Review Article

PRE-EXPOSURE PROPHYLAXIS (PREP) HIVDURING PANDEMIC COVID-19: CHALLENGE AND STRATEGY

Abstract

The COVID-19 pandemic has caused obstacles in providing PrEP services for HIV prevention. The COVID-19 pandemic has led to a decline in the use of PrEP for HIV prevention. Social restriction policies and limited services are provided for fear of being infected with COVID-19. This article narrative reviewsthe acceptance of the PrEP program according to The Theoretical Framework of Acceptability, challenges during the COVID-19 pandemic, and strategies during the COVID-19 pandemic. Affective attitude, burden, ethics, self-efficacy, and perception of effectiveness influence acceptance of the PrEP program. During the COVID-19 pandemic, several challenges were faced, including fear of transmission of COVID-19, disruption of access to health services, disruption of PrEP supplies, and shifting of priority for health workers to COVID-19. Strategies implemented during the pandemic to increase PrEP acceptance include telemedicine and remote counselling, mobile laboratories, medication home delivery, longer PrEP stocks, and online education and information. To support the PrEP program during the COVID-19 pandemic, collaboration and integration of PrEP and COVID-19 services are required.

Keywords: Pre-exposure prophylaxis, COVID-19, challenge

Introduction

The COVID-19 pandemic is causing challenges to access to health services. The COVID-19 pandemic can impact people who are vulnerable to HIV infection. This condition can hinder public health services and impact public health. The modelling results found that the impact of COVID-19 on the HIV program led to an increase in HIV cases and deaths [1]. Therefore, we need a comprehensive policy under its control.

The SDG's target to end the AIDS epidemic by 2030 is to achieve three zero, which include zero new HIV infections as one of the main pillars. To achieve this goal, in September 2015, WHO recommended preventive or prophylactic therapy in the form of PrEP.PrEP is part of and in addition to the comprehensive prevention of HIV infection that already exists [2].

PrEP is the use of ARV drugs in people who are not infected with HIV before they are exposed to or infected with HIV and aims to prevent them from being infected with HIV. Those who take this PrEP with a high risk of becoming infected with HIV. If this PrEP is taken at the right dose, it can reduce the risk of getting infected with HIV through risky sexual intercourse by more than 90% effectively [3]. However, in using PrEP, compliance is required and used according to the rules of use. High adherence to consuming PrEP can increase protection from HIV infection and vice versa. If adherence is less than optimal, PrEP will not provide the expected protective benefits [4]; Mudimu *et al.*, 2020; Shrestha and Copenhaver, 2018).

WHO has recommended the PrEP program since 2015 as a response to accelerated HIV control[7]. A systematic review study in America found that adherence to PrEP programs is related to the effectiveness of HIV prevention [8]. Research in Uganda found that family and friend support is needed to reduce stigma and support PrEP use in the FSW [9]. A study in Zimbabwe found that motivating FSWs to start a PrEP program consisted of intrinsic and extrinsic factors. Intrinsic factors consist of self-protection from HIV infection and broken condoms. Extrinsic factors consist of the risk of working as an FSW, increased opportunities to offer sex without a condom, positive encouragement from others, the need to care for children, previous participation in research studies on HIV prevention and gender-based violence [10].

PrEP is not to replace pre-existing prevention methods. However, it is an additional prevention method that can be combined with other HIV prevention mechanisms such as condoms, lubricants, harm reduction and ARV treatment for PLHIV. Please note that this PrEP cannot prevent transmitting sexually transmitted infections (STIs) such as syphilis, gonorrhoea and chlamydia. PrEP users still need additional protection, such as condoms, to prevent STIs.

During the COVID-19 pandemic, a social restriction policy made it difficult to provide health services. For this reason, it is necessary to study the theory of PrEP acceptance, factors that hinder the use of PrEP during the COVID-19 pandemic, and strategies to increase PrEP acceptance.

Method

This study is a literary narrative that examines research results related to PrEP acceptance, barriers to PrEP programs during the COVID-19 pandemic, and the strategies used. This study also uses The Theoretical Framework of Acceptability, a theory used to understand the factors influencing the acceptance of health interventions or programs. This theory provides a framework for analyzing how individuals or groups accept or reject an innovation, intervention, or change in the health context. The Theoretical Framework of Acceptability consists of seven dimensions, namely (affective attitude, burden, ethicality, intervention coherence, opportunity costs, perceived effectiveness, and self-efficacy). By considering these dimensions, it is possible to identify the factors that influence acceptance and develop appropriate strategies to increase acceptance of a PrEP intervention or program.

This study is a narrative review using Pubmed, ScienceDirect, Scopus, Springer, and Google Scholar library sources.The study was conducted using the keywords "COVID-19", "Challenge", “Accepted”, "PrEP HIV", and "Strategy".A literature search was carried out for the last five years (2018-2022) and was original research.All relevant articles were then reviewed.Study to explain the acceptance of the PrEP Program, challenges during the COVID-19 pandemic and strategies during the pandemic.

Result& discussion

The Theoretical Framework of Acceptability

Several studies related to the acceptance of PrEP, namely this HIV prevention drug, is intended for people who do not have HIV but have a high risk of contracting it, such as

MSM, IDU, FSW, and others. Adapted to the Theoretical Framework of Acceptability (TFA) consisting of seven dimensions [11]These studies include:

a) *Affective attitude*

Attitude measures have been used to assess the acceptance of health interventions. The affective attitude in question is about how an individual feels when taking part or participating in an intervention. They have a perception as a group that is vulnerable to HIV infection [10]. Those who know the benefits of PrEP tend to have an awareness of the high prevalence of HIV. FSWs tend to negotiate the use of condoms, do not believe in the quality of condoms, and perceive that using a condom means not trusting the client[12]. Support from family and friends to reduce stigma and health promotion for women and their families is crucial to increasing participation in HIV prevention programs [13].

b) *Burden*

A *burden* is defined as a heavy burden or effort. The perceived burden is the effort that is felt and required to participate in and accept or carry out a program intervention. In this theoretical framework, the load referred to is related to the burden of participation in interventions, such as participation in program interventions requiring time and money or too much cognitive effort, indicating this burden is too great.

The burden felt by several studies mentions the existence of stigma from families and communities, lack of awareness about PrEP, and lack of motivation to join a PrEP program [12], [13],[14]. Research in Uganda also mentions that barriers to PrEP are distance and lack of transportation, accessibility to health services, busy schedules, and forgetfulness [15]. Research in Malawi states that side effects are a barrier that can affect the use of PrEP[16]. Mistrust of health care professionals is also a concern [17].

c) *Ethicality*

Ethics can be defined as being morally good or being right. Ethics assesses the nature of truth and goodness from social behaviour based on traditions owned by individuals and society. In the ethical acceptance theory model, this is interpreted as the

extent to which the intervention program carried out has good conformity with truth and individual value systems (Sagala, 2013; Irwan, 2020).

Capitalizing on the success of existing HIV prevention programs, as well as social norms around HIV prevention behaviour, can have a positive impact on PrEP delivery in Sub-Saharan Africa [16].Outreach and empowerment programs related to the benefits of PrEP in HIV prevention and reducing stigma can increase acceptance and adherence to PrEP(Beckham *et al.*, 2022; Eakle *et al.*, 2018; Mutua *et al.*, 2012). Research in Uganda also mentions the need for public information campaigns, further training of health workers, provision of PrEP near at-risk communities, and promotion of community-based stigma reduction efforts [15].

d) *Intervention coherence*

Intervention coherence is defined as the participant's understanding of the intervention. This understanding is not only limited to knowing the intervention but also understanding how it works and the benefits of this intervention for these participants, including compatibility with other interventions. Policymakers should consider the priority of PrEP programs for living in high-prevalence areas and use self-testing for HIV to support acceptance of PrEP and facilitate the detection of HIV infection [21].The need for ongoing risk reduction counselling in the administration of PrEP[22]. Studies in Ethiopia show user-friendly strategies must be designed and implemented to overcome barriers and facilitate PrEP acceptance. There needs to be a program that consistently supports the fight against HIV infection. Programs should remind that PrEP is a method they can control and can support condom use. The information provided must consider their education and understanding to achieve a better HIV prevention strategy [23]. Knowledge of PrEP and equating it with contraception as a prevention modality is an educational strategy that can be developed naturally and effectively among peers [12].

e) *Opportunity costs*

Opportunity costs are costs incurred by someone when choosing or accepting a program. *Opportunity costs* can be defined as the extent to which profits, benefits and values must be given or sacrificed to be able to participate in this program intervention. Someone who has HIV is prone to experiencing opportunistic infections as a result of weak immunity, such as tuberculosis infection, candidiasis, herpes simplex, salmonella,

digestive infections, toxoplasmosis and others [24], [25]. Lifetime HIV-related medical expenses incurred for a person with HIV amounted to $420,285 [26]. In addition, opportunity costs are incurred, such as lost job opportunities, transportation costs, patient care costs, reduced life expectancy, and decreased work productivity [27], [28].

f) *Perceived effectiveness*

Perceived effectiveness is the extent to which an intervention program can achieve its goals. Perceived effectiveness is the perceived belief that a PrEP program is effective at preventing HIV. Informants' belief in the benefits of the PrEP program in preventing HIV can influence their attitudes and actions. A positive perception of effectiveness encourages them to participate in the intervention activities. The study in China showed that the supporting factors for the PrEP program were education, moderate-income compared to low income, never or rarely found a sexual partner via the internet in the last six months, history of sexually transmitted infections (STIs), more knowledge about AIDS, worry about HIV as a threat to himself and his family, had heard of PrEP, and believed that PrEP was effective in preventing HIV [22].

g) *Self-efficacy*

Self-efficacy is an individual's belief or self-confidence in exercising self-control, motivation, behaviour and the social environment. *Self-efficacy* is an individual's belief in his or her ability to perform the behaviours required to participate in an intervention program. Self-efficacy is the self-confidence to carry out the PrEP program. Research in Ethiopia also mentions that misconceptions about PrEP, their lack of self-confidence, the benefits and role of PrEP and the side effects of PrEP are barriers to acceptance of PrEP programs [23]. Research in Zimbabwe found that the motivation for using PrEP was self-protection against HIV and the risk of breaking the condom. It is also associated with occupational risks associated with sex work, increased opportunities to offer unprotected sex as a motivator to start PrEP, positive encouragement from others, the need to care for children and gender-based violence [10].PrEP can provide extra protection from HIV along with condoms and STIs[16].

Confidence in the PrEP program can encourage active involvement in HIV prevention programs.

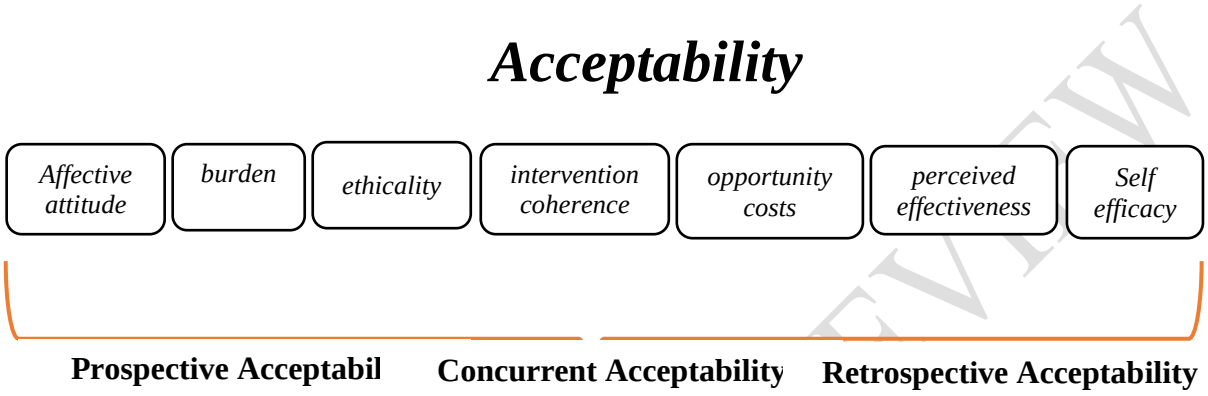

Chart1.*The Theoretical Framework of Acceptability*

[11]

PrEP challenges during the COVID-19 pandemic

The existence of COVID-19 pandemic has caused some individuals to stop taking PrEP. Some of them reported not engaging in sexual activity. The study in France found that 58.8% (n=556) reported stopping PrEP during lockdown. Among the 556 who stopped PrEP during the lockdown, 86.5% (n=481) reported not engaging in sexual activity; 76.8% (n=427) restarted PrEP after the lockdown[29].

a. Fear of transmission of COVID-19

Groups of FSW, MSM, and groups who are vulnerable to HIV infection postpone visits and feel afraid to go to crowded health facilities or clinics during a pandemic for fear of contracting COVID-19 [30].Fear of being infected with COVID-19 can hinder routine visits or counselling regarding PrEP, potentially affecting the continuity of PrEP use. Due to the COVID-19 pandemic, it was reported that several PrEP users were infected with COVID-19. They are also at risk of being infected with Covid-19 due to contact with patients or indirectly. Some PrEP users have reported being infected with COVID-19 or symptomatic. A study conducted in Brazil found

that most individuals practice social distancing (68,52%), but still consume PrEP (75.93%). Few people had contact with suspected or confirmed cases of COVID-19 (12.04%). However, some had symptoms related to COVID-19 a month before the interview (27.78%), including rhinorrhea (56.67%), cough (53 .33%), asthenia (50.00%) and headaches (43.33%) [31].

b. Impaired access to health services

The social distancing policy has limited access to health services. Most PrEP users are also required to follow the policy. Travel restrictions, clinic closures, or shifting of resources to the COVID-19 response can impair healthcare access, including PrEP access. These policies may limit an individual's ability to obtain a PrEP prescription, have regular check-ups, or maintain adequate stocks of PrEP. A survey study of 74 participants at 12 clinics in San Francisco found that the challenges during the COVID-19 pandemic were access to the health care system, inability to go to the laboratory, inability to receive PrEP drugs, lack of communication with health care providers, difficulty getting an HIV test. Participants also experienced a decline in mental health. Reported mental health is high anxiety (77%), increased stress (78%), and decreased sleep quality (49%)[32].

c. PrEP supply interruption

Discontinuation or delays in the supply of PrEP from manufacturers or distribution logistics may occur during the COVID-19 pandemic. Delays in drug supply can lead to shortages or difficulties in obtaining the PrEP medication needed, interfering with consistent use. The qualitative study found a shortage of drug supply during the COVID-19 pandemic, and pharmacists faced several challenges in procuring and storing medicines, managing unavailable medicines, dispensing medicines and providing services such as drug delivery and patient counselling. A study in Brazil found that the main reasons for discontinuing PrEP use were barriers to taking PrEP refills in health services (95/204; 46.6%) and sexual abstinence (81/204; 39.7%). The main reasons for continuing PrEP were fear of HIV infection (327/529; 61.8%), sex with non-permanent partners (90/529; 17.0%), HIV-positive

partner (63/529; 11.9%), and the belief that PrEP protects against COVID-19 (49/529; 9.3%)[33].

d. Transferring resources and changing priorities

Shifting resources and changing priorities within the health system to respond to the COVID-19 pandemic can reduce attention to and support for PrEP programs. Reduced focus on PrEP can lead to a lack of the information, education, and promotion needed to encourage PrEP use and maintenance. The pandemic has affected frontline workers' physical and psychological health, causing them to experience emotional distress such as fear, anxiety, depression and stress. In addition, a pandemic can increase post-traumatic stress disorder, which causes burnout and disconnection of healthcare workloads to ensure patient safety and the quality of care [34].

PrEP strategy during the COVID-19 pandemic

1. Telemedicine and remote counseling

Using communication technology such as telephone, video conferencing, or messaging applications to provide remote PrEP counselling and monitor the condition of PrEP users. This technology is to get information without having to visit the clinic directly. Technological developments can assist in communicating with PrEP users. The social restriction policy makes it difficult for people to take medicine to health services. Through telemedicine technology, patients can minimize clinic visits, access information, and access PrEP treatment[35]. Research on PrEP reported that PrEP teleconsultation was experienced by 21.5% of PrEP users, and 89.0% reported being satisfied with this new procedure. High PrEP teleconsultation acceptance was reported at 70%. It was also found that higher education levels were associated with higher acceptance rates of PrEP teleconsultation (aOR: 1.62; 95% CI: 1.07–2.45)[36], [37].

2. Mobile laboratory

The strategy of providing mobile laboratory facilities will make it easier for PrEP users to access services during the COVID-19 pandemic. The San Francisco

study reported high eligibility and acceptance by PrEP users of the home blood sampling method. The study results suggest that home-collected laboratory samples for patients on PrEP are an alternative option to clinic-collected laboratory samples. The study found that 87.7% of PrEP users were highly satisfied with the ability to complete laboratory tests without having to come to the clinic[38].

3. Home delivery of medication

Delivery of PrEP by post or courier. They are expandingPrEP delivery options to individuals via postal or courier services to avoid unnecessary trips to healthcare facilities. These deliveries allow individuals to get regular PrEP medication without leaving home. Several studies explain that drug delivery is also useful for reducing queuing time at the pharmacy, reducing the risk of infection during the COVID-19 pandemic and helping speed up drug delivery for disabilities [39], [40], [39], [41].

4. The longer stock of PrEP

Increase the stock of PrEP provided to users so that they have sufficient supply for a longer period. These supplies help reduce the frequency of visits to health facilities and ensure continued use of PrEP. By providing sufficient supplies of PrEP for a longer period, individuals can minimize the frequency of visits to health facilities and ensure uninterrupted continuity of PrEP use [42], [43].

Identify PrEP users who have demonstrated good adherence and ensure they have sufficient supplies of PrEP for a certain period. Evaluate each individual's need for PrEP based on their dosage and usage schedule. Prescribing PrEP for a longer period, such as 3 to 6 months, rather than just one month. This policy allows users to obtain adequate stocks without having to visit the health facility regularly.

5. Online education and information

Provide educational resources and information about PrEP online. Educational media can be in the form of videos, brochures or articles that explain the benefits, procedures and safety of PrEP. This approach can reach individuals who need information without attending meetings or counselling in a physical location. Make short videos explaining PrEP, its benefits, how to use it, and important information about PrEP. These videos can be uploaded on platforms like YouTube or to the official PrEP program website. Creating online forums or groups on social media platforms or messaging apps dedicated to discussing PrEP. This forum can allow individuals to exchange information, experiences, and support related to PrEP without meeting physically. However, other studies show that developing countries especially need digital education and good networks to support online education [44], [45].

6. Collaboration and integration with COVID-19 services

Work closely with COVID-19 programs and services to ensure that PrEP remains a priority in healthcare planning and implementation during the pandemic. They are integratingPrEP services with existing COVID-19 testing services. When someone comes for a COVID-19 test, they are also given information about PrEP as part of the service provided. This education helps increase awareness and accessibility of PrEP to individuals visiting COVID-19 testing facilities and providing information about PrEP through communication channels used in disseminating information related to COVID-19, such as the official COVID-19 website, mobile application, text message, or social media. This communication channel will enable individuals seeking information about COVID-19 to obtain information about PrEP.

Develop integrated services that combine PrEP and COVID-19 services in one place or program. This integrated service allows individuals to easily access COVID-19 and PrEP tests in the same location, reducing barriers to access and ensuring the continuity of health services. It could also be by working with COVID-19 programs to develop awareness campaigns covering PrEP and HIV/AIDS. These campaigns can include empowering individuals to access PrEP services, reminding them of the importance of protecting themselves from HIV/AIDS during a pandemic, and conveying messages about sexual safety and health during COVID-19 [46].

Conclusion

During the COVID-19 pandemic, various challenges faced HIV prevention programs with PrEP, such as fear of transmitting COVID-19, disrupted access to health services, disrupted PrEP supplies, and changes in priorities for medical personnel who shifted to treating COVID-19.The government has implemented various strategies, namely telemedicine, remote counselling, mobile laboratory services, home delivery of PrEP drugs, extending PrEP supplies, as well as online education and information.Collaboration and integration of PrEP services and handling COVID-19 is key to ensuring that individuals who need PrEP continue to have access without increasing the risk of transmitting COVID-19, maintaining overall public health, and continuing HIV prevention efforts during this pandemic.

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