REVIEW ARTICLE

HIV Care During the Covid-19 Pandemic: A Scoping Review

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ABSTRACT

COVID 19 pandemic has brought disruption to the normal health care provision in health facilities, including health care for HIV patients. Unfortunately, studies regarding this issue are still scarce. This study aims to analyse health care provision for people living with HIV during COVID-19 pandemic based on previous studies on this issue. This study used the scoping review method by searching two databases: CINAHL (EBSCO) and MEDLINE (PubMed). The article search was limited to articles written in English that were published during the period of 2019-2021, resulting in fourteen articles that met the inclusion criteria. It is demonstrated that various measures have been implemented to provide HIV care during the COVID 19 pandemic, including 1) modification of health facilities layout, 2) reduction of hospitals visits for check-ups, 3) limited visit time, 4) ensuring the availability of PrEP and PEP services, 5) SARS-COV-2 and HIV testing, 6) decentralisation, 7) telemedicine; and 8) reward provision. Further studies are required to develop effective interventions in delivering care for people with HIV during COVID-19 pandemic.

Keywords: COVID-19, HIV, Healthcare

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INTRODUCTION

HIV/AIDS remains a severe global public health concern despite the fact that advances in HIV prevention, diagnosis, treatment, and care approaches have transformed HIV infection into a manageable chronic condition. However, to be manageable, people living with HIV (PLHIV) need to have their care and treatment maintained. People living with HIV (PLHIV) should adhere to their antiretroviral treatment (ART) for life in order to improve their quality of life and to be able to have a longer life. To drive the global scale-up of the continuum of care and treatment from HIV diagnosis to treatment discontinuation or death, UNAIDS has pushed forward the "95-95-95" goals for HIV "cascade of care" by 2030 (1). However, COVID 19 pandemic has affected HIV care worldwide, with an anticipated increase in HIV transmission and HIV-related deaths due to treatment disruption (2).

The coronavirus disease 2019 (COVID-19) pandemic has impacted over twenty million people in more than 200 countries and taken the life of more than 700 thousand people until the end of 2020 (3). COVID-19 containment measures to limit the spread of COVID-19 include lockdown, travel restriction, and physical distancing (4). While attempts to prevent the COVID-19 epidemic have been made globally, numerous people suffering from chronic illnesses, such as HIV, still require continuous care (5). COVID-19 can affect PLHIV in many aspects, including a rising threats of HIV prevention and treatment interruption, as well as COVID-19 acquisition. COVID-19 causes more severe outcomes and comorbidities in HIV-positive persons when compared to those who are HIV-negative (6). Many public health care facilities worldwide have prioritised COVID-19 control, making HIV care in hospitals challenging to maintain during the pandemic (7). The interruption of HIV care and treatment, along with slower public health response to HIV, has increased the number of HIV infections during the pandemic of COVID 19 (8). This pandemic has brought more barriers and problems to HIV care as hospital visits were prohibited for non-emergency care due to the implementation of city lockdown or traffic restrictions.

This situation is worsened with the difficulty of the high-risk groups to access appropriate pre- and post-exposure prophylaxis (PrEP and PEP), which potentially leads to a higher rate of new HIV infections (7). A previous study has reported increased trends in people consumingillegal substances, poor ART adherence, HIV drug resistance, disease progression, and even mortality among PLHIV (9). One of the unexpected effects of COVID-19 on HIV care is the impact on the HIV continuum of care as the pandemic creates significant disturbances in HIV care provision and demand (4, 10). During

COVID-19 pandemic, access to essential services such as antiretroviral therapy (ART), HIV assessment and screening, and ART initiation are severely affected (3, 11, 12). This will eventually affect the outcomes of HIV since ART has proved to be effective in preventing HIV-related morbidity and mortality among PLHIV (1).
Previous reviews on HIV care during COVID 19 pandemic mainly analyses the clinical outcomes in PLHIV with COVID-19 (13) and the effect of COVID-19 in PLHIV (14). Very few have studied the continuity of HIV care programs during COVID-19 pandemic. This scoping review aims to analyse research on HIV care during COVID 19 pandemic based on published articles on this issue.

METHOD

This study adopted the five-stage scoping review methodology developed by Arksey and O'Malley of recognising research question; distinguishing related studies; study selection; outlining data; and ordering, summarising, and disseminating outcomes (15). The review question in this study was "How is HIV care provided during COVID 19 pandemic based on the existing literature?". Searches were performed on two databases, i.e. MEDLINE (PubMed) and CINAHL (EBSCO), using (1) HIV OR AIDS OR Acquired Human Immunodeficiency Syndrome OR Human Immunodeficiency Virus OR PLWH; (2) care OR treatment OR intervention OR management; (3) covid-19 OR coronavirus OR 2019-NCOV OR SARS-COV-2 OR COV-19 OR pandemic as the keywords after adaptation to the MeSH (Medical Subject Heading) and boolean operators. A manual search by checking bibliographies was also performed.

The citation manager was used to import all studies that matched the inclusion criteria. Two impartial review authors were hired (YH & SU) after duplicated electronic publications screening on relevant articles based on Title/Abstract was performed. Disparities were explored and resolved. If no agreement was achieved, a third author (DI) made the decision regarding the disparities. The two reviewers used the inclusion and exclusion criteria and excluded studies reported in comments, editorial, conference or congress papers, abstracts, and reviews. Articles that presented studies that does not assess programs or method for delivering HIV care were also excluded. The inclusion criteria used were HIV care in the continuum of care; HIV care conducted by health professionals; and clinical reports or all types of primary study through a peer-reviewed process. If the significance could not be determined from the abstract, the complete paper was ordered. The full texts of the articles were obtained and checked for eligibility. In the following stage, reviewers read the full articles to decide whether they should be included in further analysis, resulting in a total of 13 studies included in the analysis. The review decision process was reported in a PRISMA flow diagram. Figure 1 depicts the diagram of PRISMA flow for the study selection.

In the next stage, reviewers sorted the articles according to critical issues and themes. Study characteristics, including country, setting, type of sources, and author affiliation, were extracted on a sheet and elements of programs, including term of care, provider, population, continuum of care, program, outcome, and challenge, were also extracted. The charted tables were evaluated by the reviewers upon completion to ensure the accuracy and consistency.

A narrative summary of the result was then developed and tables were used to show specific details of the analysis. Results were then presented by describing the character of the studies first, followed by a thematic elaboration on care, provider, population, continuum of care, program, outcome, and challenge, as presented in Table I.

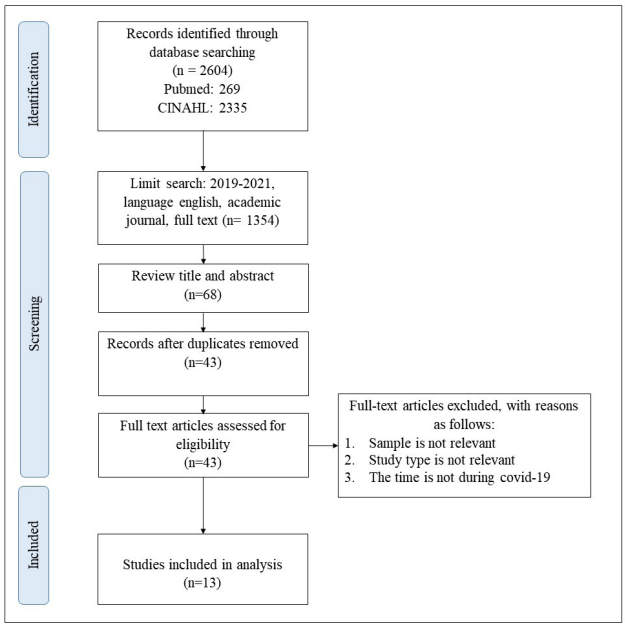

Figure 1: PRISMA flow diagram

Table I: Characteristics of included studies (n=13)

Characteristic	Detail	Frequency
Continent	America	Brazil (2), United States (3)
	Asia (China)	1
	Europe	Portugal (1), Italy (1), Belgium (1), UK (1)
	Africa	Namibia (1), Uganda (1), Rwanda (1), & Kenya (1)
Setting	Community	6
	Out-patients	HIV (1), general (7), Chronic care (1), infectious (1)
Type of sources	Clinical reports	6
	Cohort studies	3
	Cross-sectional studies	2
	RCT	1

RESULTS

Literature search/study selection

The initial search produced 2,604 articles. After limiting the search to publications during the period of 2019-2020 that were written in English language, published in academic journals, and available with full text, 1,354 articles were identified. Of these, 1,286 were excluded after title and abstract screening. Of the 68 remaining articles, 43 passed the duplication-checking. These remaining 43 articles were retrieved for full-text review. Of these, 30 articles were further excluded as irrelevant due to reasons such as unsuitable study method (e.g. review papers) and study was not perform during COVID-19 pandemic. The remaining 13 articles were thus included in this review.

Study characteristics

A total of 13 articles were included, comprising of studies from countries in America, Africa, Asia, and Europe regions. The publication years ranged between 2019 and 2021, with six presented research in community setting, two in HIV out-patient care settings, seven in general outpatient settings, one in a chronic outpatient care setting, one in infectious disease outpatient setting, and one in hospital settings. From the perspective of study design, six were clinical reports, three were cohort studies, two were cross-sectional studies, and one was a randomised control trial (RCT).

Terms use

The terms used for HIV care in COVID 19 pandemic varied across studies. Details on the name of the program is reported in Table II.

Type of care provider

This scoping review categorised the provider for HIV care during the Pandemic of COVID 19 as single and collaborative healthcare providers.

Population

Most of the program delivered in the reviewed article targeted PLHIV (people living with HIV). However, there were also studies reported programs provided for key populations, including transgender women (TGW), men who have sex with men (MSM), injecting drug user (IDU), and the high-risk men, such as employees in construction industry.

Continuum of care

The majority of the programs reported in the reviewed articles provided treatment, followed by prevention and rehabilitation efforts.

Program

The program implemented to provide HIV care during the Pandemic of COVID 19 in these reviewed studies used various approaches including telemedicine and in-person care with modifications to adjust to the COVID-19 restrictions imposed in the clinic or hospital (Table II). Most studies presented modifications from the previous programs, and some of them were newly developed. The HIV prevention and rehabilitation program strategies during COVID 19 pandemic made use of telemedicine approach through social media and streaming platforms for delivering information, followed with telehealth appointment and follow-ups through social media and mobile phone messages. New patients were recommended to have face-to-face appointments for assessment. For the HIV treatment program, a combination of telemedicine and face-to-face care programs was applied during COVID-19 pandemics. Patients with more complicated medical issues requiring a stricter follow-ups were often seen physically.

Outcomes

Telemedicine was thoroughly accepted by patients and healthcare providers and expected to continue even after COVID 19 pandemic is resolved due to convenience, diminished transport time, absence of stigma from environments in the clinic, and minimum risk of infection or social interaction. A combination of telemedicine and face-to-face treatment results in positive changes to health and lifestyle behaviours.

Challenges

Several obstacles arise throughout the implementation of these non-physical contact approaches, such as connectivity issues, feeling overwhelmed by technology, and difficulties in building relationship and creating a psychological bond with PLHIV. Due to privacy issues, patients experience rushed consultation, less engagement, and discomfort in expressing private matters. (16). Some messages were not correctly delivered due to technical or connection issues, resulting in exhaustion in sending messages over the treatment (17). Other challenges were limited access to emergency care, missing scheduled appointments, limited medication access, and inconvenience in reaching the health service (18).

DISCUSSION

This review aims to analyse literature on HIV care during COVID 19 pandemic. Although COVID-19 limits mobility, HIV care should be sustained along the continuum of care to maintain HIV patients' quality of life and to decrease morbidity and mortality. Thirteen articles on HIV care during COVID 19 pandemic are identified. Numerous studies from America, Africa, Asia, and Europe have reported a high incidence of HIV cases. It is expected that with the overwhelmed health services due to COVID-19, imbalances and disruption of regular vital services may occur due to the mobilisation of limited healthcare professionals across services to deal with the pandemic (19). Most studies present modifications of previous programs to adapt to the pandemic situation. However, there are

Table II: Program for HIV care during COVID-19 pandemic (n=13)

Term of care	Provider	Population	Continuum of care	Program	Outcome
PrEP1519 Telemedecine (16)	Medical team (doctor, nurse, psychologist, pharmacist, and social worker)	Adolescent key populations (AKP): men who have sex with men (MSM) and transgender women (TGW),	Prevention	Modified from the previous program - Recruitment based on the activities of peer-educators in social media platforms and apps only - Social media promotional videos, streaming platforms, and Project Instagram - - Following the identification of an AKP, providing PrEP and other sexual health care through telemedicine appointment or contacting them after the quarantine and giving a prevention package to their address. - Peer navigators help in scheduling face-to-face, telemedecine, and COVID-19 screening visits. - The follow-up is only online through social media platforms and smartphone text messages - Limit operational hours and face-to-face for scheduled appointments only.Measurement of temperature for all participants on arrival - Online Socio-behavioral questionnaires - Evaluates risk of COVID-19 to scheduled participants on the day before their appointment - All PrEP users can choose telemedecine with the delivery of PrEP pills and HIVST or a face-to-face meeting following protocol	Well-received by patients and providers and will likely be sustained even after COVID-19 pandemic
Mail-based Syringe services programs (SSPs) (17)	Volunteers, SSP program personnel, and public health staff	Inject drug user (IDU)	Prevention	Modified from the previous program - Pre-packing all supplies for participants - Providing delivery services of syringes, works, and naloxone based on needs (less restrictive) - Providing mail-based services - Screening for COVID-19 symptoms - Limiting visit duration - Indoor activities to outdoor space - Telemedicine for prescription	- Availability of HIV and HCV testing had decreased or been removed - Distribution of more syringes and naloxone than previously
HIV management mobile-health intervention using The A-CHESS platform (9)	Not reported	People living with HIV (PLHIV) and substance use disorder (SUD)	Treatment	Modified from the previous program - Interventions in mobile health to stay connected, collect data, and provide treatment to the general population - Private discussion forum - Cognitive-behavioral therapy boosters, games, and relaxation activities - Hepatitis C virus and HIV educational information	- Increase of missing HIV medications - Confidence to attend HIV follow-up appointments declined. - An increase in the use of other illegal substances
Extension for Community Healthcare Outcomes (ECHO) virtual mentoring platform (18)	Not reported	PLHIV	Treatment	Modified from the previous program - Facility readiness (COVID-19 symptom's screening) - Multi-month dispensing (MMD) of ART - distributed 4–6 months' supply of stock for patients receiving ART - The expansion of community ART dispensing	Continuity of critical HIV services
Behavioral Economics Incentives to Support HIV Treatment Adherence" (BEST) (5)	Not reported	PLHIV	Treatment	Modified from the previous program - BEST intervention: offer clients prizes for timely drug refills and annual prizes if they show viral suppression or based on high adherence as measured by the MEMS caps (19) - Restricting clinic visits and diagnostic testing - Health workers were allowed to continue administering ART services by using multi-month dispensing (MMD) of ART that was distributed over a period of two to three months.	Clinic attendance was constrained by fear of getting COVID-19,while stay-at-home orders aided routinize ART adherence and implementation of new community-based HIV care practices.

Table II: Program for HIV care during COVID-19 pandemic (n=13) (continued)

Term of care	Provider	Population	Continuum of care	Program	Outcome
. Telemedicine (20)	Doctors, nurses, mental health providers, social workers, and care coordinators make up the team.	PLHIV	Treatment	- Care coordinators have been proactively contacting patients to check on medication supply, food, and housing security and help set up technology during the pandemic. - In-person appointments with appropriate safety precautions, particularly for patients who have recently been diagnosed with HIV, are new to the clinic, do not understand English, do not have access to technology, or lack acceptable health or technological skills. - Follow-up video visit appointment	- Treatment adherence and care involvement - Convenience, reduced travel time/ costs, avoidance of stigmatizing clinic experiences, and reduction of infectious risk/social contact
Telemedicine (21)	Dietitian	PLHIV	Rehabilitation	- During COVID-19 lockdown, a phone interview was done to characterize dietary patterns and lifestyle modifications. - Video and phone follow-up sessions, which included a review of dietary suggestions. - The patient's weight was determined using household items.	- To prevent a significant gain in body weight by mitigating the negative changes in food habits and physical activity patterns.
Combination of telemedicine and face to face care (22)	Team of telemedicine, pharmacy	PLHIV	Prevention and rehabilitation	From the administrative files, collected data on (i) New HIV diagnosis (ii) Number of medical visits in HIV out-patients clinic (scheduled and then performed through in-person assessment or telemedicine, missed or postponed (iii) Dispensation of antiretroviral (ART) medications (iv) Hospitalizations of PLHIV - From the electronic and paper clinical records, - Medical visit every six months at clinic. - Patients with more severe medical conditions, which necessitate a more stringent follow-up, are seen more frequently. - Every three months, a pharmacy inside the hospital dispenses antiretroviral medications based on a medical prescription.	COVID 19 resulted in an increase in missed appointments from 5% to 8% (p 0.01), a decrease in new HIV infections from 6.4 per month in 2019 to 2.5 per month in 2020 (p = 0.01), a drop-in ART dispensation, and an increase in hospitalized HIV patients.
Test@Work Texts' Intervention (23)	HIV nurses, two medical trainees, and five laypeople	The high-risk population at targeting employees in the construction industry	Promotion	Modified from the previous program - SMS intervention via mobile text messaging Over the course of ten weeks, a total of 29 messages were delivered. - Texts were sent at regular intervals according to a predetermined timetable, with messages sent two to three times per week on regular days and times. - The mobile health (mHealth) evidence reporting checklist and the template for intervention description and replication assisted the development and reporting (TIDieR)	- Improvements in health and lifestyle habits such as alcohol consumption, physical activity, and diet, smoking, stress, and sexual health, as well as the intention to test for HIV. - Adults in the construction sector accept SMS messaging for HIV prevention and awareness, and it has a high uptake, broad reach, low attrition, and good engagement with message content.
HIV differentiated service delivery model (DSDM) (24)	Community Health Workers (CHWs)	Chronic care patients enrolled in pediatric development, HIV/ AIDS, non-communicable diseases, mental health, and oncology programs	Treatment	- Decentralization to improve health-care access - Use mobile phones as a formal means of contact between health professionals. - Allow patients to select delegates to seek medicine refills—stable HIV patients are offered three-monthly prescription refills and six-monthly checkups.	Many patients also identified positive coping methods on their own to guarantee that their care was continued.
Decongestion of the HIV clinics (25)	Not reported	People living with HIV (PLHIV)	Prevention and rehabilitation	- Provide refill antiretroviral therapy (ART) for multiple months; - Screen all patients for COVID-19 symptoms upon arrival and isolate if necessary;Patient spacing within the health facility waiting bays - At service locations, provide handwashing facilities and sanitizers. - Hold daily COVID-19 health discussions, and scale up community ART distribution.	Daily HIV clinic attendance in larger health facilities dropped by 60.4 percent, while clinic attendance in smaller facilities dropped by 33.6 percent. possible and attainable in a short amount of time

Table II: Program for HIV care during COVID-19 pandemic (n=13) (continued)

Term of care	Provider	Population	Continuum of care	Program	Outcome
Combination of telemedicine and face to face care (26)	All health care provider	PLHIV	Treatment	- More significant quantities of antiretroviral refill - phone consultations - New refill sites	Because of COVID-19-related measures, 17.7% of respondents reported difficulty acquiring antiretroviral drugs. During the COVID-19 outbreak, HIV care was adapted to include more significant volumes of antiretroviral refill in 67 (21.1%) cases, phone consultations in 25 (7.9%), and new refill sites in 12 cases (3.9%).
Combination of telemedicine and face to face care (7)	All health care provide	PLHIV	Rehabilitation	- Relocate hospital resources as quickly as feasible following the outbreak to prevent nosocomial infection; - Reduce the number of antiretroviral drug follow-up visits to the hospital. - Medication refills, delivery, and hotline consultation for three months - When someone has a fever or respiratory symptoms, they should be tested for sarcov and HIV.	COVID-19 was not found in any of the 15000 PLWH seeking HIV therapy at the facility.

also programs that are newly developed. In principle, programs implemented for HIV care provision during COVID 19 pandemic vary and include approaches such as telemedicine combined with a face-to-face approach as a modification to adapt to the COVID-19 restriction in clinics or hospitals.

During the pandemic, telemedicine is widely used for HIV prevention and rehabilitation by making use of social media and streaming platforms, combined with patient care for specific conditions. Promotional videos are posted on social media and streaming platforms, including Instagram posts, to reach the key populations. This is then followed by telehealth appointments. New patients are recommended to perform face-to-face appointments or assessments, followed by follow-ups through smartphone text messaging and social media sites. For PrEP registration, a telemedicine appointment is performed to do the appropriateness appraisal for PrEP use. Meanwhile, face to face appointments are performed for HIV assessments based on needs. A prevention kit, which is adjusted to the patient's need, is delivered to the patient's preferred address. This kit my include an HIV self-test (HIVST) kit, condoms, lubricants, PrEP flyer, anal douche, sanitiser syringes, works, or naloxone (20).

Modification of Health Facilities

The hospital's layout is divided into three separated central areas: infected, possibly infected, and non-infected. Because HIV is not an airborne infectious disease; nevertheless, the HIV inpatient and outpatient areas area relocated to the sterile area of the hospital, which is completely separated from the COVID-19 are. All zones have a specific disinfection protocol that must be followed. In HIV care facilities, alcohol spraying is performed every 2 hours. Medical personnel rigorously enforces face masks, hand cleanliness, and decontamination, which successfully protects PLHIV against COVID-19 in the health care centre (7). Handwashing stations and sanitisers are provided in service points for both indoor and outdoor activities (21).

Reduced number of hospitals visits for antiretroviral therapy check-ups

Antiretroviral treatment (ART) has been shown to enhance the life of HIV patients by lowering mortality and improving quality of life. Long-term treatment necessitates strict adherence and a strong commitment from patients to achieve long-term viral suppression (22). During the pandemic, the priority is to reduce the number of PLHIV who visit health facilities to get their ART and to provide medicine and treatment required based on a predetermined schedule. Adherence to therapy is essential in HIV/AIDS management due to the nature of this disease progression. Consumption of all required doses of Highly Active Antiretroviral Therapy (HAART) correctly will result in optimum level of virus suppression up to 90-95% (23). Patients who refuse to visit the hospital monthly are given a three-month supply of medicine. In addition, a three-month supply of ART for patients with additional comorbidities is recommended (7). Multi-month dispensing (MMD) of ART by distributing 3–6 months' stock supply for patients receiving ART is also applied (21). Patients with more complicated medical issues requiring a stricter follow-ups are seen more often. The strategies used to reduce the number of follow-up visits including utilisation of fast delivery of medicine. Another strategy is a hotline for counselling and advice.

Limiting visit time

Asymptomatic patients are selected to obtain refills without having to visit the facility to avoid SARS-CoV-2 transmission. In addition, priority is also given to patients over 50 years old and those with underlying medical issues (16).

Ensuring availability of pre-exposure and post-exposure prophylactic services

Collaboration with nongovernmental organisations (NGOs) to distribute HIV self-check kits and 3-month refills through fast transfer is established. In addition, NGOs also assist in collecting test results, which are then uploaded to a digital portal. Telemedication system provides distant counselling, recommendation, and medicine distribution for emergency PEP to decrease new HIV infections. A hotline has been established to discuss high-risk populations' queries and to offer simultaneous HIV prevention advice (7).

SARS-CoV-2 and HIV test for patients with respiratory manifestation and pneumonia

A new activity, which is COVID-19 symptom screening, is applied in HIV clinics. Patients who show the symptoms of SARS-CoV-2 infection were isolated and tested. If hospitalisation is not required, they are requested to do self-quarantine while waiting for the test resuls (16). Additionally, the manifestation of HIV could lead to misconstruction due to SARS-CoV (3). COVID-19 symptom screening is performed on every visit to the clinic (21).

Decentralisation

Decentralisation enhances access to health services and expands community ART dispensing (21). Community ART provision is extended by 1) updating existing community-based ART stations, 2) establishing health care outreach centres, 3) establishing community adherence groups, 4) using mobile vans, and 5) implementing home-based distribution (16).

Telemedicine

Patients are more inclined to access HIV care through telemedicine than face-to-face. Mobile-health initiatives are essential for PLHIV, and substance use disorder (SUD) to stay connected, gather data, and administer care during pandemics like COVID-19. Virtual platforms like phone calls, social media, Zoom or Skype meetings, WhatsApp Messenger, and mobile applications for smartphones are used as the alternative methods for communication and facilitation of physical distancing. (21). Text messaging proved to be a valuable method for conveying health-related information in the construction sector in the context of COVID-19 limitations that disrupted workers' regular routines (17).

Providing Rewards

Another approach uses the BEST intervention by providing rewards to clients based on timely drug refills, therapy adherence, and viral suppression (24).

CONCLUSION

While the covid -19 pandemic has made it difficult to do face-to-face visits with health providers and raises concerns about care disruptions, this pandemic also spurs the rise of alternative care approaches, including telemedicine and face-to-face care with modification to adjust to covid-19 restriction. The strategies include: 1) modification health facilities layout, 2) reduction of hospitals visit for a check-up, 3) limiting visit time, 4) ensuring availability of PrEP and PEP services, 5) SARS-COV-2 and HIV testing, 6) decentralisation, 7) telemedicine; and 8) providing rewards. Further studies ares required to develop effective interventions to deliver health care for PLHIV during COVID 19 pandemic.

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