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Review

Mapping Evidence on Strategies Used That Encourage Pre-Exposure Prophylaxis (PrEP) Uptake and Adherence Amongst Female Sex Workers in South Africa

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Abstract: Female sex workers (FSWs) in South Africa have a high HIV prevalence. To reduce the rate of new infections, pre-exposure prophylaxis (PrEP) was introduced to FSWs; however, studies show that FSWs' uptake and adherence to PrEP has been inconsistent. This study explored existing evidence related to strategies used to encourage PrEP uptake and adherence. Utilizing the scoping review framework, seven peer-reviewed articles were analyzed thematically. The themes were (1) PrEP promotion and distribution, (2) PrEP counselling and using educational resources, and (3) using instant messaging and rewards programs. The suggestions from the literature include a generalized PrEP promotion and distribution approach not aimed towards high-risk groups to avoid stigma. PrEP pick-up points should include sex work-friendly healthcare facilities as well as community-based venues. PrEP counselling should be conducted prior to PrEP administration to prepare users on how to deal with side effects. Information, education, and communication materials should be colorful and consist of catchy phrases targeted to the whole population. Instant messaging has been found to be effective in encouraging adherence. FSWs should be instrumental in informing intervention best practices. Future interventions aimed at FSWs should focus on holistic wellness that incorporates the psychosocial aspects of HIV prevention.

Keywords: female sex workers; PrEP; adherence; uptake; strategies; South Africa

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1. Introduction

Globally, female sex workers (FSWs) are estimated to be 30 times more likely to live with HIV than other women of similar reproductive age. Circumstantially, FSWs are at a higher risk of acquiring HIV because they experience intense stigma and discrimination exacerbated by the criminalization of sex work [1]. Women in South Africa generally display a higher HIV prevalence. Evidence asserts that of the 7.3 million adults living with HIV in South Africa, 64% are women [2]. Black women aged between 20–34 are exposed to higher HIV acquisition risk. This is due to various social drivers such as age, concurrent partnerships, substance use, violence, and low levels of education [3]. These factors listed here have a compounding effect amongst female sex workers who are exposed to a heightened HIV acquisition due to additional social vulnerabilities such as economic hardship, alcohol and drug use, violence, inability to negotiate condom use with clients, criminalization which results in stigma, and social marginalization which impacts access to healthcare services [4–6]. Global research shows that the decriminalization of sex work could contribute to a 46% reduction in HIV whilst a reduction in sexual violence perpetrated against FSWs could lead to a 20% reduction in new HIV infections [1]. Statistics show that

HIV prevalence amongst FSWs is estimated to range between 39–72%, as recorded in three of South Africa's major cities [7].

A nationally based survey reported a 62% HIV prevalence amongst FSWs [8]. In response to this alarming HIV prevalence amongst FSWs, the South African national government formulated the first 2016–2019 national sex worker HIV, TB, and STI plan, which is now followed up by the second plan of 2019–2022 to show how the South African health system can respond in providing complex targeted medical and non-medical healthcare services to FSWs [9,10]. These plans draw on the WHO's 2015 PrEP guidelines which emphasized a combination prevention approach to HIV prevention which is an integration of biomedical, behavioral, social, and structural interventions that are contextually relevant [11]. This response to HIV amongst FSWs is also aligned to the UNAIDS HIV prevention roadmap of 2025 which seeks to reduce new HIV infections by reaching key populations with specific innovative interventions such as long-acting formulations of pre-exposure prophylaxis (PrEP) [12]. PrEP is a HIV prevention medication that can be administered in the form of the anti-HIV drugs emtricitabine and tenofovir disoproxil fumarate (also known as Truvada) or emtricitabine and tenofovir alafenamide (also known as Descovy). Vaginal rings are another form of PrEP containing dapivirine. In addition to PrEP tablets and vaginal rings, there are also other delivery methods under research such as long-acting injectables and implants [13].

The first target of the UNAIDS plan involves countries conducting a data-driven assessment of HIV prevention programs' needs and barriers. Secondly, the plan involves adopting a precision prevention approach focused on key and priority populations. The UNAIDS plan has up to ten targets; however, the two listed are relevant to exploring the landscape around HIV prevention interventions, which is the focus of this scoping review. Furthermore, the UNAIDS global target is that 95% of people at risk of HIV should use appropriate prioritized effective combination prevention, which is meant to contribute to an overall number of annual new infections of fewer than 370,000 by 2025 [12]. The COVID-19 pandemic contributed to a shift in priorities which pushed the HIV response agenda off-track, which may have contributed to an increase in new infections during that time. To reorient health services, UNAIDS developed a five-pillar approach that is people-centered. Pillars 1–3 describe combination prevention for key populations including adolescents and young adults in geographical areas with high HIV incidence. Pillar 4 is focused on condoms and pillar 5 emphasizes anti-retroviral-based prevention such as treatment as prevention and the provision of pre-exposure prophylaxis to key populations and HIV-discordant partners and other relevant groups where incidence is high. The focus on PrEP in South Africa since the inception of oral PrEP programming in 2016 has been to prioritize key populations which include FSWs. Research has shown that the uptake and adherence of PrEP amongst FSWs in South Africa has been somewhat unstable [14–16]. It is important to understand what interventions are necessary to ensure PrEP uptake and adherence amongst FSWs. There have been scoping reviews conducted to synthesize results from PrEP interventions; however, these have been conducted among other key and vulnerable populations such as cisgender and transgender adolescent girls and young women [17,18]. Other scoping reviews have focused on the global PrEP service delivery landscape amongst various key populations [19], general ART uptake and adherence amongst FSWs [20], And the implementation of long acting-acting PrEP in low- and middle-income countries [21]. Among the other studies that focused on strategies promoting PrEP uptake and adherence among FSWs were systematic reviews conducted in sub-Saharan Africa [22,23]. To the researchers' knowledge, this scoping review is the first of its kind to outline strategies that have been reported in the literature to encourage PrEP uptake and adherence amongst FSWs specifically in the South African context.

2. Materials and Methods

A scoping review was chosen to explore a wide range of the literature and identify potential gaps and innovative approaches [24], to determine the value of conducting a full systematic review, and to summarize and disseminate research findings [25]. Specifically, this review focused on synthesizing the existing evidence related to strategies used to encourage PrEP uptake and adherence among female sex workers (FSWs). The findings of this review may contribute to strengthening the already existing strategies used with the FSWs' population, as well as suggesting new strategies and methods that could positively influence PrEP adherence among FSWs. Following the recommendations by Mak and Thomas [26], the scoping review was conducted by two researchers: NM, who has content expertise, and GK, who has experience in conducting scoping reviews. The review was carried out according to the scoping review methodological framework developed by Arskey and O'Malley [25] and later enhanced by Levac, Colquhoun, and O'Brien [27]. This framework includes the following steps: (1) identifying the research question, (2) identifying relevant studies, (3) selecting relevant studies, (4) charting the data, and (5) collating, summarizing, and reporting the results.

2.1. Research Question

The current review was guided by the following broad research question: What are the strategies reported in the literature to encourage PrEP uptake and adherence among female sex workers (FSWs) in South Africa? This question was informed by the pressing need for best practices in services that support FSWs, who are known to be part of the key population affected by the high burden of HIV and related diseases in the South African context [28]. The question is further guided by the researchers' argument that understanding the strategies used can influence access to healthcare services, such as PrEP interventions. This focus on strategies to encourage PrEP use among FSWs is particularly important given their increased vulnerability to HIV and the potential for PrEP to significantly reduce their risk of infection.

2.2. Identifying Relevant Studies

To answer the research question, the researchers conducted an initial search in October 2021 and a follow-up search in June 2024. A comprehensive search of articles reporting on the strategies used to encourage PrEP uptake and adherence among female sex workers (FSWs) in South Africa was conducted using four online databases: PubMed, Science Direct, Web of Science, and EBSCOhost. The selected articles were restricted to studies published in English between 2015 and 2024. The language restriction was applied due to time-saving factors and human and financial resource constraints, as translating services would have been needed for non-English publications [29], while the date restriction was applied because PrEP distribution for FSWs in South Africa started in 2016 [11]. The year 2015 is significant, as it was the year the WHO released expanded guidelines for PrEP distribution among persons considered at high risk for HIV, which included FSWs. Therefore, PrEP studies published from that period onwards were deemed relevant for this review, as they included FSWs who were now targeted for PrEP [11]. In adhering to recommendations by Arksey and O'Malley [26] that search words should allow for broad coverage of literature, researchers developed terms that captured literature related to female sex workers and pre-exposure prophylaxis and used Boolean operators to "narrow, widen and combine literature searches" [30]. The following search terms were used: (female sex workers OR female sex work OR female prostitutes OR female prostitution OR female commercial sex workers OR female commercial sex work) AND (strategies OR interventions)

AND (pre-exposure prophylaxis uptake OR pre-exposure prophylaxis adherence) AND (South Africa).

2.3. Selecting Relevant Studies

All citations were imported into Rayyan software (version 1.4.3) and duplicate citations were automatically identified and then manually removed by GK. The articles were independently screened by both researchers, NM and GK, and were only included if they contained the search keywords and phrases and provided an overall description of strategies used to encourage PrEP uptake and adherence among FSWs. Specifically, 541 citations were identified across the databases (see Figure 1). Of these, 46 articles were identified as duplicates and removed. The first level of screening, which involved title and abstract screening, resulted in the exclusion of 471 articles. The remaining 24 articles were then subjected to full-text screening, which led to the inclusion of only 7 articles in the review. In the full-text screening process, 17 articles were removed due to reasons of not meeting the inclusion criteria of the current review and not addressing the review question. All 7 included articles reported on strategies to encourage PrEP adherence and uptake in the South African context. We acknowledge that some articles consisted of multiple participant groups (e.g., FSWs, adolescent young women, and men who have sex with men); however, the current manuscript focuses on PrEP strategies with FSWs.

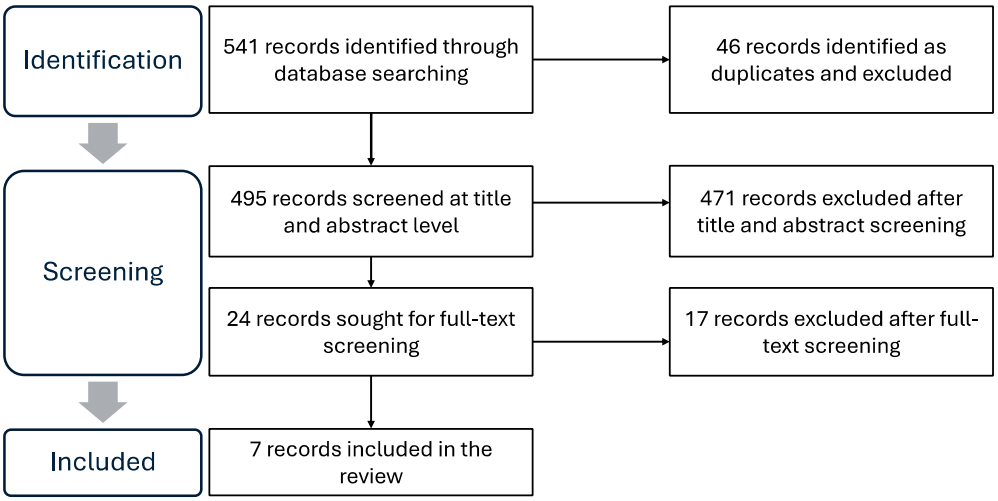

Figure 1. Flowchart describing the process of selecting relevant studies.

During the title and abstract screening and full-text screening processes, the two researchers, NM and GK, regularly convened to discuss and resolve any conflicts or disagreements that arose regarding which articles should be included in the review. These collaborative meetings allowed the researchers to carefully review the screening decisions, share their perspectives, and come to a consensus on the final set of articles to be included. In instances where there were unresolved disagreements about whether a particular article should be included, the lead researcher, NM, who had the final decision-making authority, made the ultimate determination on the article's inclusion or exclusion. This iterative approach to screening and resolving conflicts ensured a rigorous and thorough review process, with both researchers' expertise contributing to the final selection of articles.

2.4. Charting the Data

The researchers created a data extraction spreadsheet in Excel, where they recorded key details about the final articles included. As shown in Table 1, these details encompassed the author and publication year, title of the study, aim, context, methods, participants, and a summary of the findings. Both researchers, NM and GK, contributed to charting the data and they held regular meetings to ensure consistency and agreement on the information added to the spreadsheet. This collaborative approach to data charting enabled the researchers to thoroughly and accurately capture the essential information from the included studies, which would later aid in the collation, summarization, and reporting of the review's findings.

2.5. Collating, Summarizing, and Reporting the Results

The researchers employed inductive thematic analysis, a qualitative data analysis method described by Braun and Clarke [31], to synthesize and collate the various themes and subthemes that emerged from the data extracted from the final set of included articles. This analysis approach allowed the researchers to let the themes arise directly from the data, rather than imposing a predetermined framework. The identified themes presented in the next section were therefore recorded and organized using the data extract spreadsheet (Table 1).

Table 1. Studies included in the scoping review.

Author	Publication Title	Aim/s and Methods	Context	Participants	Summary of Findings
Makhakhe et al. (2022) [32]	"Whatever is in the ARVs, is Also in the PrEP" Challenges Associated with Oral Pre-exposure Prophylaxis Use Among Female Sex Workers in South Africa	The purpose of this study was to explore barriers to the uptake of PrEP among FSWs Qualitative study	Urban city of Durban	11 peer educators, one site coordinator, and one counsellor (thus, a total of 13), while the rest were FSWs (18)	• PrEP should be advertised and distributed to the wider population, not just sex workers, to normalize its use and reduce stigma • Lack of PrEP education and contradictory messaging from healthcare providers contributed to lower PrEP uptake and retention among sex workers • Explicit education is needed to differentiate PrEP from ARVs and explain that it is an HIV prevention tool, not just treatment • Wider distribution of PrEP and coherent messaging across healthcare providers is needed to increase confidence in PrEP and encourage uptake
Chimbindi et al. (2022) [33]	Antiretroviral therapy-based HIV prevention targeting young women who sell sex: A mixed method approach to understand the implementation of PrEP in a rural area of KwaZulu-Natal, South Africa	To describe PrEP access, awareness and uptake for AGYW, and community norms around PrEP Mixed methods (qualitative and quantitative)	Rural area of KwaZulu-Natal	Key informants (n = 33), community members (n = 19), 10–35-year-olds (n = 58) and stakeholder/providers (n = 9)	• PrEP was implemented through a sex worker peer outreach program targeting self-identifying and visible young women who sell sex (YWSS) • Peer outreach helped with recruitment as YWSS felt less stigmatized or fearful of being identified • A mobile unit offered free services like STI/TB screening, HIV testing, ART, and PrEP, reducing transport costs • PrEP awareness increased, but uptake remained low even among YWSS • Despite the targeted outreach efforts, PrEP uptake was still suboptimal among YWSS
Pillay et al. (2020) [34]	Factors influencing uptake, continuation, and discontinuation of oral PrEP among clients at sex worker and MSM facilities in South Africa	The goal of this study was to identify barriers and facilitators to oral PrEP uptake, retention, and adherence in South Africa Mixed methods (cross-sectional observational)	Rural, per-urban and urban areas in Limpopo, Gauteng, KwaZulu-Natal and Western Cape	299 clients (203 from sex worker facilities, 96 from MSM facilities)	• Participants at sex worker facilities described how providers played a key role in their decision to use oral PrEP • Providers gave comprehensive information, helped them understand PrEP, and encouraged them to use it • Participants felt the provider's explanation was crucial in their decision to use PrEP • Informational materials like posters also helped normalize PrEP use and motivated some participants to initiate it • Some past users said they would use oral PrEP again in the future if the reinitiation requirement was removed or if a longer-acting injectable version was available

Table 1. *Cont.*

Author	Publication Title	Aim/s and Methods	Context	Participants	Summary of Findings
Mateboge et al. (2023) [35]	Planning for decentralized, simplified prEP: Learnings from potential end users in Ga-Rankuwa, Gauteng, South Africa	To paper presents young and older people's preferences for decentralized, simplified PrEP service delivery and new long-acting HIV prevention methods, in Ga-Rankuwa, South Africa Qualitative study	Peri-urban area in Ga-Rankuwa, Tshwane district, Gauteng Province	109 participants (36 AGYW, 46 ABYM, 10 Female sex workers, 4 Pregnant AGYW, 8 MSM and 5 Unspecified)	• Current PrEP collection locations for FSWs included public health clinics (68.4%) and mobile vans (31.6%) • Suggested locations for PrEP and SRH services included one-stop centers (convenient to access multiple services in one place); parks (with tents set up for service delivery); universities (seen as understanding and mature environment); secondary schools (considered safe spaces) • Locations deemed unsuitable included pubs and eateries as there was a lack of privacy and potential for disruptive behavior from intoxicated patrons. Concerns about safety and confidentiality at these venues
Rao et al. (2023) [36]	The impact of implementation strategies on PrEP persistence among female sex workers in South Africa: an interrupted time-series study	To estimate level changes in 1-month oral PrEP persistence associated with rollout of various implementation strategies among FSWs across nine districts in South Africa Interrupted time series (ITS) design	9 districts in Northwest, Mpumalanga, KwaZulu-Natal, Eastern Cape and Western Cape	Female sex workers	• Mobile van PrEP provision, although the analysis did not examine the effects on PrEP persistence • Short message service (SMS) Support and Refill Reminders were modestly effective at improving 1-month PrEP persistence among FSWs • Examples of messages used: "Congratulations on taking control of your health!" and "If you've been taking your pill daily, you're now protected!" No effect found on 4-month PrEP persistence • Clinical mentoring for providers improved PrEP persistence, although based on limited data from two sites • Providers involved include HIV/AIDS, TB, and STI counsellors, nurses, social workers, and peer coordinators • Surprisingly, the loyalty rewards program was negatively associated with 1-month PrEP persistence • Issues with disbursement and redemption of vouchers led to program refinement • The incentive may have attracted less interested individuals, resulting in worse persistence

Table 1. *Cont.*

Author	Publication Title	Aim/s and Methods	Context	Participants	Summary of Findings
Eakle et al. (2018) [37]	Exploring acceptability of oral PrEP prior to implementation among female sex workers in South Africa	The paper aimed to explore community- level, multi-dimensional acceptability of PrEP within the context of imminent implementation alongside early ART in the TAPS Demonstration Project Qualitative study	Two clinic-based sites in Johannesburg and Pretoria	69 participants (Female sex workers)	• Clear messaging on potential side effects and their duration is crucial to promote PrEP uptake • Concerns about side effects like sickness and pain can deter initiation if not properly addressed • Supportive, non-judgmental services tailored to sex workers are universally needed • Positive clinic experiences motivate FSWs to return for services • Providing PrEP alongside early ART can help destigmatize interventions • High HIV prevalence causes distress, so PrEP offers an opportunity to "de-stress" • Having additional protection may result in fewer infections in the community • Flexibility in service delivery is criticalFSWs have limited time to visit clinics due to long work hours and rent payments • Habituated to mobile services, especially in Johannesburg Clinics need to adapt to FSWs' schedules and preferences
Eakle et al. (2019) [38]	"I am still negative": Female sex workers' perspectives on uptake and use of daily pre- exposure prophylaxis for HIV prevention in South Africa	The paper aimed to explore the lived experiences and perceptions of taking up and using PrEP among FSWs engaged in the TAPS Demonstration Project Qualitative study	Two urban clinics (Johannesburg and Pretoria)	18 participants (Female sex workers)	• Organizations in the community often lacked knowledge about PrEP, making it difficult for FSWs to believe in its effectiveness • Lack of broader awareness contributed to stigma around PrEP being only for "sick people" • Promoting PrEP to the broader community and making it more widely available could help reduce stigma and increase uptake • Regular clinic visits provided a sense of assurance and added control over their health • Personalized, welcoming treatment from clinic staff supported PrEP use and attendance • Women were able to cycle on and off PrEP during the study, with counselling support from clinicians • This flexibility helped them rationalize PrEP use and see it as a step towards potentially ending sex work • Participants would sometimes miss doses or share PrEP with others to "top up" when they couldn't make it to the clinic

3. Results

3.1. Characteristics of the Included Studies

The geographical distribution of the studies included in this review revealed that 42.8% (n = 3) were conducted solely in urban areas, while 14.3% (n = 1) focused on rural settings. A further 14.3% (n = 1) investigated peri-urban areas, and 14.3% (n = 1) encompassed a combination of rural, urban, and peri-urban settings. The location of the remaining study (14.3%, n = 1) was unclear. These studies were geographically diverse, spanning six South African provinces: Gauteng, Limpopo, Western Cape, North-West, Mpumalanga, KwaZulu-Natal, Eastern Cape, and Western Cape. In terms of research methodology, qualitative approaches were employed in 57.1% (n = 4) of the studies. Mixed methods approaches were utilized in 28.6% (n = 2) of the studies. Finally, one study (14.3%, n = 1) adopted an interrupted time series (ITS) design. Focusing on participants, the studies included FSWs, peer coordinators, community members, healthcare providers (nurses, general practitioners, pharmacists), adolescent girls and young women, men who have sex with men, adolescent boys and young men, and pregnant women. However, considering the data participants, the key populations of interest in this review were data from FSWs and healthcare providers.

3.2. Results of the Analyzed Studies

The selected studies identified various strategies to promote PrEP use and adherence among FSWs within the South African context. The interventions mentioned were thematized into three themes, namely (1) PrEP promotion and distribution, (2) PrEP counselling and using educational resources, and (3) using instant messaging and rewards programs. These themes are addressed in the subsequent sections.

3.2.1. PrEP Promotion and Distribution

The study by Makhakhe and colleagues [32] suggests that initial PrEP promotion to encourage PrEP uptake and adherence was targeted mainly at FSWs and other high-risk groups such as men who have sex with men. This targeted promotion contributed to stigma and PrEP hesitancy amongst FSWs as they felt that PrEP was only advertised to sex workers. Therefore, they call for a more generalized approach to PrEP promotion that should be targeted to all people who are sexually active to normalize it as an added HIV prevention method. Eakle et al. [38] also reflected on the use of PrEP promotion as a strategy with FSWs within the urban cities of Johannesburg and Pretoria. In their study, they implemented the Treatment and Prevention for Female Sex Workers (TAPS) project which was designed to assess whether it was feasible, acceptable, safe and cost-effective to roll out oral PrEP and early ART as part of an HIV intervention to FSWs in two urban clinics (Johannesburg and Pretoria) in South Africa. Their findings echoed similar sentiments regarding PrEP being distributed to the wider population to curb stigma and avoid PrEP being viewed as medication for 'sick people,' particularly because it is a form of antiretroviral (ARV); in this case, ARVs were understood to be solely for people who are HIV-positive. Furthermore, the narrowing of PrEP to a pill for FSWs contributed to the questioning of PrEP efficacy among FSWs. As part of the TAPS intervention strategy, the FSWs were required to participate in further interviews and the authors noted the following: "reconciling their own and others' confusion or disbelief around PrEP was observed across the second and third waves of interviews. This process seemed to contribute to a commitment from these participants to take PrEP, and also circled back to the motivation of managing and mitigating risk." [37] (p. 8). Moreover, peer outreach programs were also found to be one of the interventions contributing to PrEP uptake amongst FSWs. This was reflected in a study by Chimbindi et al. [33] located in the rural areas of KwaZulu-Natal. In their study, they point to the use

of peer educators as a catalyst for their PrEP program start-up and continuity amongst young women who sell sex (YWSS). Peers are said to speak to each other in a language that they understand, and this encourages the uptake of health services [33].

The various studies included in this review [35–37] clarified that PrEP was made available predominantly through local clinics accessible to FSWs in which they would pick up their PrEP prevention pills to ensure their uptake and adherence. Eakle et al. [37] highlight the delivery of PrEP in the local sex worker clinics which provided support tailored to sex workers was paramount to the successful implementation of PrEP. This local sex workers' clinic contributed to the uptake and adherence of PrEP as some of the participants indicated that FSWs would use the clinic services without feeling shy and could speak freely when accessing the services. In another study, Eakle et al. [38] echoed similar findings as PrEP was provided in a clinical setting and this specific location seemed to create a sense of assurance for some of the FSWs as they would do regular health checks and continue with PrEP prevention. On the contrary, Mateboge et al. [35] conducted a study in a peri-urban area in Ga-Rankuwa in the Gauteng province and the findings suggest that FSWs currently do not access PrEP prevention from public health clinics as one participant noted that they had to consistently travel to different sites to access PrEP and then travel elsewhere for generic services such as family planning services. As a result, the FSWs then suggested alternative pick-up areas such as parks, universities, and secondary schools which should also be one-stop centers that provide comprehensive sexual reproductive health services, which would encourage prevention uptake [35].

3.2.2. PrEP Counselling and Using Educational Resources

The second theme that was identified from the selected studies was PrEP counselling and educational resources. Counselling as part of strategies used to encourage initiating and continuing with PrEP was reported, while Ealke et al. [37] suggested that counselling services were made available to FSWs before initiating PrEP to discuss the potential side effects. This strategy is important to encourage PrEP uptake, especially because perceptions around these side effects already existed, with one participant indicating that "they will make me sick, they will make me throw up, I will die". The provision of counselling during the study by Eakle et al. [38] suggest that PrEP use was actively encouraged, as the FSWs were offered tailored support and guidance on managing their PrEP use flexibly and safely. They were allowed to cycle on and off PrEP based on their changing circumstances, therefore suggesting that adherence to PrEP was not rigidly enforced on them but, through counselling, was adapted to their individual situations.

Interaction with healthcare providers was another important factor in determining whether FSWs initiated and continued with PrEP. Eakle et al. [38] mentioned that the personal treatment that FSWs experienced when they visited the clinics supported their PrEP use and attendance. Specifically, the healthcare providers in the clinics made it easier for FSWs to continue accessing PrEP services as they were made to feel comfortable, safe, and welcomed and the providers seemed to provide individualized services. The healthcare providers serving FSWs and involved in providing and supporting PrEP use included professional nurses and nurses, counselors, social workers, and social auxiliary workers, amongst others [34,36,38]. The service provided by these healthcare professionals supported the PrEP initiation and persistence process for the FSWs. FSWs in a study by Pillay et al. [35] described interacting with a healthcare provider who gave them comprehensive information, helped them understand PrEP, and encouraged them to use it. This contributed to their decision to use PrEP. Considering that in some instances, confusion and misinformation around PrEP existed, Makhakhe et al. [32] therefore emphasized the significance of healthcare providers and the PrEP education that they offered.

A study by Pillay et al. [34] to examine factors affecting clients' decision to initiate and continue or stop oral PrEP use found that 87,9% (n = 153) of FSWs were influenced by information, education, and communication (IEC) materials to initiate PrEP. These IEC materials included posters, brochures, fact sheets, and pocket-sized booklets about initiating PrEP. Ultimately, the materials were used to raise awareness and assist facilities with efforts to create demand for oral PrEP. Moreover, continuation with PrEP was evident in the study, as some of the participants indicated that the side effects of PrEP did not affect the use as they had pamphlets explaining the side effects. Overall, 93.1% stated that printed information sources helped them to continue to use PrEP. For instance, in their study, one participant said that seeing the materials piqued their interest in oral PrEP and helped them decide to go to the clinic to get more information. Moreover, other participants noted that after initiating oral PrEP, they found the posters really motivating because they normalized oral PrEP use. To enhance easy access to PrEP and support for adherence, Pillay and colleagues [34] have developed a website (www.myprep.co.za (accessed on 2 December 2024)) and various social media platforms.

3.2.3. Using Instant Messaging and Rewards Programs

The use of instant messaging and rewards programs is the final theme that was identified from the studies. Specifically, research by Rao and colleagues [36] showed quantitative data reflecting the use of these methods (i.e., instant messaging and rewards programs) to encourage PrEP adherence. Their findings were collected from nine sites, including 299 site months and 11,020 total initiations. SMS support and refill reminders were associated with an 11% relative increase in 1-month PrEP persistence (RR 1.11, 95% CI 1.02–1.26) and clinical mentoring for PrEP providers was associated with a 127% relative increase (RR 2.27. 95% CI 1.94–2.66) after. While a loyalty rewards program was also established to encourage PrEP persistence, Rao et al. [36] concluded that this type of program was negatively associated with PrEP persistence. This may have been due to issues faced with voucher distribution and redemption, which prompted a pause for improvements. Once the program was re-initiated, similar negative associations were noted. The authors further clarify that the incentives (loyalty rewards) which were introduced as part of this study strategy to encourage PrEP "have resulted in recruiting those who were less interested in PrEP and, therefore, had worse persistence" [36] (p. e813). Pillay et al. [34] echoed similar findings that FSWs were encouraged to take up PrEP through continuous calls by the healthcare providers, and this was effective in some instances.

4. Discussion

4.1. PrEP Promotion and Distribution

The studies included in the current scoping review highlight critical insights into the promotion and distribution of PrEP in the context of FSWs who are vulnerable to HIV exposure and stigma from communities. Specifically, key focus areas were highlighted on how targeted promotion, peer-led initiatives, and accessible PrEP delivery mechanisms were significant strategies used to encourage PrEP uptake and adherence in different South African communities. The promotion and distribution of PrEP recommended in the various studies coincide with the updated WHO PrEP guidelines of 2022 which call for a differentiated PrEP service delivery approach which is person- and community-centered and adapts to the needs and preferences of people who are interested in PrEP. Furthermore, this differentiated service delivery approach calls for flexibility in the healthcare system where an individual can be initiated on PrEP at a healthcare facility and offered follow-up visits in a community setting. There are various barriers to PrEP access that could possibly hinder PrEP uptake among FSWs, such as actual or perceived lack of privacy,

stigma and discrimination, negative attitudes of healthcare providers, travel distance, frequency of clinic visits, and long waiting times [39]. Thus, studies have recommended, based on evidence emanating from research amongst FSWs, a wider distribution of PrEP to the broader population to curb stigma [32] And the provision of PrEP through sex worker-sensitive healthcare facilities, since attitudes from healthcare providers matter in determining PrEP uptake and adherence [34,36,38]. The convenience of PrEP pick-up sites was also an important factor in determining uptake; hence, FSWs suggested sites that are accessible and community-based [35]. Frequent clinic visits have been cited as having a negative impact on adherence. The WHO [39] has proposed multi-month dispensing of either ARVs or PrEP for experienced users. This was particularly accelerated during the COVID-19 pandemic. Depending on the context, the time frame differs from a two- to three-month supply to a six-month supply. Peer education was another strategy for PrEP promotion and education [33]. This strategy has been utilized by health and prevention programs in various countries among diverse populations and ages. The use of peer educators in healthcare programs is common as it is assumed that peers have a powerful influence over one another's perceptions and behavior. The credibility of peer influence is attributed to factors such as shared background and interests which render peer educators relatable and foster a sense of trust and understanding. Peer education has been widely used in HIV prevention programs among sex workers in various contexts [40,41]. This strategy is associated with successful PrEP implementation programs [33].

4.2. PrEP Counselling and Educational Resources

The studies included in the current review further reflect the role of PrEP counselling and educational resources in encouraging FSWs to initiate and continue PrEP use. These strategies are not unique to the South African context but are also used in other contexts, such as in Indonesia [40], Zimbabwe [41], and Kenya [42], and have been reported to be critical strategies in addressing misconceptions and fears around PrEP and ensuring its use and adherence. Specifically, the study by Eakle et al. [37] emphasizes the significance of counselling provision to FSWs before initiating PrEP to discuss in detail the potential side effects and pre-existing negative perceptions. Counselling should be provided on a regular basis to help FSWs take their pills daily and to help reduce the risks of HIV infections through safer sex behaviors [39]. The use of PrEP should be normalized to foster adherence [37]. The use of PrEP counselling as an intervention method is supported by South Africa's Department of Health which notes that counselling is a "behavioral intervention that attempts to decrease an individual's likelihood of acquiring HIV and other STIs and should be implemented as part of HIV prevention counselling, with sexual reproductive health and contraceptive counselling at all follow-up visits for PrEP users" [43] (p. 14). Practically, this does not only support PrEP use but addresses other sexual reproductive health issues. Clinical mentoring for healthcare providers was also another intervention strategy that encouraged PrEP persistence; this included mentoring for healthcare providers to increase their PrEP knowledge, with the aim of reducing stigma and improving patient-provider communication [36]. In a study by Pillay et al. [35], evidence showed that a considerable number of FSWs cited IEC materials as having influenced them to initiate PrEP. In the first launch of PrEP in South Africa in 2016 the National Department of Health (NDoH) consulted with the Wits Reproductive Health & HIV Institute (WitsRHI) and McCann Global Health to design PrEP IEC materials for FSWs. The suggestions provided by partners from sex work programs and organizations were that apart from the catchy slogan, "We are the generation that will end HIV", the IEC materials needed to be colorful and have catchy phrases, as well as emphasize that PrEP was for HIV-negative people. In as much as the brochures, booklets, posters, and fact sheets were used to educate FSWs,

they were also developed with a broader audience in mind for greater appeal as well as to minimize stigma [44].

4.3. Using Instant Messaging and Rewards Programs

Alongside PrEP education, FSWs responded positively to (SMS) messages that encouraged them to continue taking PrEP. However, in the same study, they found that supportive text messages no longer had any effect after 4 months of persistence. In this same study that reported on the utilization of text messages, they also implemented a loyalty rewards program to encourage adherence which was unsuccessful [36]. SMS messages as a form of intervention have been used amongst other high-risk groups such as MSM and adolescent girls and young women (AGYW); this strategy has proven to be effective [45,46]. A Kenyan study known as WelTel looking to enhance ART adherence amongst HIV-positive people utilized weekly two-way messages checking on the progress of patients, asking how they were doing, and those who indicated that they were not doing well were followed up with a telephone call [47]. The HPTN 082 study utilizing the two-way SMS intervention amongst AGYW in Zimbabwe and South Africa found that this intervention was acceptable amongst these groups [48]. Evidence from a meta-analysis found that the messaging is more effective if delivered less frequently than daily and has customized scheduling and content [49]. Thus, the implementation of SMS messaging needs to take into account the type of messages and the frequency of the messages for optimum impact.

5. Study Limitations

This scoping review acknowledges some inherent limitations. While the databases were meticulously chosen to align with the review question's focus, the possibility exists that relevant articles from other databases might have been excluded. Additionally, the language restriction applied due to factors related to time and finances for translation may have resulted in the exclusion of potentially relevant articles published in other languages which could have provided additional insights or perspectives on the review topic.

5.1. Conclusions

This review found that multiple strategies have been used within the South African context to encourage PrEP uptake and adherence among FSWs. These include PrEP promotion and distribution, PrEP counselling and using educational resources, and using instant messaging and rewards programs. The findings suggest that PrEP use encouragement among FSWs should take multiple forms to ensure its effectiveness, further suggesting that PrEP should not be a prevention method targeted solely at high-risk groups, as this contributes to stigma and impacts uptake and adherence. Furthermore, PrEP services should be incorporated with other comprehensive sexual reproductive health services.

5.2. Recommendations

When designing and implementing PrEP interventions, it is important for researchers to conduct formative studies with FSWs to understand what constitutes best practices to ensure that the intervention has a higher chance of success.

Healthcare providers should be abreast with new PrEP technologies so as to understand how they function, which will assist in the accurate dissemination of knowledge to encourage uptake and adherence.

HIV prevention interventions should incorporate the psychosocial aspects of HIV prevention that focus on developing FSWs' resilience, agency, and a sense of empowerment for FSWs to develop their own intrinsic motivations for maintaining their HIV-negative status, as well as focusing primarily on general individual well-being as a holistic approach to health.

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