiving PrEP care from primary doctor and not FP.

Sales 2019a[32]	To understand women's preferences for learning about PrEP in the setting of an FP clinic.	Survey of 500 women seeking care at 4 FP clinics in Atlanta.	43% believed that clinics should utilize brochures, posters, phone calls, texts, and/or emails to disseminate information about PrEP. 39% wanted staff/providersto talk to patients about PrEP.
Sanders 2017[59]	To describe the integration of PrEP into an urban adolescent clinic and examine impact of PrEP use on STI rates.	Non-randomized experimental study, 234 youth approached.	93% not aware of prEP, 21% received information, 14% referred for PrEP. Rates of STI decreased for those initiating PrEP (n=15).
Scott 2018[60]	To describe feasibility and yield of offering PrEP to women in FP clinics in high-HIV-prevalence communities in Washington, DC.	3-month pilot integration, staff surveys, patient chart review (N=273).	39% of patients creened for PrEP eligibility, 98% eligible, 10% initiated PrEP. Staff knowledge increased from poor or fair to good or very good after training.
Scott 2020;[61] poster presentation	To identify barriers and facilitators of PrEP initiation among women at high risk for HIV in a high prevalence community Washington, DC.	Cross-sectional survey of cisgender HIV-negative women seeking care at sexual health clinic or FP clinic (n=1118).	32% met "high risk" criteria, 88% unaware of PrEP, 13% committed to starting PrEP in next 12 months; positive attitudes, perceptions of normsl, and efficacy associated with uptake intention.
Seidman 2016[62]	To gain data data on the proportion of FP clientswho are at substantial risk of HIV, FP client knowledge of PrEP, and if FP clients want to receive PrEP education and/or services at the time of their visits.	Cross-sectional surveys of women aged 13-45 attending FP visit in northern California (N=1700).	21% of all women and 27% of those meeting CDC criteria were interested in learning about PrEP at their FP visit. 86% not aware of PrEP.
Shende 2018[63]	To investigate the knowledge, attitudes and barriers about PrEP among adults seeking care at STI clinics in Pima County, Arizona.	Cross-sectional survey of HIV-negative patients attending STI clinic (N=96).	71% unaware of PrEP, median interest 4.4 (scale 1-7).
Shende 2020[33]	To understand PrEP barriers among Hispanics, women, and low-income individuals.	Cross-sectional survey of patients attending public health clinics in Pima County, Arizona (N=500).	88% of women unaware of PrEP, those with higher perceived HIV risk or one HIV risk factor had higher probability of knowledge. 87% would take adaily pill, 91% would visit a provider every 3 months, and 92% would complete labs every 3 months. Lack of knowledge most important barrier.
Tekeste 2019[64]	To investigate the indirect association between race and women's comfort discussion PrEP with a provider through medical mistrust	Cross-sectional survey of 501 adult Black (n=241) and white (n=260) women in three cities in Connecticut (Bridgeport, New Haven, and Hartford).	Black women reported greater PrEP interest and intention than white women, but also expressed higher levels of medical mistrust and lower comfort discussing PrEP with a provider.

Sonalkar 2021[27]	To estimate the proportion of patients at a clinic in Philadelphia seeking care for induced abortion or early pregnancy loss eligible for PrEP, and to compare PrEP eligibilty and uptake between patients with intended and unintended pregnancy.	Cross-sectional survey of 250 patients with intended (n=139) and unintended (n=110) pregnancy; nested cohort study with n=16 PrEP-interested patients.	13% of participants were PrEP eligible; this proportion did not vary significantly by pregnancy intendedness (p=.18). 11/16 accepted same-day PrEP start and 1 continued PrEP at 30 days.
Provider factors			
Brant 2020[41]	To evaluate the feasibility and impact of integrating HIV PrEP services with family planning services, using the RE-AIM Framework at MedStar Washington Hospital Center's Family Planning and Preventative Care clinic.	Implementation study; FP clinic; high HIV prevalence community; patient- and provider-level outcomes. N=515 patients.	HIV prevention in FP setting was feasible; 98.4% of patients were eligible due to no or inconsistent condom use in a high-prevalence area; 6% initiated PrEP.
Coleman 2021[21]	To assess factors that influence perceptions of costs and resources related to PrEP delivery to women in FP setting.	Web-based survey of clinicians and administrators of Title X-funded FP clinics in Southern states (N=414 respondents, 283 unique clinics).	Clinics providing primary care more likely to provide PrEP (27.8% vs 18.3%, p=.06), more likely to have necessary financial resources (p<.01) and staffing (p<.01) for PrEP implementation.
Horack 2020[47]	To evaluate a clinical practice alert and evidence-based patient education script to determine if this intervention increased the number of appointments to discuss or initiate PrEP.	Mixed-methods implementation study at Planned Parenthood of Illinois between 10/18-12/18.	11/686 patients triggered alert, and staff read script 9 times during 8-week implementation period. 1 patient scheduled PrEP appointment. Staff found alert and script helpful for patient conversations.
Piper 2021[65]	To describe models of PrEP care in Title X FP clinics in the Southern US and explore clinic resources that are needed to facilitate PrEP provision.	Semistructured interviews with providers (n=34) and administrators (n=11) from 38 clinics.	3 models of PrEP care identified. Facilitators to PrEP care included staff available to assess patients before clinician, integrating assessment into EMR. PrEP educational materials facilitated process. Model 1 clinic had PrEP funding but Models 2 &3 clinics expressed funding concerns.
Razon 2021[43]	To understand the challenges FP providers face in integrating PrEP into their practice in San Francisco, California; Kansas City, Missouri; and Philadelphia, Pennsylvania.	Qualitative focus groups of FP clinicians, counselors, and clinic managers (N=37).	Key themes included PrEP tension with other FP priorities (efficient clinic visits, condom promotion, and LARC counseling). Discomfort with HIV vulnerabilities rooted in social and structural determinants of health.

Sales 2019b[40]	To conduct a pilot implementation study to improve HIV risk assessment and PrEP counseling in 4 high-volume safety net FP clinics in Atlanta, Georgia.	Implementation study of PrEP informational training; provider (N=28) and patient (N=500) surveys); patient population same as in Sales 2019a	81% of patients not aware of PrEP. 18% of PrEP-eligible patients accepted a referral. Intervention increased provider knowledge and support of HIV prevention in a FP visit.
Seidman 2016[35]	To understand barriers and facilitators to PrEP implementation in FP.	Cross-sectional survey of FP providers across the country (n=495).	38% correctly defined PrEP, 37% correctly stated efficacy of PrEP, and 36% chose correct HIV test after a recent exposure. Lack of training identified as main barrier to PrEP implementation, 87% desired PrEP education.
Calabrese 2019[28]	To examin women's PrEP eligibility according to 2 versions of CDC PrEP risk criteria (guidance summary criteria and recommended indications criteria).	Online survey of Planned Parenthood patients in Connecticut (N=679 HIV-negative women); same population as Calbrese 2018	82.3% of respondents eligible for PrEP by guidance summary criteria vs. 1.5% by recommended indications criteria. Guideline reform is needed to improve clarity.
Tripathi 2012[36]	To investigate the knowledge and perception of PrEP among healthcare providers and their willingness to adopt future implementation of PrEP in the southern US.	Cross-sectional survey of providers at STI and FP clinics (N=360).	Physician knowledge of PrEP higher than non-physicians (p=.001) and for nonpublic health care providers compared to public health providers (p=.023). Willingness to prescribe PrEP associated with higher PrEP knowledge (aOR 14.94).
Unger 2020[37]	To understand provider knowledge of, attitudes toward, and comfort with delivering PrEP at Planned Parenthood health centers providing PrEP services.	Cross-sectional survey of staff at a sample of 10 Planned Parenthood affiliates (N=189) that were providing PrEP at 64 health centers across 12 states.	Most staff had positive attitudes toward HIV prevention. 93% agreed that reaching heterosexual women for HIV prevention should be prioritized, and 87% agreed that patients were interested in hearing about PrEP. 88% clinicians comfortable screening patients for HIV risk.
Implementation factors			
Piper 2021[66]	To determine what sub-groups of Title X FP clinics in the US South represent the heterogeneity of CFIR-related factors and identify howsub-group membership is related to readiness for implementation of PrEP	Cross-sectional survey of providers and administrators (N=414) at 227 non-PrEP providing clinics.	Clinics identified into six sub-groups: high capacity, optimistic, advantageous, moderate, incompatible, and resource constrained. Groupings related to provider- and community-level characteristics. Groupings related to implementation readiness.
Ramakrishnan 2021[38] (abstract)	To inform provider training strategies by characterizing self-efficacy among providers from FP clinics that do not provide PrEP.	Cross-sectional survey of providers (N=325) from 224 clinics in southern U.S. not providing PrEP.	Provider PrEP self-efficacy scores varied in the different PrEP implementation steps. Overall

			PrEP self-efficacy was higher among prescribers.
Sales 2020[45], abstract	To examine PrEP provision practices and resource-related considerations for PrEP provision in Title X-funded clinics across the Southern US	Mixed-methods study with survey (N=529) and key informant interviews (N=39) of clinicians and administrators of Title X-funded clinics in the U.S. South;same population as in Sales 2021	Barriers included funding, lack of support staff. Facilitators: having a formal screening tool, integration into EMR. 20% of respondents' clinics provided PrEP care.
Sales 2021[44]	To evaluate internal clinic factors and external contextual factors that may influence the successful adoption of PrEP services in Title X clinics in the Southern U.S.	Cross-sectional survey of clinic medical staff, providers, and administrators (N=519); same population as in Sales 2020	Readiness for PrEP implementation was associated with HIV-specific implementation climate, leadership engagement, assessment of resources, providing primary care services and area poverty. Association between negative readiness for PrEP implementation and negative attitudes about PrEP.