MAKERERE UNIVERSITY

READINESS AND FACTORS INFLUENCING COMMUNITY PHARMACY PARTICIPATION IN THE HIV-FOCUSED COMMUNITY RETAIL PHARMACY DRUG DISTRIBUTION POINT (CRPDDP) PROGRAM IN KAMPALA CITY, UGANDA

BY

MBAZIIRA UMAR (BPHARM, MAK)

REG .NO:2023/HD07/3226U

SUPERVISORS: DR. KAGGWA BURHAN, PhD

DR. MUTEBI NOAH, MSc.

A RESEARCH DISSERTATION SUBMITTED TO THE DEPARTMENT OF PHARMACY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN PHARMACEUTICALS AND HEALTH SUPPLIES MANAGEMENT OF MAKERERE UNIVERSITY

AUGUST, 2025

DECLARATION

I, MBAZIIRA UMAR, hereby declare that this research report is my original work and that it has never been submitted to this University or any other institution of higher learning for any academic award or publication.

..... 7th August, 2025

Signature **Date**

MBAZIIRA UMAR

2023/HD07/3226U

APPROVAL

The research report has been submitted with the approval of the following supervisors.

1. **Mr. KAGGWA BRUHAN, PhD**

   Signature.....Kaggwabruhan..... **Date:**.....7th August 2025

2. **Dr MUTEBI NOAH, MSc.**

   Signature .....Mutebi..... **Date**.....8th/August, 2025

ACKNOWLEDGEMENT

I extend my heartfelt gratitude to my supervisors, Dr. Kaggwa Bruhan and Dr. Mutebi Noah, whose unwavering guidance and support were the cornerstone of my journey through this master's program. Their expertise and encouragement were pivotal in navigating this research and composing this thesis.

My sincere thanks also go to Mak IRB and the lecturers from the Makerere Pharmacy Department for their commendable role in my thesis, providing invaluable feedback and suggestions that significantly enriched this work.

I am very grateful to my friends and family for their love and constant support during this process. This journey was not only feasible but also meaningful because of their presence.

Lastly, I express profound gratitude to all the participants in my study, whose time and willingness to share their experiences were truly indispensable.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

ACP	-	AIDS Control Program.
ART	-	Anti-Retrovirus Treatment.
ARVs	-	Anti-retroviral
CAGs	-	Community ART Groups.
CCLAD	-	Community Client-Led ART delivery
CDDP	-	Community Drug Distribution Points.
CHCD	-	Community Health Commodity Distribution.
CRP	-	Community Retail pharmacies.
CRPDDP	-	Community Retail Pharmacy Drug Distribution Point
DHS2	-	District Health Software 2
DSD	-	Differentiated Service Delivery.
EMR	-	Electronic Medical Records.
GIS	-	Geographic Information System.
HIV	-	Human Immunodeficiency Virus
HTS	-	Health Test Services.
IDI	-	Infectious Disease Institute.
IP	-	Implementing Partners.
KCCA	-	Kampala Capital City Authority
MOH	-	Ministry Of Health.
MoU	-	Memorandum of Understanding
NGOs	-	Non-Government Organizations
NGOs	-	Non-Government Organizations
NDA	-	National Drug Authority
PLHIV	-	People Living with HIV.
PPPs	-	Public-Private Partnerships.
PreP	-	Pre- Exposure Prophylaxis
PSU	-	Pharmaceutical Society of Uganda.
RoC	-	Recipient of Care

UNAIDS - Joint United Nations Program on HIV/AIDS.

UPHIA - Uganda Population-based HIV Impact Assessment.

SMS - Short Message Service.

WHO - World Health Organization

OPERATIONAL DEFINITIONS

Community client-led ART delivery (CCLAD): This is delivery of antiretroviral drugs at community level to a community ART group by one of the community ART group members on a rotational basis.

Differentiated drug delivery approaches: Drug delivery models that are adapted or customized to provide drugs (ARVs) to clients living with HIV in the most convenient manner without compromising quality of care.

Enrollment in CRPDDP program -This can be operationalized as the number of community pharmacies who complete the registration process to receive medications and provide health services to the required HIV patients.

Factors favoring participation in CRPDDP program-Encompass the various demographic, socioeconomic, and health-related characteristics that aid individuals' likelihood to engage with the pharmacy services. These factors can include age, gender, income, accessibility of the pharmacy, and awareness of services.

Participation in CRPDDP program -Refers to the frequency and degree to which enrolled individuals engage with the services provided, including visits to the pharmacy, receipt of medications, and involvement in educational programs.

Readiness for Participation -Readiness in this context refers to the extent (meet or exceed the75% readiness threshold based on 20 facility-level indicators.) to which community pharmacies in Kampala City, Uganda are prepared to participate in the HIV-focused community retail pharmacy drug distribution point (CRPDDP) program. The indicators include factors such as storage, resources, training, and infrastructure availability that contribute to pharmacies' ability to effectively engage in the program.

Stigma: Stigma in this context refers to negative attitudes, beliefs, or behaviors towards people living with HIV (PLHIV). These include; discriminatory attitudes which refer to negative views or stereotypes towards PLHIV, fear of transmission of contracting HIV through casual contact, social exclusion which involves excluding PLHIV from social interactions or services, confidentiality concerns which involves breaches of patient confidentiality or lack of respect for patient privacy and finally the language that perpetuates negative stereotypes or shame.

ABSTRACT

Background: Globally, HIV remains a persistent public health concern. As of 2022, approximately 39 million people were living with HIV (PLHIV), with adults accounting for over 95% of this population (UNAIDS, 2023). ART coverage globally reached 76% in 2022, still falling short of the UNAIDS 95-95-95 targets aimed at ending the AIDS epidemic by 2030 (WHO, 2023).This study assessed the proportion of readiness, identified factors favoring and barriers to participation of community retail pharmacies (CRPs) in the Community Retail Pharmacy Drug Distribution Point (CRPDDP) program for HIV service delivery in Kampala City, Uganda.

Methodology: A cross-sectional design was employed, involving 304 pharmacies across the city's five administrative divisions. Quantitative data gathered from the surveys were summarized and Cleaned-in Ms. Excel then analyzed using SPSS version 26.

Results: Findings revealed a critical participation gap: only 3.9% of CRPs were actively enrolled in the CRPDDP program, yet out of the 292 non-participating pharmacies assessed, 76.7% met or exceeded the 75% readiness threshold based on 20 facility-level indicators. Most pharmacies complied with regulatory and structural domains such as licensure, pest-free storage, and temperature monitoring. However, notable gaps were identified in HIV-specific service areas, with only 11.2% of CRPs having ART counseling spaces, 7.8% maintaining adverse drug reaction records, and 20.1% equipped with dedicated ART dispensing points. Most community retail pharmacies complied with the presence of a supervising pharmacist, dedicated infrastructure, and prior involvement in public health programs. Barriers to enrollment were primarily perceptual and systemic, including low program awareness and stigma concerns.

Conclusion: The study concludes that while Kampala's CRPs demonstrate substantial technical capacity, their integration into the national HIV response remains limited. Bridging this readiness–participation divide will require targeted HIV training, mentorship, simplified policy communication, infrastructure support, and performance-based incentives to fully harness the potential of CRPs in differentiated ART service delivery.

CHAPTER ONE

INTRODUCTION

1.0 Background

Globally, Human Immuno-Deficiency Virus (HIV) remains a persistent public health concern. As of 2022, approximately 39 million people were living with HIV (PLHIV), with adults accounting for over 95% of this population (UNAIDS, 2023). Despite substantial progress in prevention and treatment, disparities in access to Anti-retroviral therapy (ART) persist, particularly in low- and middle-income countries. ART coverage globally reached 76% in 2022, still falling short of the UNAIDS 95-95-95 targets aimed at ending the Acquired Immuno- Deficiency Syndrome (AIDS) epidemic by 2030. Sub-Saharan Africa, which bears the highest burden of HIV, has made significant strides reporting a 43% decline in new infections over the past decade yet only approximately 68% of PLHIV had achieved viral suppression by 2022 (WHO, 2023).

To improve access and continuity of HIV care, several countries have adopted decentralized and community-based ART distribution strategies. In Nigeria, shifting ART delivery from health facilities to community retail pharmacies has achieved high refill retention rates and enhanced access among underserved populations (Oseni & Erhun, 2024). Similarly, in Zambia, qualitative research supports the feasibility of private pharmacies as ART access points, provided implementation issues such as training and infrastructure are addressed (Magomana, 2023). In Rwanda, over 90% of community pharmacies were found to possess the basic infrastructure and expressed willingness to engage in ART service delivery (Musafiri et al., 2024), aligning with emerging data from Kenya, Namibia, and South Africa demonstrating the effectiveness of community pharmacy models for both ART and Pre- Exposure Prophylaxis (PrEP) access (Lalla-Edward & Venter, 2025; Nyamuzihwa et al., 2023).

In Uganda, the Ministry of Health (MoH) has actively promoted Differentiated Service Delivery (DSD) models to optimize HIV service access and reduce congestion in public health facilities. Introduced in 2015, the DSD framework supports patient-centered care through approaches such as Community Client-Led ART Delivery (CCLAD), Community Drug Distribution Points (CDDP), and Fast-Track ART refills. These models align with World Health Organization (WHO)

and International AIDS Society (IAS) guidance recommending ART for all PLHIV, regardless of CD4 count (IAS, 2024). However, recent studies indicate implementation challenges, including stigma, drug stock-outs, and infrastructural gaps at the community level (Kintu et al., 2021; Oyet et al., 2023).

By 2022, Uganda reported an ART coverage rate of 83%, with approximately 90% of PLHIV aware of their HIV status and over 88% of those diagnosed on ART. However, viral load suppression the third '95' target stood at just under 60%, indicating a major bottleneck in treatment success (Uganda National Institute of Public Health, 2023). This gap in viral suppression reflects challenging shortfalls such as inconsistent medication adherence, limited follow-up mechanisms, and insufficient support for monitoring treatment outcomes**.** These shortfalls are most acute in urban and peri-urban districts, where overburdened health systems, high patient mobility, and fragmented referral pathways hinder ART continuity. Kampala, accounting for nearly 20% of the ART caseload nationally, remains a strategic priority for scaling up alternative ART delivery approaches, which aim to reduce congestion at public health facilities, improve medication adherence, shorten wait times, and provide more patient-centered, convenient refill options for stable clients (PEPFAR/USAID, 2022).

Among Uganda's innovative strategies is the Community Retail Pharmacy Drug Distribution Point (CRPDDP) program, which formally engages accredited private pharmacies to refill ART for stable patients. Licensed pharmacies receive ART stocks from partner health facilities and provide refills to enrolled clients, often in collaboration with implementing organizations such as "Reach Out Mbuya" and the Infectious Diseases Institute (IDI). (Ministry of Health, 2023; PEPFAR/USAID, 2022). Technology-based solutions like the ART Access platform are also being piloted to support community pharmacies in ART data reporting and refill management (Kyomugisha et al., 2023).

Despite these advances, CRPDDP implementation in Kampala remains patchy. While pilot data from the capital show promising viral suppression and client retention rates, readiness among community pharmacies varies widely due to regulatory gaps, inconsistent supervision, digital infrastructure limitations, and insufficient pharmacist training in HIV care protocols (ACP, 2021; Toroitich et al., 2024). Recent research indicates that barriers such as stigma, privacy concerns,

and lack of formal policy guidance continue to impede pharmacy-level participation in DSD programs (Oyet et al., 2023; Ezenduka et al., 2025).

It is within this context that the current study was undertaken to determine what is the proportion of readiness and the factors influencing participation in the CRPDDP program among community retail pharmacies in Kampala. As Uganda continues to align with global HIV targets, understanding the drivers and barriers of CRPDDP participation at the community pharmacy level will provide essential insights to inform policy and improve the effectiveness of urban HIV service delivery.

1.1 Problem Statement.

Uganda's HIV response aspires to ensure equitable, sustained access to antiretroviral therapy (ART) for all People Living with HIV (PLHIV), in line with the UNAIDS 95–95–95 targets. One of the innovative strategies supporting this goal is the Community Retail Pharmacy Drug Distribution Point (CRPDDP) model. This approach seeks to overcome the problem of much congestion, long waiting times and high patient provider ratios in the public health facilities so that stable ART clients are able to refill medications at licensed community pharmacies whose readiness was determined in order to improve client satisfaction and continuity of care .(IAS, 2024; WHO, 2023; Goldstein et al., 2023).

However, Uganda continues to face systemic challenges. As of 2022, the national HIV prevalence among adults stood at 5.1%, with viral load suppression at just 75.4% far below the global target of 95% (UPHIA, 2022). Kampala, which serves nearly 20% of the country's ART population, is especially affected by overcrowded clinics, long queues, and staff shortages (USAID/PEPFAR, 2022). Despite a CRPDDP rollout to over 100 sites nationally, participation in Kampala remains low, even with its high density of licensed pharmacies. Previous studies have alluded to persistent readiness problems including inadequate infrastructure, lack of staff training, limited policy awareness, stigma, and fragmented digital systems which can compromise the quality of HIV services provided (Musafiri et al., 2024; Toroitich et al., 2024; Ogbuagu et al., 2024). Moreover, community pharmacies are business entities with financial priorities, and their participation in the CRPDDP program were as well influenced by concerns about profitability and sustainability. The requirements for participation in a CRPDDP program, such as obtaining necessary licenses,

meeting specific storage and dispensing facility standards, and adhering to program guidelines and protocols which require 75% threshold score from the 20 indicators were burdensome or problematic to some pharmacies, particularly smaller or resource-constrained ones. These requirements may strain the limited resources of some pharmacies, making it challenging for them to participate in the program (ACP, 2021).

Additionally, the program's emphasis on HIV care and treatment may not align with the core business priorities of some pharmacies, leading to competing interests and limited motivation to participate. As a result, the CRPDDP program may not reach its full potential in increasing access to HIV services, exacerbating existing health disparities and limiting the impact of HIV treatment and care initiatives in Uganda (ACP, 2021).

Yet, pilot CRPDDP sites in Uganda and similar initiatives in Nigeria, Rwanda, and South Africa have shown that pharmacy-led ART distribution can achieve over 95% client retention and improved adherence when well-integrated with digital platforms and health facility support (Mukama et al., 2024; Ajagu et al., 2017; Nyamuzihwa et al., 2023). Still, data on the actual readiness of Kampala's community pharmacies and the systemic enablers or barriers affecting their participation remain sparse and largely inconclusive.

This gap limits efforts to optimize community-based ART delivery. Without understanding the readiness and constraints facing pharmacies, the scale-up of CRPDDP in urban Uganda may fall short of its potential to enhance access, reduce facility congestion, and support viral suppression. This study therefore investigated the factors favouring participation in the CRPDDP program among community retail pharmacies in Kampala City, focusing on the facilitators, barriers, and service readiness essential for sustainable program expansion.

1.2 Justification

Uganda's HIV/AIDS policy framework emphasizes the importance of increasing access to HIV treatment, care services and acknowledges the importance of community-based service delivery, there is limited guidance on the integration of community pharmacies into the HIV care continuum. Specifically, there is lack of clear policies and guidelines on Community pharmacy roles, training and capacity building, incentives and support and stigma reduction.

Understanding the readiness and barriers to CRPDDP participation among community retail

pharmacies will help inform the scale-up of differentiated ART delivery models**.** This research is justified by its potential to enhance access to HIV medications, inform policy, improve program implementation, and ultimately contribute to better health outcomes for people living with HIV in Kampala City, Uganda. By identifying the systemic, infrastructural, and perceptual barriers that limit pharmacy participation, and by assessing the level of technical readiness across facilities, the study provides actionable evidence for designing a more effective and inclusive HIV care strategy. Given the burden on urban health facilities and the push toward decentralized care, leveraging community pharmacies could be a transformative step toward achieving Uganda's national HIV targets and the global 95-95-95 goals.

1.3 Research Questions

1. What is the proportion of pharmacies ready to offer the CRPDDP services among community retail pharmacies in Kampala City, Uganda?
2. What are the factors that favor participation in CRPDDP program among community retail pharmacies in Kampala City, Uganda?
3. What are the barriers to participation in CRPDDP program among community retail pharmacies in Kampala City, Uganda?

1.4 Research Objectives

1.4.1 General Objective

To determine the readiness and factors influencing community pharmacies participation in the HIV Focused Community Retail Pharmacy Drug Distribution Point (CRPDDP) Program in Kampala City, Uganda.

1.4.2 Specific Objectives.

1. To determine the proportion of community retail pharmacies ready to offer CRPDDP services in Kampala City, Uganda.
2. To determine the factors that favor participation in CRPDDP program among community

retail pharmacies in Kampala City, Uganda.

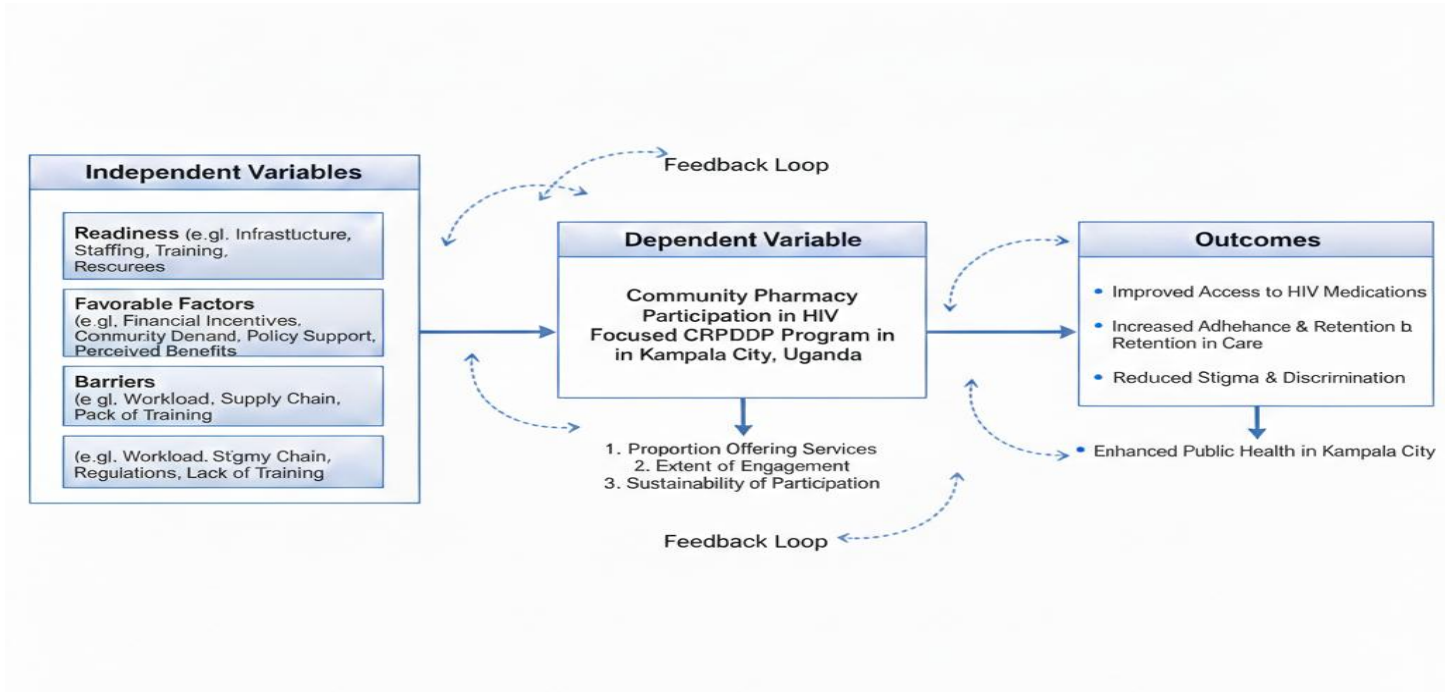
3. To determine the barriers to participation in CRPDDP among community retail pharmacies in Kampala City, Uganda.

1.5 Conceptual framework

The independent variables include readiness facilitators, the factors and barriers to participation in the CRPDDP program while participation in the HIV focused program is the Dependent variable

***Figure 1**: Conceptual Framework for Readiness and Participation Factors in the HIV (CRPDDP) Program.*

Source: Developed by the researcher, 2025



CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of the CRPDDP Program

The Community Retail Pharmacy Drug Distribution Point (CRPDDP) Program is a differentiated service delivery model designed to enhance access to HIV treatment services for stable People Living with HIV (PLHIV) residing or working in urban areas of Uganda. This model, adopted from the Ministry of Health's AIDS Control Program (ACP), seeks to decongest overburdened health facilities by shifting stable clients to community retail pharmacies where they can conveniently pick up their antiretroviral (ARV) medications (ACP, 2021). The model is grounded in the principles of accessibility, client-centered care, and public-private partnership, aiming to bridge service delivery gaps in high-burden urban settings (Katongole et al., 2024).

2.2 Benefits of the CRPDDP Program

Several benefits have been attributed to the CRPDDP program for key stakeholders, including the recipients of care (RoC), the health system, and the participating pharmacies. For the RoC, the program offers enhanced convenience in accessing medication, with reduced travel time and associated costs, flexible pick-up hours, and increased privacy. A cross-sectional study done on 135 PLHIV in southwestern Uganda indicated that these factors significantly contribute to improved medication adherence and retention in care, which are crucial for viral suppression (Amunyongire et al., 2022). Evidence from pilot studies conducted by Implementing Partners (IPs) such as the Infectious Diseases Institute (IDI) in Kampala and Wakiso reported retention and viral suppression rates exceeding 95% among RoC enrolled in the program (ACP, 2021; Mukama et al., 2024). Moreover, a qualitative cross-sectional study done on PLHIV, health workers, HIV focal persons, community retail pharmacies involving 11 in-depth interviews, 9 key informants and 8 focal group discussions indicated that the CRPDDP model helps mitigate HIV-related stigma by shifting medication collection from health facility-based ART clinics to community retail pharmacies, where services are less conspicuous (Katongole et al., 2024).

An exploratory descriptive study done on adolescents aged 10 to 19 years living with HIV in Lira district involving 29 qualitative interviews showed that from a health system perspective, the CRPDDP program plays a vital role in optimizing service delivery by decongesting ART clinics and redirecting stable clients to alternative access points. This allows healthcare workers at health facilities to focus their attention on newly diagnosed clients, unstable cases, and those with co-morbidities (Apio, 2022). Furthermore, in a descriptive qualitative study done in Bushenyi, southwestern Uganda involving 24 PLHIV, 6 key informants indicated that the CRPDDP promotes cost-effectiveness in service delivery, reduces patient waiting times, and expands differentiated care in urban and peri-urban environments (Oyet et al., 2023; WHO, 2022). Emerging cost data from South Africa also support this home-based ART refills offered through community channels have shown cost comparability with clinic-based models, further affirming the viability of decentralized delivery. The use of Geographic Information System (GIS) mapping has been instrumental in identifying eligible pharmacies located within one to two kilometers of participating health facilities, ensuring ease of access for RoC (ACP, 2021).

Further-more, a randomized controlled trial done on PLHIV for at least one year involving four network members indicated that Pharmacies participating in the CRPDDP model also benefit significantly. Besides receiving dispensing fees, these pharmacies experience increased foot traffic from PLHIV who often purchase other medications, thereby expanding their customer base and revenue streams. In addition, their participation strengthens public-private partnerships and offers them an opportunity to contribute to public health and community development (Wagner et al., 2022). A descriptive cross-sectional study done in 42 health facilities in Wakiso District indicated that Pharmacies are selected based on specific criteria, including possession of a valid National Drug Authority (NDA) license, physical accessibility, adequate storage space, availability of trained personnel, and a demonstrated willingness to participate in the CRPDDP initiative (Lule et al., 2025).

Implementation of the CRPDDP model involves a formal service agreement between the regional implementing partner, usually a health facility under organizations such as Reach Out Mbuya or IDI, and the selected community pharmacy. Eligible clients are those who have been on ART for at least one year, are 20 years and older, are not pregnant or breastfeeding, and have no major co-infections such as tuberculosis. Once enrolled, a maximum of 2,000 RoC can be served per

pharmacy, and clients are allowed to choose a pharmacy most convenient to them (ACP, 2021). In the event of clinical complications such as persistent headaches, vomiting, diarrhea, fever, or failure to adhere to appointments within a seven-day grace period, clients are referred back to the health facility for further evaluation and management (WHO, 2022).

Since its introduction, the CRPDDP model has witnessed notable expansion. By early 2023, the program had been rolled out to over 104 pharmacies in Uganda, serving approximately 40,000 clients across 61 health facilities. The Ministry of Health aims to extend the initiative to 200 pharmacies, covering 147 health facilities and reaching more than 150,000 stable PLHIV (IAS, 2023). This expansion illustrates the scalability and growing acceptance of the CRPDDP model as a viable intervention for improving HIV service delivery in urban Uganda. The model's success reinforces the global shift towards differentiated service delivery approaches that emphasize client convenience, system efficiency, and multi-sectorial collaboration (UNAIDS, 2024). In other countries such as Zambia and South Africa, similar models involving community pharmacies have already demonstrated feasibility, acceptability, and potential to reach underserved populations.

2.3 Readiness for the CRPDDP Program Enrollment among Community Pharmacies

The World Health Organization (WHO) strongly advocates for decentralized delivery models for antiretroviral therapy (ART), emphasizing community-based approaches as effective strategies to increase access to HIV treatment services. These models improve ART uptake, retention in care, and help decongest overburdened public health facilities (Avong et al., 2018; WHO, 2023).A cross-sectional study conducted on 262 community pharmacies in Rwanda showed that decentralization efforts have evolved from hospital-based care to primary health centers and now increasingly involve community pharmacies, which serve as accessible points of care and medication distribution closer to the patients (Musafiri et al., 2024).

In another research done using a descriptive cross-sectional design involving 205 community pharmacies in southeast Nigeria gave evidence which demonstrates the feasibility and success of shifting ART distribution to community pharmacies. Between 2016 and 2017, 375 clients were decentralized from 14 public hospitals to 26 community pharmacies with impressive outcomes 100% prescription refill rates and nearly 99.7% retention in care (Ajagu et al., 2017). This model has since expanded to other states, reaching over 5,000 clients by 2019 and planned for further

scale-up (Ajagu et al., 2017). Such successes underline the critical role that private community pharmacies can play in ART service delivery in urban and peri-urban settings.

In Eswatini, the national Community Health Commodity Distribution (CHCD) program has implemented community-based differentiated service delivery (DSD) models, including ART groups and outreach, effectively reducing the burden on healthcare facilities while making ART more accessible and patient-centered (PEPFAR, 2022; Goldstein et al., 2023). These models have improved ART retention rates and satisfaction among people living with HIV (PLHIV). Similarly, in South Africa, home-delivered ART and pharmacy-based models have emerged as effective, scalable, and cost-comparable to conventional delivery systems.

Rwanda's experience further supports pharmacy-based ART distribution, with 99.6% of surveyed pharmacies reporting adequate infrastructure and storage conditions, and over 93% willing to dispense ARVs (Musafiri et al., 2024). This readiness is pivotal for scaling community ART programs, especially in urban centers where pharmacies are more accessible than health facilities.

Within Uganda, a cross-sectional study involving adults living with HIV in 9 health facilities has shown growing enrollment in community drug distribution points (CDDP) as a preferred differentiated service delivery option (Baleeta et al. 2023) found that CDDPs enrolled more PLHIV than other models in East and Central Uganda, highlighting community-based approaches' acceptability. In a cross-sectional study done Kamuli district involving 392 adults living with HIV indicated that although enrollment rates remain modest in some districts, such as Kamuli where only 12% of stable ART clients were enrolled in CRPDDP by late 2022, numbers are rising steadily, reflecting increasing program awareness and pharmacy readiness (Buyinza et al., 2025).

The readiness of community pharmacies is not limited to Kampala or Uganda alone. A cross-sectional survey in Kenya showed that over 85% of community pharmacies had adequate infrastructure and expressed willingness to participate in decentralized ART distribution (Willie, 2025). In South Africa, pilot programs integrating private pharmacies in ART distribution reported improved client convenience and decongestion of public health facilities, though challenges remain around pharmacy staff training and supply chain management.

In the research done in Uganda using a qualitative observational design involving 12 stakeholders indicated that Digital health integration is increasingly critical for the success of community-based ART programs. In Uganda, the Infectious Diseases Institute (IDI) partnered with Kampala Capital City Authority (KCCA) to pilot digital platforms linking client data with pharmacy dispensing systems, ensuring seamless ART refill services without increasing staff burden (Academy for Health Innovation Uganda, 2021; Kyomugisha et al., 2023). This is echoed in studies from Kenya and Malawi where mobile health technology facilitated better ART adherence and client retention.

Public-private partnerships (PPPs) are essential to mobilize community pharmacies for CRPDDP implementation. Regional and district health authorities often engage pharmacies through service agreements, ensuring pharmacies meet requirements such as active licenses, adequate staffing, and space (ACP, 2021; McAlister, 2024). This approach strengthens health systems' capacity and broadens service reach, fostering sustainability.

Overall, readiness for CRPDDP enrollment among community pharmacies in Uganda and other African contexts depends on multiple factors: adequate infrastructure, willingness and capacity of pharmacy staff, robust supply chains, digital health systems, and strong stakeholder collaboration. While challenges such as staff training, stigma, and resource limitations exist, evidence from various settings affirms community pharmacies as vital partners in decentralized ART delivery, improving accessibility, adherence, and health outcomes for PLHIV

2.4 Factors Influencing Community Pharmacies' Participation in the CRPDDP Program

The participation of community pharmacies in Uganda's Community Retail Pharmacy Drug Distribution Point (CRPDDP) program is shaped by a confluence of operational, infrastructural, and policy-related factors. A critical enabler has been the integration of digital health systems, notably the synchronization between Uganda EMR and ART Access platforms. This integration facilitates real-time patient data sharing, streamlines antiretroviral (ARV) requisition processes, and ensures accurate prescription documentation, thereby enhancing the efficiency of service delivery (Kyomugisha et al., 2023; Katongole et al., 2024). These digital innovations not only reduce administrative burdens but also improve transparency and patient tracking mechanisms, which have been instrumental in boosting pharmacy engagement in Kampala. Further-more a qualitative descriptive study done on 14 key informants in Zambia and a randomized controlled

trial done in Malawi have demonstrated improved accountability and data accuracy in ART dispensing (Vumbugwa et al., 2024; Msosa et al., 2023).

Moreover, the studies conducted by Willie (2025) and Oyet et al. (2023) previously emphasized that facilities signing agreements with hospitals received training and EMR support, which streamlined data entry and prescription coordination. This foundational approach has been validated and echoed by more recent qualitative inquiries, where stakeholders noted the importance of intuitive software development aligned with pharmacy workflows to encourage sustained participation (Kyomugisha et al., 2023). These findings affirm the necessity of technical alignment between pharmacy operations and national EMR architecture.

Financial incentives also play a significant role. For example, the CRPDDP program reimburses pharmacies a dispensing fee of $0.55 (UGX 2,000) per refill visit when patients adhere to their scheduled pick-ups, reinforcing the economic viability of the model (Katongole et al., 2024). Comparative studies in Nigeria and Zambia indicate that community pharmacies that receive similar compensation are more likely to show consistent participation in ART programs (Magomana, 2023). These incentives symbolize formal recognition of the pharmacy's value in the HIV treatment cascade and motivate long-term commitment.

Capacity building remains a cornerstone. Pharmacies involved in CRPDDP typically undergo targeted training in ART delivery, patient communication, and data reporting, boosting their readiness to serve people living with HIV (PLHIV). These findings resonate with outcomes from Rwanda and Uganda where skilled pharmacy staff demonstrated improved adherence support and patient satisfaction (Musafiri et al., 2024; Katongole et al., 2024). Programs that invest in pharmacy-led mentorship and supervision as done in Eswatini’s CHCD model have demonstrated sustained improvement in pharmacy performance and HIV care retention (Goldstein et al., 2023).

Another important factor is the formal agreement between pharmacies and healthcare facilities. These partnerships often include predefined terms concerning ARV stock management, reporting obligations, and quality assurance protocols. Such structural frameworks enhance coordination and accountability, as supported by both local (Kabale, Kampala) and international evidence (Kyomugisha et al., 2023; Katongole et al., 2024). These agreements often mirror Public-Private Partnership (PPP) structures that have been effective in similar health service delivery models

(McAlister, 2024).

However, concerns regarding long-term sustainability persist. The CRPDDP program's reliance on donor funds, such as those from USAID LPHS Kigezi, raises questions about its scalability and continuity without external financial support (Katongole et al., 2024). This emphasizes the urgent need for policy shifts toward integrating CRPDDP into the national health budget or exploring public-private financing models to ensure program longevity.

Lastly, non-financial facilitators such as peer influence, accessibility, joint supervision from health authorities, and proactive reminder systems (e.g., calls, SMS using ART Access system) have also been noted as positive contributors to program adoption and client retention (Oyet et al., 2023). Such supportive systems mirror evidence from differentiated care models in Kenya and South Africa, where interpersonal outreach and professional reinforcement led to higher pharmacy-based ART uptake (Ismail, 2024).

2.5 Barriers to Participation in the CRPDDP Program among Community Pharmacies

Despite the promising potential of the Community Retail Pharmacy Drug Distribution Point (CRPDDP) program to decentralize HIV treatment, community pharmacies in Kampala face multiple barriers that limit their full engagement. These barriers are both systemic and situational, encompassing training inadequacies, infrastructural limitations, digital interoperability issues, stigma, and regulatory constraints.

A prominent challenge is the limited training of pharmacy personnel in HIV care, particularly in antiretroviral therapy (ART) management and psychosocial support. Although many pharmacy staff have undergone training in HIV prevention such as HIV testing and counseling, a significant proportion lack the competencies required for treatment provision. In a national study in Rwanda, for example, 82.4% of pharmacy staff had training in HIV prevention, but only 30.5% were trained in treatment and 29.8% in psychosocial support (Musafiri et al., 2024). These gaps in technical capacity diminish confidence among pharmacists and hinder program adoption. In Uganda, qualitative assessments also revealed that insufficient HIV-focused professional development demotivates pharmacies from embracing differentiated care models like CRPDDP (Katongole et al., 2024).

Infrastructural deficiencies further obstruct participation. Pharmacies must meet criteria outlined by the Uganda AIDS Commission (UAC) to qualify for enrollment. These include possession of a valid license, a waiting area for Recipients of Care (RoC), secure storage facilities free from pests, adequate ventilation, and accessibility (UAC, 2021). However, many community pharmacies, especially small and independent ones in urban and peri-urban Kampala, do not meet 75% of these conditions, rendering them ineligible. Research from Kabale and Bushenyi corroborates this, indicating that lack of physical infrastructure and storage space was among the most frequently cited barriers to CRPDDP implementation (Oyet et al., 2023). Studies in Kenya and Nigeria also confirm that inadequate dispensary space, stock control systems, and consultation privacy limit pharmacy participation in decentralized ART models (Ajagu et al., 2017; Willie, 2025).

Another barrier is HIV-related stigma, which continues to permeate communities. Clients often fear being seen collecting ARVs at local pharmacies, particularly in areas where anonymity is limited. This fear discourages both patients and pharmacists who may worry about reputational harm from fully engaging with the program. Research conducted in Uganda shows that HIV stigma continues to undermine service uptake and was often cited by pharmacists as a reason for patient attrition (Apio, 2022; Katongole et al., 2024; Bruser, 2020).

A related issue is the limited digital integration between pharmacy systems and government-supported electronic medical record (EMR) systems. The CRPDDP relies on synchronization between platforms such as ART Access and Uganda EMR. However, these systems often fail to interoperate efficiently, leading to data discrepancies, delayed reporting, and fragmented patient histories (Musafiri et al., 2024; Katongole et al., 2024; Ogbuagu et al., 2024). This technological gap undermines trust in the system and reduces pharmacy participation. In contrast, where digital integration has succeeded as in Malawi's smart ART pilot pharmacy-based ART delivery has flourished (Msosa et al., 2023).

Policy and regulatory gaps also persist. In Nigeria, the absence of a robust national framework to support and empower community pharmacists in HIV care was shown to hinder their participation in ART delivery (Ajagu et al., 2017). Uganda has made more progress, but inconsistencies remain in how CRPDDP policies are interpreted and implemented across districts. The lack of uniform

enforcement creates ambiguity that discourages pharmacy investment in CRPDDP readiness. Further, ambiguous operational standards and lack of clear guidance for pharmacies unfamiliar with ART refills create a culture of caution rather than innovation.

Eligibility restrictions for clients further constrain program uptake. In Kabale, only stable clients those aged over 20, with over 12 months of ART experience, not pregnant or breastfeeding, and not on TB treatment are eligible for CRPDDP enrollment (Mugenyi et al., 2024). This stringent inclusion criterion excludes potentially eligible patients who could benefit from community-based ART access. Health workers' skepticism of the model and weak demand-generation efforts has also slowed program uptake. A study in Bushenyi revealed that poor awareness campaigns and weak peer education strategies limited interest in CRPDDP, even among eligible clients (Oyet et al., 2023).

Finally, systemic bottlenecks such as human resource limitations and inconsistent stock replenishment cycles discourage pharmacies from sustaining participation. Without guarantees of ARV supply and reimbursement for dispensing costs, some pharmacies hesitate to commit to CRPDDP fully. These concerns are heightened by the uncertainty of long-term funding, particularly given the program's current reliance on donor financing from agencies like USAID LPHS Kigezi (Katongole et al., 2024). Without a defined transition to government support or sustainable PPPs, CRPDDP may struggle to expand equitably.

2.6 Summary and Identified Literature Gaps

The literature consistently affirms that the Community Retail Pharmacy Drug Distribution Point (CRPDDP) program represents a strategic differentiated service delivery (DSD) model tailored to the urban context of Uganda. Its core aim is to decongest public health facilities by decentralizing antiretroviral therapy (ART) distribution to community retail pharmacies. Scholars have emphasized that CRPDDP enhances access and adherence among stable people living with HIV (PLHIV) by providing more convenient, patient-centered, and less stigmatizing ART pickup options (ACP, 2021; Katongole et al., 2024). The model is described as mutually beneficial promoting improved public health outcomes while simultaneously offering pharmacies increased foot traffic, brand visibility, and supplementary income through dispensing reimbursements (Wagner et al., 2022). Evidence from Uganda, Nigeria, Rwanda, and Kenya points to growing

readiness among community pharmacies to engage in such service models, particularly where enabling factors such as infrastructure improvements, digital system readiness, and strong public-private partnerships exist (Musafiri et al., 2024; Ajagu et al., 2017).

Empirical studies from Uganda have further underscored the importance of systemic enablers such as interoperability between ART Access and Uganda EMR platforms, financial incentives, and clearly articulated service agreements in supporting pharmacy engagement in the CRPDDP framework (ARC, 2024; Katongole et al., 2024). Nevertheless, despite promising outcomes such as high client retention and viral suppression rates reported in pilot programs the literature shows that participation across districts remains inconsistent. Contextual challenges, including infrastructural limitations, persistent HIV-related stigma, digital disparities, and policy ambiguities, continue to hinder equitable scale-up (Oyet et al., 2023; Apio, 2022). Therefore, while the CRPDDP model is theoretically sound and increasingly operationalized, its implementation success remains uneven and context-dependent.

However, the reviewed literature reveals several critical gaps that warrant further investigation. First, while multiple studies document programmatic success stories, few rigorously interrogate why certain pharmacies sustain high levels of participation while others disengage or decline to enroll. Organizational factors such as internal leadership dynamics, staff motivation, workflow integration, and the role of owner-manager decisions remain underexplored. These qualitative dimensions particularly in high-density urban settings like Kampala could illuminate the hidden drivers or constraints of pharmacy participation and sustainability in CRPDDP programs.

Second, limited evidence exists regarding the quality of care delivered through community pharmacies under the CRPDDP arrangement. Although pilot evaluations reported high retention and viral suppression rates (ACP, 2021; Mukama et al., 2024), few studies have systematically assessed whether these outcomes are maintained at scale or how they compare with facility-based ART services. Furthermore, while digital systems have been cited as critical enablers, the literature lacks in-depth assessments of data accuracy**,** EMR interoperability**,** user training gap and privacy or confidentiality risks inherent in sharing patient records across public-private platforms issues which are increasingly important in light of the program's expansion.

Third, the patient experience particularly among vulnerable or high-risk populations remains insufficiently examined. While some studies highlight improved convenience and reduced stigma, there is a dearth of research exploring patient trust, perceived quality, confidentiality concerns, or willingness to transition from facility-based to pharmacy-based ART collection. Moreover, the acceptability of CRPDDP among key and marginalized groups such as adolescents, mobile workers, men who have sex with men (MSM), and female sex workers who often face unique barriers to HIV care remains an unaddressed area in the existing body of evidence.

Lastly, there is a noticeable lack of comparative evaluation of CRPDDP against other DSD models, such as community ART groups (CAGs), home-based ART refills, or facility-based fast-track systems. Without comparative analysis of clinical outcomes, cost-effectiveness, and patient satisfaction, it remains difficult to determine the most scalable and sustainable ART delivery models within Uganda's broader national HIV strategy. As differentiated care becomes the standard, understanding where CRPDDP fits in the continuum of DSD options is essential.

In conclusion, while existing literature validates the strategic promise of pharmacy-based ART delivery especially in urban hubs like Kampala it remains clear that critical evidence gaps must be addressed. Further research is needed to assess care quality, system-level coordination, patient perspectives, and contextual implementation dynamics. Bridging these gaps will be vital for guiding national scale-up, informing policy formulation, and optimizing CRPDDP's role in Uganda's path toward achieving the 95-95-95 global HIV targets.

CHAPTER THREE

METHODOLOGY

3.1 Research Design

The study adopted a cross-sectional design to assess the readiness, factors that favor, and barriers to participation in the Community Retail Pharmacy Drug Distribution Point (CRPDDP) program in Kampala, Uganda.

3.2. Study Setting

The study was conducted in Kampala, the capital and largest city of Uganda. Kampala is divided into five political divisions: Central Division, Kawempe Division, Makindye Division, Nakawa Division, and Rubaga Division all covering a total of 189 Square Kilometers with 176 Square Kilometers of land and 13 Square Kilometers of water.

Community pharmacies in Uganda are accredited by the National Drug Authority (NDA) to operate as licensed pharmacies.

3.2.1. Study Population

The study targeted retail pharmacies in Kampala City. According to the 2022 National Drug Authority (NDA), there were 353 licensed community retail pharmacies in Kampala, representing 22.7% of all licensed retail pharmacies in Uganda. The Central Division had 99 pharmacies, Kawempe 57, Makindye 76, Nakawa 58, and Rubaga 63 that were eligible to participate in the study.

Kampala has a population of 1,875,834. These divisions are densely populated and host many people living with HIV (PLHIV) who are in need of the CRPDDP program. Community retail pharmacies in these areas are well stocked to manage co-morbidities and often have reserved space for additional services such as counseling.

3.2.2 Inclusion Criteria

The study included community retail pharmacies that met the following criteria:

- Community retail pharmacy with a valid license recognized by national regulatory authority (NDA)
- Located within Kampala City, covering any of its five administrative divisions Demonstrated involvement in HIV-related service delivery (e.g., dispensing ART, counseling)

3.2.3 Exclusion Criteria

Newly established pharmacies with less than the specified operational period of six months in Kampala City, Uganda, were excluded from the study according to the AIDS Control Program (ACP) standards.

3.2.4 Sample Size Estimation

For objectives one and three, the study sought to determine the readiness and the barriers of community retail pharmacies to participate in the HIV-focused CRPDDP program by conducting a census of all pharmacies in Kampala City that were not enrolled for the program. A census was feasible due to the manageable number of licensed community retail pharmacies in the city and the availability of an up-to-date register from the National Drug Authority (NDA). Conducting a census ensured complete geographic and programmatic representation, minimized sampling bias, and enhanced the credibility of readiness-level comparisons across divisions.

Rather than selecting a sample, the study gathered information from all relevant pharmacies. For objective two, which focused on identifying factors favoring participation in the CRPDDP program, the study targeted only those community retail pharmacies that had enrolled for the CRPDDP program.

3.2.5 Sampling Procedure

The study involved obtaining a list of pharmacies from the National Drug Authority register. Then research assistants visited community retail pharmacies with questionnaires which were administered to managers, owner, or dispensers available at the premises. Since the study aimed to assess the readiness and participation factors of all community retail pharmacies in Kampala City, A census or complete enumeration approach was adopted for objective one and three and sampling for objective two.

3.3 Study Variables

3.3.1 Dependent Variables

The dependent variable for this study was the participation of community retail pharmacies in the HIV focused CRPDDP program.

3.3.2. Independent Variables.

- The readiness proportion of community retail pharmacies to offer CRPDDP services in Kampala City, Uganda.
- The factors that favor participation in the CRPDDP program among community retail pharmacies in Kampala.
- The barriers to participation in the CRPDDP program among community retail pharmacies in Kampala.

3.4 Data Collection Methods

Quantitative data were collected through a semi-structured survey questionnaire targeting community pharmacies in Kampala City, Uganda. The purpose was to assess their readiness to participate in the CRPDDP program and to document barriers and enablers affecting their potential enrollment. The study involved pharmacy managers, owners, and dispensers who were directly engaged in pharmacy operations and decision-making.

3.5 Data Collection procedure.

Data collection was conducted by the principal researcher and his assistants using semi-structured questionnaires, which were administered to personnel at community retail pharmacies, including pharmacy managers, owners, and dispensers. The questionnaires gathered data on readiness for enrollment in the CRPDDP program and addressed additional constructs such as awareness of the program, perceived barriers to participation, and incentives that might promote uptake. Trained research assistants conducted brief on-site observations using a standardized checklist aligned with the 20 readiness indicators. Key items (e.g., pest infestation signs, temperature monitoring devices, dedicated dispensing areas) were verified visually; others (e.g., licensure status, EMR access) relied on documentation or staff report. The use of semi-structured questionnaires is widely recognized in health systems research for their ability to capture both structured responses and limited open-ended insights (Komildjanovna, 2024).

3.6 Data Analysis

Quantitative data gathered from the surveys were summarized and Cleaned-in Microsoft Excel then analyzed using SPSS version 26. Data obtained were used to determine the proportion of pharmacies ready for enrollment and to identify factors favoring enrollment. Additionally, the analysis examined the barriers to enrollment, followed by a ranking of these factors.

3.7 Ethical Considerations

The research protocol was cleared by Makerere University Research Ethics Committee (MAKSHSREC-2025-897). Informed consent was obtained from all participants, ensuring they understood the research's purpose and the use of their data. Throughout the research process, confidentiality was maintained, with all data anonymized prior to analysis.

3.8 Dissemination

The findings from this research were presented to key stakeholders in Kampala City, Uganda, including the Makerere University College of Health Science Department, community retail pharmacies within Kampala City, program coordinators, and policymakers. Furthermore, a final report was published and shared with the broader public health community to inform future interventions and programs aimed at enhancing participation in the CRPDDP program.

CHAPTER FOUR

RESULTS

4.0 Introduction

This chapter presents the findings from the study on the readiness and factors influencing the participation of community pharmacies in the HIV-focused Community Retail Pharmacy Drug Distribution Point (CRPDDP) Program in Kampala City, Uganda. Data was collected from 304 pharmacies across the five city divisions: Kawempe, Makindye, Rubaga, Nakawa, and Central. The results are organized into four sections aligned with the specific objectives: demographic characteristics, readiness levels, favoring factors for participation, and barriers to participation.

4.1 Demographic Characteristics of Pharmacies and Respondents

A total of 304 pharmacies were surveyed across the five divisions of Kampala City. The distribution showed Makindye (76) with most and Central (50) with least respondents. This distribution is visually represented in the accompanying pie chart (figure 2).

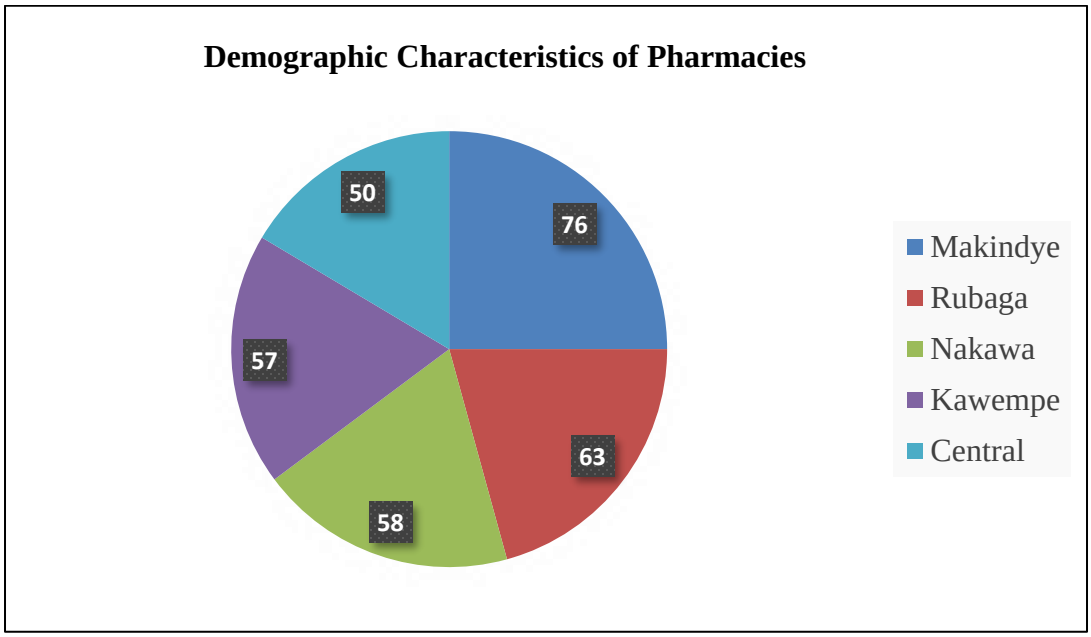


Figure 2:Demographic characteristics of pharmacies included in the study

It is worth noting that while the initial plan aimed to survey 99 pharmacies in the Central Division, only 50 were found to be operational at the time of data collection. The remainder had either relocated or ceased operations, resulting in a lower-than-expected size from that division.

Role of Respondents

As illustrated in the corresponding graph (figure 3), the majority of respondents were Dispensers or Pharmacists, making up 90.8% (276) of the total respondents while Managers accounted for 5.9% (18). Pharmacies in Kawempe and Makindye divisions recorded the highest numbers of dispensers, with 54 and 60 respectively. Owner representation was generally low across all divisions, with no pharmacy owner recorded in Nakawa.

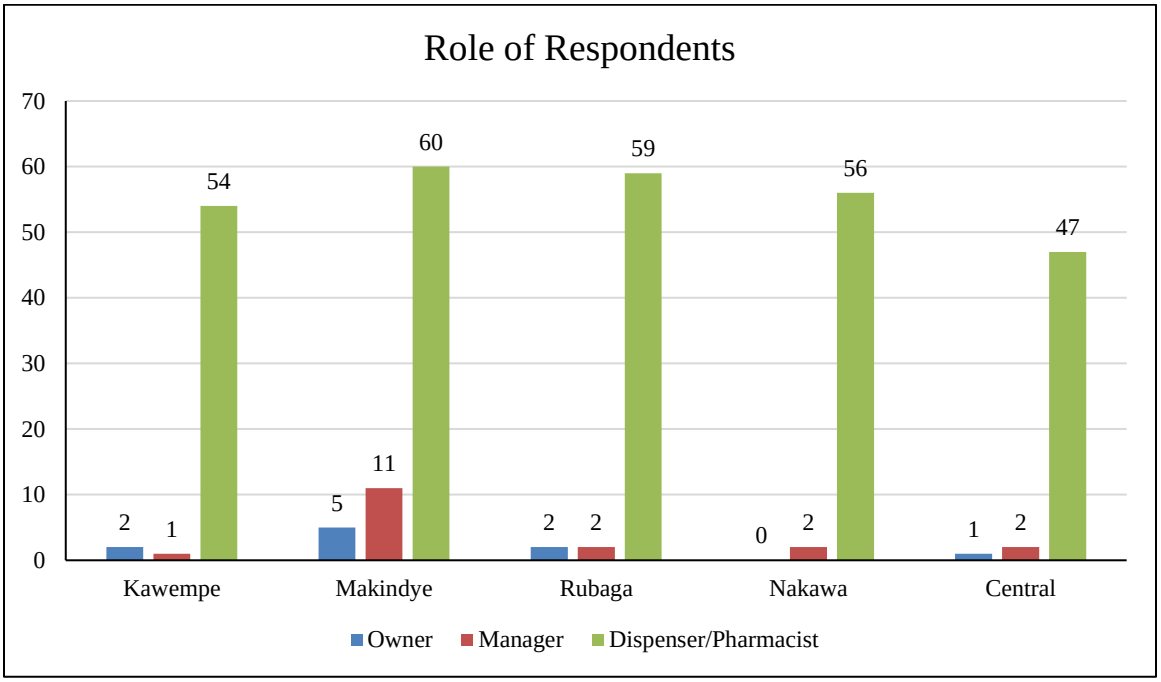


Figure 3: Role of Respondents in the pharmacies involved in the study

Academic Qualifications of the respondents

The graph (figure 4) on academic qualifications shows that most respondents (88.2% or 268) held Diplomas or Certificates as their highest level of education, while only 11.8% (36) had University Degrees. Makindye stood out with the highest number of degree holders (17), followed by Kawempe (9). Rubaga had the largest number of diploma/certificate holders (59), matching Makindye in this regard.

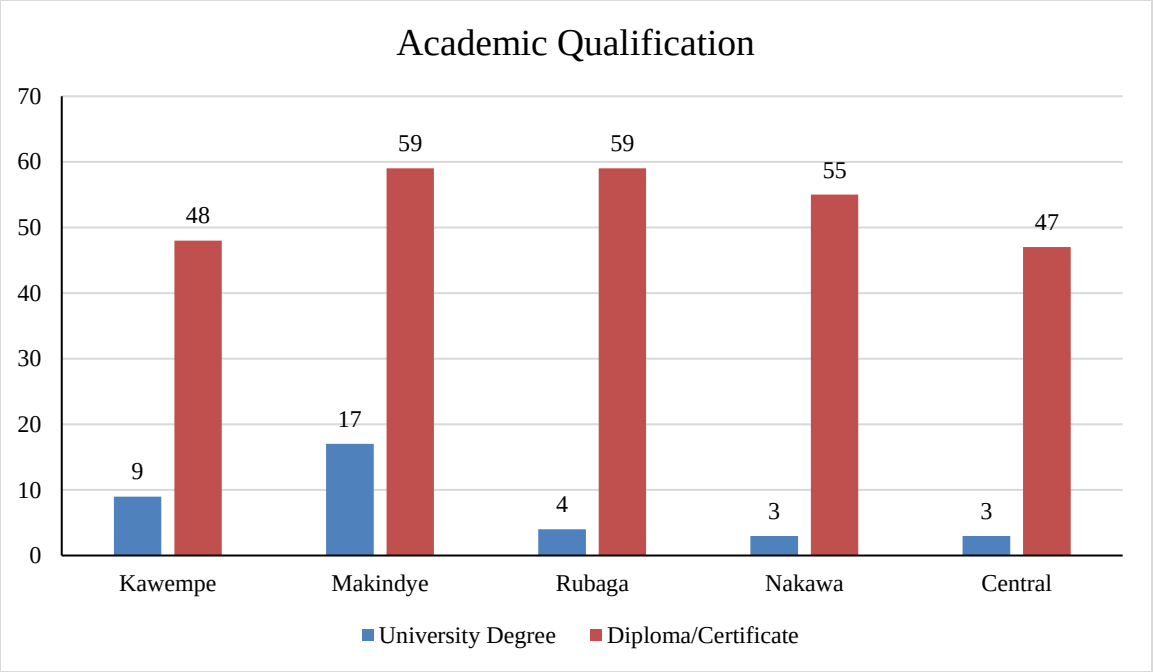


Figure 4: Academic Qualification of the respondents involved in the study.

Years of operation of the pharmacies involved in the study

According to the graph on years of operation (figure 5), nearly half of the surveyed pharmacies (49.0% or 149) had been in operation for 1–5 years while the 6–10-year bracket represented least respondents with 21.1% (64) of the pharmacies, with notable contributions from Makindye (21) and Rubaga (15).

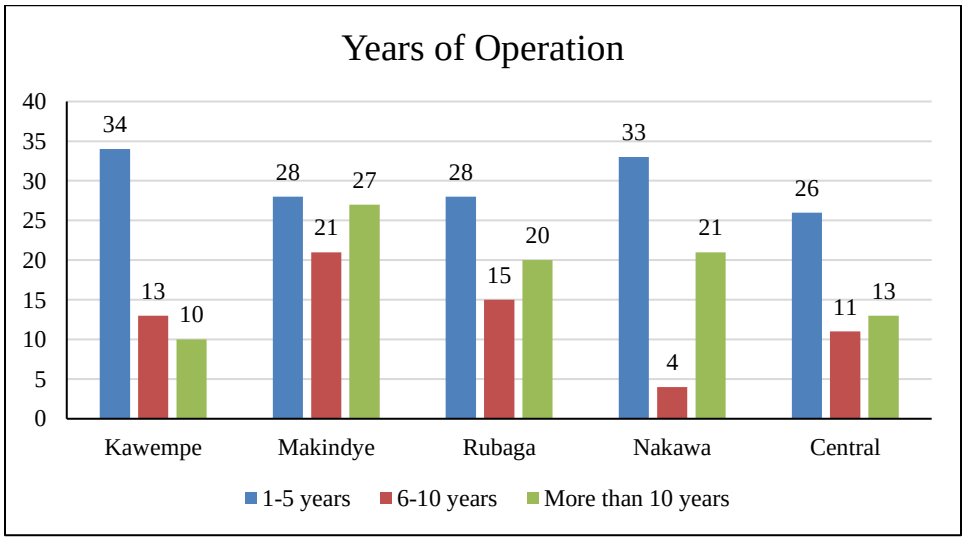


Figure 5: Years of operation of the pharmacies involved in the study

4.2 Readiness of Community Retail Pharmacies to Participate in the CRPDDP Program

4.2.1 Overview of Readiness Scores

Out of the initial 304 community retail pharmacies surveyed, 12 were already enrolled in the CRPDDP program and were therefore excluded from the readiness scoring analysis. The remaining 292 pharmacies were evaluated for readiness using a standardized checklist consisting of binary (Yes/No) responses. The checklist covered structural, regulatory, and operational criteria aligned with CRPDDP requirements.

Each pharmacy received a composite score, calculated as a percentage of items fulfilled. Pharmacies were classified based on their scores as follows:

Results:

- Ready Pharmacies: 224 (76.7%)
- Not Ready Pharmacies: 68 (23.3%)

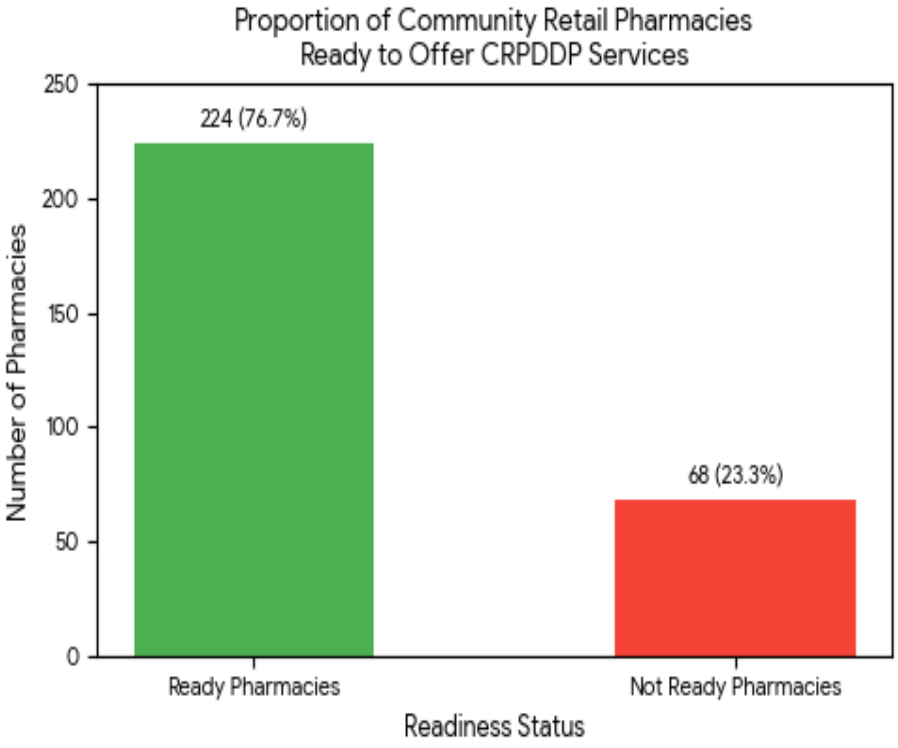


Figure 6; Proportion of readiness of the pharmacies involved

Only a small proportion of pharmacies scored below 70%as shown in Table 1.

Table 1: Readiness Score Distribution and Categorical Classification (N = 292)

Readiness Score (%)	Frequency (Freq.)	Percent	Cumulative Percent	Readiness Category	Cumulative Freq.	Category Percent
45 and less	2	0.7%	0.7%	Not Ready	68	23.3%
46-50	2	0.7%	1.4%	Not Ready		
51-55	10	3.4%	4.8%	Not Ready		
56-60	6	2.1%	6.8%	Not Ready		
61-65	22	7.5%	14.4%	Not Ready		
66-70	26	8.9%	23.3%	Not Ready		
71-75	33	11.3%	34.6%	Ready	224	76.7%
76-80	42	14.4%	49.0%	Ready		
81-85	53	18.2%	67.1%	Ready		
86-90	61	20.9%	88.0%	Ready		
91-95	30	10.3%	98.3%	Ready		
96-100	5	1.7%	100.0%	Ready		
Total	292	100%				

4.2.2 Enrollment Patterns in CRPDDP Program

Although 304 pharmacies participated in the survey, only 12 had enrolled in the CRPDDP program at the time of data collection. Enrollment was analyzed across key demographics as shown in Table 2.

Table 2: Enrollment in CRDDP Program by demographic characteristics

Demographic Characteristic	Category	Total Participants	Enrolled	% Enrolled
Location	Kawempe	57	2	3.5%
	Makindye	76	3	3.9%
	Rubaga	63	3	4.8%
	Nakawa	58	2	3.4%
	Central	50	2	4.0%
Role	Owner	10	1	~10%
	Manager	18	1	~6%
	Pharmacist/Dispenser	274	10	~3.6%
Qualification	Degree	36	5	~13.9%
	Diploma/Cert.	268	7	~2.6%
Years in Operation	1–5 Years	149	5	~3.4%
	6–10 Years	64	2	~3.1%
	>10 Years	91	5	~5.5%

4.3 Factors Favoring Participation in CRPDDP Program.

A semi- structured questionnaire with options was used to obtain the factors regarding the respondents' motivation to enroll, perceived benefits, challenges faced, and collaboration with health system stakeholders. Out of the 304 community retail pharmacies surveyed, only 12 (3.9%) were actively participating in the HIV-focused Community Retail Pharmacy Drug Distribution Point (CRPDDP) program. These pharmacies responded to questions.

4.3.1 Motivating Factors for Participation

Respondents were asked to indicate what motivated their pharmacy to participate in the CRPDDP program. As shown in Table 3, the leading motivators were enhanced service provision for HIV clients and positive community health impact—each cited by 41.7% of the enrolled pharmacies.

Table 3: Motivating factors for participation in CRPDDP (n=12)

No.	Respondent Role	Motivating Factor	Number of Pharmacies	Percentage (%)
1	Dispensers/Pharmacists	Enhanced service provision for HIV clients	5	41.7
2	Dispensers/Pharmacists	Community health impact	5	41.7
3	Dispensers/Pharmacists	Support from government health agencies	1	8.3
4	Manager	Financial incentives	1	8.3

4.4 Barriers to Participation in the CRPDDP Program

was used to obtain the barriers to participation in the CRPDDP Program and a total of 292 pharmacies (96.1%) indicated they were not currently participating in the CRPDDP program. These respondents were asked to select the key reasons for their non-participation.

4.4.1 Key Barriers to Participation

The most common barrier was lack of awareness or understanding of the program, affecting approximately 68.5% of non-participating pharmacies while the least respondents reported lack of staff capacity (0.7%) as shown in Table 6.

Table 4: Barriers to Participation in CRPDDP (n = 292)

Barriers	Number of Pharmacies	Percentages (%)
Lack of awareness or understanding	200	68.5
Regulatory concerns	6	2.1
Insufficient financial incentives	5	1.7
Lack of staff capacity	2	0.7
Other/Unspecified	79	27.1

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter discusses the findings on the readiness and participation of community retail pharmacies (CRPs) in the Community Retail Pharmacy Drug Distribution Point (CRPDDP) program in Kampala City, Uganda. The discussion draws on the objectives of the study, the empirical results presented in Chapter Four, and current scholarly debates from both national and regional literature. The key concepts are discussed according to the specific objectives of the study, namely: the readiness of CRPs to offer CRPDDP services, the factors favoring participation, and the barriers limiting scale-up. The chapter also situates the findings within the broader context of differentiated service delivery (DSD) models and decentralization of antiretroviral therapy (ART) in Sub-Saharan Africa.

5.2 Readiness of Community Retail Pharmacies to Offer CRPDDP Services

The main findings from the study indicated that the readiness assessment conducted among the non-participating pharmacies (n = 292) revealed that a significant majority (76.7%) met the core readiness criteria of 75% threshold from the 20 indicators but only 3.9% (n = 12) of the 304 community retail pharmacies surveyed were actively participating in the CRPDDP program. This is indicating substantial untapped potential for expanding the program. These findings are consistent with studies by Musafiri et al. (2024) in Rwanda and Willie (2025) in Kenya, which reported that over 90% of urban-based community pharmacies possess both the structural capacity and the willingness to dispense ART medications. Likewise, Kyomugisha et al. (2023) observed that digital infrastructure and service readiness within Kampala pharmacies can support wider CRPDDP rollout, reinforcing the idea that the challenge lies more in program integration than in baseline preparedness.

In this study, empirical readiness indicators confirmed that nearly all non-participating pharmacies scored highly on structural parameters: 100% reported the presence of reference materials and absence of pests, while 94% had adequate storage facilities and secure premises. This mirrors findings by Oyet et al. (2023) in Bushenyi and Apio (2022) in Central Uganda, which identified

strong compliance with structural standards among community pharmacies. However, readiness on critical functional indicators was notably lower. For instance, only 6.5% of pharmacies had fire safety equipment, and 23.6% had systems for tracking adverse drug events. These gaps are particularly concerning in the context of CRPDDP, which involves dispensing life-saving and sensitive medications such as ARVs. As such, addressing deficiencies in pharmacovigilance and safety infrastructure is essential for ensuring regulatory compliance and program credibility.

Overall, the Kampala case confirms broader regional patterns: while structural infrastructure is largely adequate, functional gaps, human resource limitations, and lack of strategic engagement with pharmacy leadership remain critical barriers to readiness. For the CRPDDP program to achieve scale and impact, readiness frameworks must evolve beyond physical compliance to incorporate digital tools, stigma-sensitive layouts, trained personnel, and ownership-level engagement.

5.3 Factors Favoring Participation in the CRPDDP

The study showed that majority of the enrolled pharmacies, 41.7% cited enhanced HIV service delivery and an equal proportion reported community health impact as their primary reasons for participation. Although overall enrollment in the CRPDDP program was low only 3.9% (12 out of 304) pharmacies the study identified several enabling factors among participating pharmacies that signal potential for expansion. Notably, these findings challenge the assumption that private pharmacies are exclusively profit-driven and instead support the assertions by Musafiri et al. (2024) and Apio (2022) that social responsibility remains a central motivation in community ART models, especially in urban resource-limited contexts. Although the current results did not provide detailed data on prior public health involvement or digital platform adoption, the presence of motivated actors within pharmacies likely overlaps with findings by Baleeta et al. (2023) and Oyet et al. (2023). These studies suggest that prior engagement in health campaigns like immunization or family planning can predispose pharmacies to readily adopt differentiated service delivery (DSD) models such as CRPDDP. Similarly, Katongole et al. (2024) highlighted those pharmacies familiar with digital tools are more likely to integrate platforms like ART Access, enhancing communication and monitoring within decentralized ART programs.

While financial gain was not the primary motivator only 8.3% of enrolled pharmacies cited financial incentives. Its role in supporting continued engagements cannot be overlooked. This finding is consistent with Ismail (2024) in South Africa and Magomana (2023) in Zambia, who found that modest, performance-based reimbursements, such as Uganda's UGX 2,000 (~$0.55) per refill, improve pharmacy retention in ART programs. Thus, although altruism and social impact dominate initial motivations, financial incentives provide a stabilizing mechanism that supports continuity in high-volume or resource-limited settings.

Indeed, participation in the CRPDDP appears to be influenced majorly by social responsibility. For policymakers and implementers, this means that scaling up the program will require not just infrastructure and training, but also intentional cultivation of these enablers through formal engagement, incentives, and capacity building.

5.4 Barriers to Participation in the CRPDDP

The study indicated that the most significant barrier identified was lack of awareness, with 68.5% of non-participating pharmacies reporting unfamiliarity with the program. While the majority of community retail pharmacies (CRPs) in Kampala demonstrated high readiness to offer CRPDDP services, actual participation remains very low, largely due to a range of systemic and operational barriers. This aligns with findings by Apio (2022) in Kabale and Musafiri et al. (2024) in Rwanda, who observed that underutilization of pharmacies often stems from poor policy dissemination, weak stakeholder engagement, and unclear enrollment pathways. In the Kampala context, limited outreach from implementing partners appears to have contributed to a knowledge gap, reinforcing the PEPFAR-Eswatini (2022) recommendation for stronger community-level sensitization when rolling out differentiated service delivery (DSD) models.

Moreover, the limited involvement of pharmacy owners emerged as another key barrier. Only 7.3% of non-enrolled respondents were owners or managers, with the rest being dispensers or general staff. As noted by Akanbi et al. (2018), sustainable participation in public-private health initiatives like CRPDDP requires commitment from strategic decision-makers who control investment decisions and structural adjustments. This finding also echoes Katongole et al. (2024), who emphasized the mismatch between technical readiness and leadership-level buy-in as a critical constraint in scaling DSD interventions.

Infrastructural constraints were also evident. The study showed that only 11.2% of non-participating pharmacies had private counselling rooms, and 20.1% had dedicated ART dispensing areas. These limitations raise concerns around confidentiality and stigma, particularly for clients from vulnerable or high-risk groups. Such conditions are likely to compromise adherence and uptake of ART, reinforcing earlier findings from Ajagu et al. (2017) in Nigeria and Mukosha et al. (2021) in East Africa, which demonstrated the importance of structural privacy in improving trust and treatment outcomes. These insights support Oyet et al. (2023), who advocate for minimum infrastructure standards such as privacy-enhancing spaces before enrolling pharmacies into ART distribution programs.

Digital infrastructure also posed a barrier to participation. Among non-enrolled pharmacies, only 52% had access to internet services and 47% had computers for dispensing, making integration with national systems like the Uganda EMR or platforms such as ART Access difficult. This digital gap resonates with Kyomugisha et al. (2023), who reported that digital readiness was strongly associated with effective program implementation and data monitoring. Likewise, Ronald (2022) emphasized the enabling role of electronic tools in enhancing reporting accuracy, patient follow-up, and stock accountability in ART programs.

Perhaps most concerning is the volatility of the private pharmacy sector. The study noted that in Kampala Central Division, nearly 46% of previously mapped pharmacies had closed or relocated by the time of data collection. This instability mirrors the fragile private-sector dynamics described by Wagner et al. (2022), where economic pressures, rental constraints, and weak regulation contribute to the transient nature of urban pharmacies in sub-Saharan Africa. Such instability threatens continuity and institutional learning both of which are essential for long-term participation in structured public health programs like CRPDDP.

Collectively these barriers which include; information gaps, lack of managerial engagement, inadequate infrastructure, weak digital capacity, and sector instability were observed. Without targeted interventions addressing each layer, the CRPDDP risks remaining underutilized despite the apparent readiness of Kampala's community pharmacies. As this study shows, bridging the gap between readiness and participation will require a coordinated approach involving regulatory reform, owner-level advocacy, digital infrastructure support, and robust communication strategies.

5.5 Practical Strategies to Strengthen CRPDDP Implementation

To fully operationalize the CRPDDP model in Kampala, a multi-level strategy is required, one that addresses not just the high readiness among community retail pharmacies (CRPs), but also the practical barriers revealed in this study. These include low awareness, limited owner engagement, infrastructure deficits, and digital gaps. Insights from studies in Rwanda (Musafiri et al., 2024), Nigeria (Ajagu et al., 2017), and Uganda (Apio, 2022; Kyomugisha et al., 2023) provide tested models that can be adapted to Kampala's context.

First, the Ministry of Health and its implementing partners should initiate targeted awareness and sensitization campaigns that specifically reach pharmacy owners not just dispensing staff. This recommendation stems from the finding that only 7.3% of non-enrolled respondents were owners, highlighting a critical gap in strategic-level engagement. Such outreach should be coordinated through professional bodies like the Pharmaceutical Society of Uganda (PSU) and district licensing offices, with tailored messaging on the program's goals, benefits, and enrollment process. As Ronald (2022) documented in Kabale, direct orientation visits by program implementers contributed to a notable increase in enrollment.

Second, standardized training and formal certification for CRPs offering ART services should be prioritized. While over 90% of participating pharmacies reported having trained staff, the training was often informal or limited in scope. This aligns with Musafiri et al. (2024), who found a disconnect between general HIV awareness and ART-specific competence in Rwanda. Drawing from Katongole et al. (2024), a modular training approach accredited by national bodies like the Uganda AIDS Commission should be developed, focusing on ART guidelines, pharmacovigilance, confidentiality, and EMR usage. Such a program would enhance confidence among regulators, funders, and clients while ensuring consistent quality of care.

Third, the government and its partners should offer infrastructure support to help pharmacies meet privacy and service delivery standards. The study found that only 11.2% of non-participating pharmacies had private counseling rooms, a major barrier to enrollment. Small infrastructure investments such as partitions, signage, or private dispensing spaces can significantly improve client experience and reduce stigma. This is consistent with findings by Apio (2022) in Kabale, where minor layout changes led to greater client comfort and increased service uptake.

To encourage adoption, such improvements could be supported through performance-based incentives, like the UGX 2,000 reimbursement for ART dispensing, as reported by Ronald (2022).

Fourth, formal collaborative frameworks between pharmacies and public or NGO health facilities must be institutionalized. Although 75% of enrolled pharmacies in the study reported some form of collaboration, only a minority had formal agreements. Developing Memoranda of Understanding (MoUs) can clarify responsibilities, outline referral pathways, and set data-sharing protocols. This reflects the experience of PEPFAR-Eswatini (2022), where standardized MoUs strengthened supervision and accountability across sectors, improving the sustainability of ART distribution programs.

Lastly, digital enablement must be scaled to address the gap in EMR integration. The study revealed that only 52% of pharmacies had internet access, and 47% had dispensing computers, limiting their ability to interface with national reporting systems. As emphasized by Kyomugisha et al. (2023) and Ronald (2022), even partial digital integration can enable ART stock tracking, client monitoring, and quarterly updates into DHS2. Based on Katongole et al. (2024), the rollout of affordable, EMR-compatible systems for pharmacies should be viewed as a core component of national HIV programming not an optional add-on.

In summary, the findings of this study reinforce that strengthening CRPDDP implementation in Kampala will require simultaneous investments in human capacity, infrastructure, digital systems, and inter-institutional coordination. Building on the readiness already demonstrated by many pharmacies, the proposed strategies offer a practical roadmap for scaling the CRPDDP model into a reliable, community-driven pillar of Uganda's HIV response—especially in urban and peri-urban areas with high patient loads and limited public health capacity.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS.

6.1 Conclusion

This study determined the first objective of the proportion of readiness of community retail pharmacies (CRPs) in Kampala City to participate in the Community Retail Pharmacy Drug Distribution Point (CRPDDP) program, and highlighted the gap between potential and actual engagement. Although readiness was at (76.7%) of non-participating pharmacies which met core structural, regulatory, and human resource criteria based on the 20 indicators evaluation tool, only 3.9% were enrolled in CRPDDP. This readiness–participation paradox reveals the systemic and contextual barriers, rather than technical incapacity.

The second objective of the study was to determine the factors that favor participation in the CRPDDP Program and the leading motivators were enhanced service provision for HIV clients and positive community health impact of the enrolled pharmacies. The third objective was to determine the barriers to participation of CRPs in the CRPDDP Program and It is reported that most respondents stated lack of awareness as the key barrier for enrollment into the CRPDDP program.

The findings position Kampala's CRP as a n under leveraged but strategically important resource for Uganda's HIV response. Unlocking their potential will require a coordinated approach that moves beyond infrastructure upgrades or training. A comprehensive strategy should prioritize targeted owner engagement, standardized training and certification, investment in confidential counseling spaces, digital enablement to link pharmacies with national EMR systems, and structured public–private partnerships that guarantee supply chain reliability and accountability. Addressing these gaps will transform CRPDDP from a promising but underutilized model into a scalable, sustainable mechanism for differentiated HIV service delivery. Strategic investment not only expands ART access and supports adherence but also strengthens health system resilience in Kampala and other urban contexts, advancing progress toward Uganda's 95–95–95 targets.

6.2 Recommendations

To bridge the gap between high technical readiness and low participation in the CRPDDP program, a coordinated, multi-stakeholder approach is essential. The following evidence-based recommendations are designed to address systemic, infrastructural, human resource, and policy barriers, thereby strengthening the role of Community Retail Pharmacies (CRPs) in Uganda's differentiated HIV care delivery:

Objective one recommendation

1. The National Drug Authority and relevant donors must prioritize infrastructure support for CRPs in underserved and high-burden areas. Targeted investments should include private counseling rooms, pest-free storage, ADR tools, and designated dispensing spaces. Provide grants, subsidies, or tax relief to enable these improvements. Enhancing physical infrastructure is essential for stigma-free, high-quality HIV services.

Objective two recommendations

1. Pharmacy professional bodies, supported by MoH, to lead outreach campaigns aimed at pharmacy owners to explain CRP program benefits and expectations. Use printed materials, workshops, and direct engagement to encourage ownership investment in service readiness. Stakeholders must clarify how participation supports public health goals and business sustainability. Strategic buy-in will ensure effective CRP integration and compliance.
2. The MoH, NDA, and donor agencies should introduce performance-based incentives for CRPs, linked to adherence to quality indicators and service delivery targets. Offer per-refill reimbursements, public recognition, and reduced licensing fees to reward consistent engagement. Clearly communicate the criteria and timelines for earning these benefits. Structured incentives will sustain CRP motivation and long-term involvement.

Objective three recommendation.

1. The Ministry of Health should team up with training institutions to create HIV training modules for Community Retail Pharmacy (CRP) staff. These modules would cover: ART delivery, stigma-sensitive counseling, inventory management and digital tools. After

training, staff gets certified. National bodies approve these programs for uniform standards. This boosts CRP staff skills and improves HIV care quality.

2. District health offices and implementing partners especially policymakers (e.g.s Infectious Disease Institute) should establish formal MoUs with CRPs to define referral pathways, data sharing protocols, and supervisory roles. Regular mentorship, peer learning, and on-site coaching must be included in district HIV plans. MoH should coordinate this process to align CRPs with national service standards. This structure ensures program consistency, accountability, and improved service delivery.

6.3 Recommendations for further studies

•Investigating the impact of CRPDDP program participation on HIV treatment out comes and patient satisfaction.

•Assessing the effectiveness of different training models for community pharmacy staff on HIV care services.

•Evaluating the cost-effectiveness and sustainability of integrating community pharmacies into HIV care program

6.4 Study limitations

• The Cross-sectional design does not allow for causal inferences or examination of changes over time.

•The limited generalizability since the findings may not be generalizable to other regions or countries with different healthcare systems.

• The anticipated number of respondents was not obtained thus affecting the final results.

..

REFERENCES

Academy for Health Innovation Uganda. (n.d.). *ART Access*. Retrieved from https://theacademy.co.ug/art-access/

Africa Resource Centre. (2024, May 8). *Expanding alternative drug distribution models in Uganda*. https://africaresourcecentre.org/2024/05/08/expanding-alternative-drug-distribution-models-in-uganda/

AIDS Control Programme (ACP) of Uganda. (2021). *Community Retail Pharmacy Drug Distribution Point (CRPDDP) implementation toolkit*. Ministry of Health Uganda. https://dsduganda.com/wp-content/uploads/2021/08/crpddp-toolkit-20210427.pdf

Ajagu, N., Anetoh, M. U., & Nduka, S. O. (2017). Expanding HIV/AIDS care service sites: a cross sectional survey of community pharmacists' views in South-East, Nigeria. *Journal of Pharmaceutical Policy and Practice*, *10*(1), 34. https://link.springer.com/content/pdf/10.1186/s40545-017-0122-x.pdf

Amunyongire, R., Nuwagaba, E., Atuhaire, J., Nduhuura, E., Ndebiika, A., Turyasingura, O., ... & Rukundo, G. Z. (2022). Patient Satisfaction and Perceptions Regarding Anti-Retroviral Therapy (ART) Services in Rural Southwestern Uganda. *Journal of AIDS and HIV Treatment*, *4*(1), 30-40.

Apio, B. (2022). Barriers and facilitators to the utilization of community drug distribution points among adolescents aged 10 to 19 years living with HIV in Lira District, Northern Uganda: A qualitative study. https://www.researchsquare.com/article/rs-1870177/latest.pdf

Apio, B. (2022). Barriers and facilitators to the utilization of community drug distribution points among adolescents aged 10 to 19 years living with HIV in Lira District, Northern Uganda: A qualitative study.

Avong, Y. K., Aliyu, G. G., Jatau, B., Gurumnaan, R., Danat, N., Kayode, G. A., ... & Dakum, P. (2018). Integrating community pharmacy into community based anti-retroviral therapy program: A pilot implementation in Abuja, Nigeria. *PloS one*, *13*(1), e0190286. https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0190286&type=printable

Baleeta, K., Muhwezi, A., Tumwesigye, N., Kintu, B. N., Riese, S., Byonanebye, D., ... & Wasswa, J. (2023). Factors that influence the satisfaction of people living with HIV with differentiated antiretroviral therapy delivery models in east central Uganda: a cross-sectional study. *BMC Health Services Research*, *23*(1), 127. https://link.springer.com/content/pdf/10.1186/s12913-023-09114-2.pdf

Brian, B., Goruntla, N., Bommireddy, B. R., Mopuri, B. M., Easwaran, V., Mantargi, M. J. S., ... & Ayogu, E. E. (2025). Knowledge, Attitude, and Practice Towards Responsible Self-Medication Among Pharmacy Students: A Web-Based Cross-Sectional Survey in Uganda. *Drug, Healthcare and Patient Safety*, 7-23.

Bruser, G., Luginaah, I., Katasi, R., Zhang, L. Z., Namasinga, M., Kityo, C., & Arts, E. (2024). '… So that's why we hide, we don't want them to know' challenges to antiretroviral therapy adherence in Kampala, Uganda. *African geographical review*, *43*(1), 18-31. https://www.tandfonline.com/doi/pdf/10.1080/19376812.2022.2101496?casa_token=dYGNgh_DD_kAAAAA:2-x5ecptLFEPP0RI5v5ux1Ff_LHq_G2HAFPOJYhLgLuStXSnEedy2T0mHNU5fRby6_NvHG8K82i3f18

Buyinza, T., Ssengooba, F., Mayega, R. W., Nankya Mutyoba, J., Warugaba Birungi, S., Mutole, G., & Ndejjo, R. (2024). Perceived risk for hypertension and associated factors among adult persons living with HIV in Kamuli district, Uganda. medRxiv, 2024-07.

Creswell, J.W. and Creswell, J.D. (2023) Research Design: Qualitative, Quantitative and Mixed Methods Approaches. Sage Publications Ltd

Ezenduka, J., Nwaokennaya, P., Obasa, G. B., Ogbeke, G., Onuorah, O., Abubakar, L., ... & Akinjeji, A. (2025). Perception of People Living with HIV and Healthcare Workers on Differentiated Service Delivery Programs in Nigeria: A Qualitative Study. *PLoS One*, 20(5), e0309254.

Goldstein, D., Ford, N., Kisyeri, N., Munsamy, M., Nishimoto, L., Osi, K., ... & Bateganya, M. (2023). Person-centred, integrated non-communicable disease and HIV decentralized drug distribution in Eswatini and South Africa: outcomes and challenges. *Journal of the International AIDS Society*, *26*, e26113.

IAS (International AIDS Society). (2024). *Differentiated Service Delivery for HIV: Global policy and progress*. https://www.iasociety.org/DSD

Ismail, T. (2024). A Survey of the Delivery of Clinical Services in Independent Community Pharmacies in South Africa. https://wiredspace.wits.ac.za/server/api/core/bitstreams/1d7dcc21-849c-423a-863f-b19f77f3e125/content

Katongole, S. P., Mukama, S. C., Nakawesi, J., Bindeeba, D., Simons, E., Mugisa, A., ... & Mukasa, B. (2024). Enhancing HIV treatment and support: a qualitative inquiry into client and healthcare provider perspectives on differential service delivery models in Uganda. *AIDS research and therapy*, *21*(1), 47. https://link.springer.com/content/pdf/10.1186/s12981-024-00637-0.pdf

Kintu, T. M., Ssewanyana, A. M., Kyagambiddwa, T., Nampijja, P. M., Apio, P. K., Kitaka, J., & Kabakyenga, J. K. (2021). Exploring drivers and barriers to the utilization of community client-led ART delivery model in South-Western Uganda: patients' and health workers' experiences. *BMC Health Services Research*, 21, 1–14.

Komildjanovna, N. M. (2024). The power of open-ended question and its crucial role in discovering unanticipated answers, gathering additional details and important insights. *Web of Teachers: Inderscience Research*, *2*(10), 33-45.

Kumar, A., & Praveenakumar, S. G. (2025). *Research methodology*. Authors Click Publishing.

Kyomugisha, E. L., Balaba, M., Nakibuuka, E., King, R., & Parkes-Ratanshi, R. (2023). Stakeholder engagement to drive iterative software development of the ARTAccess web-based application for community pharmacy dispensing of anti-retroviral therapy. *Medical Research Archives, 11*(1). https://esmed.org/MRA/mra/article/download/3378/193546575

Lalla-Edward, S. T., & Venter, W. D. F. (2025). Feasibility and Impact of Community Pharmacy and Novel Pick-up Points for Antiretroviral Therapy Pre-exposure Prophylaxis Initiation and Continuation in Low and Middle-income Countries. *Current HIV/AIDS Reports*, 22(1), 1–18.

Lule, F., Rajab, K., Banzimana, S., & Asingizwe, D. (2024). Assessing determinants of the availability of HIV tracer commodities in health facilities in Wakiso District, Uganda. *Journal of Pharmaceutical Policy and Practice*, *17*(1), 2306846.

Magomana, T. (2023). *Towards Achieving the 95% Treatment Coverage for Hard-to-Reach Populations Living with HIV and AIDS in Lusaka, Zambia Using Community Retail Pharmacies to Improve Access to Antiretroviral Therapy*. Indiana University-Purdue University Indianapolis. https://scholarworks.indianapolis.iu.edu/bitstreams/325fbaf3-974b-484b-87d3-8af951e081b4/download

McAlister, A. (2024, November 13). *Increasing private sector engagement in the antiretroviral supply chain to PEPFAR countries in Southern Africa*. USAID Global Health Supply Chain Program – Procurement and Supply Management (GHSC-PSM). https://www.ghsupplychain.org/sites/default/files/2024-11/VMS_GHSC%20Summit_Increasing%20Private%20Sector%20Engagement%20in%20the%20AV%20Supply%20Chain_Nov2024.pdf

Msosa, T. C., Swai, I., Sumari-de Boer, M., Ngowi, K., F. Rinke de Wit, T., Aarnoutse, R., & Nliwasa, M. (2023). The effect of a customised digital adherence tool on HIV treatment outcomes in young people living with HIV (YPLHIV) in Blantyre, Malawi: a protocol for a randomised controlled trial. *Trials*, *24*(1), 535.

Mugenyi, L., Namuwenge, P. M., Ouma, S., Bakashaba, B., Nanfuka, M., Zech, J., ... & Hirsch-Moverman, Y. (2024). Isoniazid preventive therapy completion between July-September 2019: A comparison across HIV differentiated service delivery models in Uganda. Plos one, 19(1), e0296239.

Mukama, S. C., Nakawesi, J. S., Bindeeba, D. S., Ezajobo, S., Mugisa, A., Senyimba, C., ... & Mukasa, B. (2024). Evaluating Antiretroviral Therapy Service Delivery Models Through Lot Quality Assurance Sampling in Central Uganda. *HIV/AIDS-Research and Palliative Care*, 337-354.

Musafiri, C., Nyandwi, J. B., & Hahirwa, I. (2024). Assessment of community pharmacies readiness to dispense antiretroviral medicines in Rwanda. *J Pharm Policy Pract*, *17*(1), 2286349. https://www.tandfonline.com/doi/pdf/10.1080/20523211.2023.2286349

NDA. (2022.). National Drug Authority, Licensed outlets, Kampala.

Nyamuzihwa, T., Tembo, A., Martyn, N., Venter, F., Maimin, J., Houghton, J., & Lalla-Edward, S. T. (2023). The South African community pharmacy sector—an untapped reservoir for delivering HIV services. *Frontiers in Reproductive Health*, 5, 1173576.

Ogbuagu, O. O., Mbata, A. O., Balogun, O. D., Oladapo, O., Ojo, O. O., & Muonde, M. U. R. I. D. Z. O. (2024). Expanding access to mental health in low-resource settings: Strategies for policy, supply chain, and implementation. *IRE Journals*, *7*(9), 407-412.

Oseni, Y. O., & Erhun, W. O. (2023). Delivery of training in HIV/AIDS services among community pharmacists in Oyo State, Nigeria: an interventional study. *Malaysian Journal of Pharmaceutical Sciences*, 21(2), 13–28.

Oseni, Y. O., & Erhun, W. O. (2024). Implementation strategies and outcomes in the delivery of HIV test services (HTS) in community pharmacies in Nigeria. *BMC Primary Care*, 25(1), 315.

Oyet, D., Niyonzima, V., Akol, G., Onyait, E., Twinomugisha, D., Kawala Wambera, D., ... & Obua, C. (2023). Barriers and Facilitators to Utilization of Community Drug Distribution Points Among People Living with HIV in Bushenyi District, South-Western Uganda: A Qualitative Study. *HIV/AIDS-Research and Palliative Care*, 633-640.

PEPFAREP. (2022). Decentralized drug distribution of antiretroviral therapy in Eswatini. https://doi.org/https://www.fhi360.org

Settumba, J. P. (2022). *An assessment of public private partnerships in the healthcare sector in Uganda: a case of government referral hospitals* (Doctoral dissertation, North-West University (South Africa).

Shahi, A., Shrestha, S., K. C, B., Acharya, K., & Pradhan, S. K. (2023). Potential roles of pharmacists in HIV/AIDS care delivery in Nepal: A qualitative study. *PloS one*, 18(1), e0280160.

Ssanyu, J. N., Kananura, R. M., Eriksson, L., Waiswa, P., Målqvist, M., & Kalyango, J. N. (2025). Readiness of health facilities to deliver family planning services and associated factors in urban east-central Uganda. *Reproductive Health*, *22*, 82.

Toroitich, A. M., Armitage, R., & Tanna, S. (2024). Suspected poor-quality medicines in Kenya: a retrospective descriptive study of medicine quality-related complaints reports in Kenya's pharmacovigilance database. *BMC Public Health*, *24*(1), 2561.

Tseng, A. S., Barnabas, R. V., van Heerden, A., Ntinga, X., & Sahu, M. (2024). Costs of home-delivered antiretroviral therapy refills for persons living with HIV: evidence from a pilot randomized controlled trial in KwaZulu-Natal, South Africa. *PLOS Global Public Health*, 4(12), e0003368.

Uganda AIDS Commission (UAC). (2021). *CRPDDP enrollment eligibility and operational*

guidelines for pharmacies. Ministry of Health, Uganda. [Available via UAC Policy Portal]

Ministry of Health, Uganda. (2023). *Consolidated Guidelines for the Prevention and Treatment of HIV and AIDS in Uganda*. Retrieved from https://dsduganda.com/wp-content/uploads/2023/05/Consolidated-HIV-and-AIDS-Guidelines-20230516.pdf

Uganda National Institute of Public Health. (2023). *Trends and distribution of HIV incidence among children aged 0–14 years: Uganda, 2015–2023*. https://uniph.go.ug/trends-and-distribution-of-hiv-incidence-among-children-aged-0-14-years-uganda-2015-2023/

Uganda Population-based HIV Impact Assessment (UPHIA) 2020–2021. (2024). *Final Report*. Ministry of Health, Uganda. Retrieved from https://phia.icap.columbia.edu/wp-content/uploads/2024/09/280324-UPHIA-EN-RR5.pdf

UNAIDS. (2023). *Global HIV & AIDS statistics 2023 fact sheet*. https://www.unaids.org/en/resources/fact-sheet

UNAIDS. (2024). *Expanding alternative drug distribution models in Uganda*. Africa Resource Centre. Retrieved from https://africaresourcecentre.org/2024/05/08/expanding-alternative-drug-distribution-models-in-uganda/

USAID/PEPFAR. (2022). *Uganda Country Operational Plan (COP22) Strategic Direction Summary*. U.S. President's Emergency Plan for AIDS Relief. https://www.state.gov/wp-content/uploads/2022/09/Uganda_COP22-Strategic-Directional-Summary.pdf

Vumbugwa, P., Puttkammer, N., Majaha, M., Likaka, A., Stampfly, S., Biondich, P., ... & Feldacker, C. (2024). Leveraging digital health systems maturity assessments to guide strategic priorities. *Journal of Public Health in Africa*, *15*(1), 769.

Wagner, G. J., Bogart, L. M., Green, H. D., Storholm, E. D., Klein, D. J., McBain, R. K., ... & Okoboi, S. (2022). Social network-based group intervention to promote HIV prevention in Uganda: study protocol for a cluster randomized controlled trial of Game Changers. *Trials*, *23*(1), 233.

WHO. (2022). *Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring*. Geneva: World Health Organization. https://www.who.int/publications/i/item/9789240051593

WHO. (2023). *Global HIV programme: HIV/AIDS key facts*. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/hiv-aids

WHO. (2023). *Guidelines on differentiated service delivery for HIV treatment and care*. World Health Organization.

Willie, M. M. (2025). Leveraging Retail and Community Pharmacies for Decentralised ARV Distribution: A Diffusion of Innovation Approach to Maximising HIV Treatment Outcomes. https://www.researchgate.net/profile/Michael-Willie/publication/390666064_Leveraging_Retail_and_Community_Pharmacies_for_De

centralised_ARV_Distribution_A_Diffusion_of_Innovation_Approach_to_Maximising_HIV_Treatment_Outcomes/links/67f7fc1960241d51400ace11/Leveraging-Retail-and-Community-Pharmacies-for-Decentralised-ARV-Distribution-A-Diffusion-of-Innovation-Approach-to-Maximising-HIV-Treatment-Outcomes.pdf

APPENDICES

Appendix 1: Questionnaire

Research topic- Readiness And Factors Influencing Community Pharmacies Participation In The Hiv Focused Community Retail Pharmacy Drug Distribution Point (Crpddp) Program In Kampala City, Uganda.

Tool number:.....

Code of the region: code of pharmacy.....

Person collecting the data:.....

Date of data collection:.....

Section 1: Demographic data.

1. Name of the Community Pharmacy:.....,..code.....,.....,

2. Location (Specify Division):
   A. Kawempe Division
   B. Makindye division
   C. Central division
   D. Rubaga Division
   E. Nakawa division

3. Participant details (Role in the facility)
   A. Owner
   B. Manager
   C. Dispenser/Pharmacist
4. Qualification of the participant
   A. High school
   B. University degree
   C. Other
5...How long has the pharmacy been in operation?
   A. 1-5 years
   B. 6-10 years
   C. More than 10 years

Section 2: Readiness for the CRPDDP Program

6. Are you currently enrolled in the CRPDDP program?

   A. Yes
   B. No

7. Do you have a supervising pharmacist?
A.Yes
B.No

19

8. Number of staff
   A. 1-2
   B. 3-4
   C. More than 4

9. Name of possible linked facility and facility level

.....
.....

10. Valid NDA operating certificate displayed
   A. Yes
   B. No

11. Certificate of practice from PSU displayed
   A. Yes
   B. No

12. Reference books like British National Formula, Uganda Clinical Guide, etc present
   A. Yes
   B. No

13. No signs of pests/harmful insects/rodents seen in the area (Check traces, droppings etc. from bats, rats, ants, etc.)
   A. Yes
   B. No

14. Are the medicines protected from direct sunlight (Painted glass, curtains or blinds or no windows)?
   A. Yes
   B. No

15. Is the temperature of the pharmacy monitored daily?
   A. Yes
   B. No

16. Can the temperature of the storeroom be regulated (with Ventilation, air-condition or by opening windows)?
    A. Yes
    B. No

17. Roof is maintained in good condition to avoid water penetration?
    A. Yes
    B. No

18. Is storage space sufficient and adequate?
    A. Yes
    B. No

19. Is the pharmacy secure with limited access to authorized personnel?
    A. Yes
    B. No

20. Fire safety equipment is available and accessible (any items for promotion of fire safety should be considered)
    A. Yes
    B. No

21. Is there a computer used for dispensing?
    A. Yes
    B. No

22. Is there any internet connection?
    A. Yes
    B. No

23. Boxes are not directly on the floor in the store
    A. Yes
    B. No

24. Is there a system and record for staff capacity development in the Pharmacy?
If yes please ask to see proof
    A. Yes
    B. No

25. Is there a system and records for monitoring of medicines adverse events in the Pharmacy?
    A. Yes
    B. No

26. Do you have adequate space for counselling of the patients on ART REGIMENS?
    A. yes
    B. No

27. Do you have a special dispensing area where PLHIV can get their medication?

    A. Yes
    B. No

28. Do you have any specialized qualified personnel to handle these PLHIV at your facility?

    A. Yes
    B. No

Section 3: Factors Associated with Participation in the CRPDDP Program

29. What motivated your pharmacy to participate in the CRPDDP program? (Check all that apply)

    A. Support from government health agencies
    B. Enhanced service provision for HIV patients
    C. Financial incentives
    D. Community impact
    E. Other (please specify).....

30. How would you rate the impact of the CRPDDP program on your pharmacy's operations?
    A. Very Positive
    B. Positive
    C. Neutral
    D. Negative
    E. Very Negative

31. Have you experienced any challenges since joining the CRPDDP program? (Check all that apply)
    A. Staff training and capacity building
    B. Adequate drug supply
    C. Regulatory compliance issues
    D. Communication with program coordinators
    E. Other (please Specify).....

32. How would you rate the level of collaboration between your pharmacy and other healthcare providers (e.g., clinics, hospitals or NGOs) in supporting the CRPDDP Program?

A. Very collaborative
B. Collaborative
C. Neutral
D. Poor collaboration
E. No collaboration

Section 4: Barriers to participation in the CRPDDP Program.

33. What factors influenced your decision not to participate in the CRPDDP program? (Check all that apply).

A. Lack of awareness about the program- don't understand the program
B. Regulatory concerns
C. Insufficient financial incentives
D. Lack of staff capacity
E. Other (please specify).....

Appendix 2: Consent form for community pharmacies.

Title of the proposed study: READINESS AND FACTORS INFLUENCING COMMUNITY PHARMACIES PARTICIPATION IN THE HIV-FOCUSED COMMUNITY RETAIL PHARMACY DRUG DISTRIBUTION POINT (CRPDDP) PROGRAM IN KAMPALA CITY, UGANDA.

Investigator:

Mbaziira Umar (BPHA, MAK) Reg No. 2023/HD07/3226U, mbaziirau@gmail.com. 0700132358, Makerere University

Background and rationale for the study:
This research is justified by its potential to enhance access to HIV medications, inform policy, improve program implementation, and ultimately contribute to better health outcomes for individuals living with HIV in Kampala City, Uganda. By addressing the barriers to participation and assessing the readiness for enrollment of community retail pharmacies in Kampala City, Uganda, the study aims to create a more effective and inclusive approach to HIV cares in the community.

Sponsor of the study
The study will be self-sponsored.

Purpose:
To determine the readiness and factors influencing community pharmacies participation in the HIV Focused Community Retail Pharmacy Drug Distribution Point (CRPDDP) Program in Kampala City, Uganda.

Procedures:
I will get the list of pharmacies from the National Drug Authority register, the research assistants will then move to the community retail pharmacies with a questionnaire to interview the managers, owners and dispensers depending on the one found in the premises. Considering that I want to capture the readiness and factors for participation of all community retail pharmacies in Kampala City, Uganda, I will opt for a census or a complete enumeration approach rather than sampling. This means I will aim to include all pharmacies in the study.

Who will participate in the study?
The study will involve the community retail pharmacies in Kampala city. Each will be interviewed for a duration of 30 minutes.

Risks/Discomforts:
The study will have minimum risks like the study participants sitting for long time during the interview.
The participants will not be harmed because they will only be required to answer questionnaire about the program which is well known to them.

Benefits:
The study aims to create awareness on the number of community retail pharmacies ready to take on the program, the factors which would favor their enrollment and the barriers that may limit their participation in the program.

Confidentiality:
Confidentiality will be maintained throughout the research process, with all data anonymized before analysis.

The local Research Ethics Committee (REC) and Uganda National Council for Science and Technology (UNCST) will have access to private information of this study.

Compensation for participation in the study:
Each study participant will be given a total amount of UGX 10,000/= to appreciate them for the participation in the study.

Questions about the study:
The study participants will contact Mbaziira Umar (principal investigator) on 0700132358, for any inquiries.

Questions about participants rights:
The questions about the participants welfare and rights will be answered by the MAKCHSIRB Ag Chairperson Dr. Kalidi Rajab on Tel No. 0776798978.

Statement of voluntariness:
Pparticipation in thisis study is voluntary and participants may join on their own free will. Participants also have a right to withdraw from the study at any time without penalty.

Dissemination of results:
Findings from the research will be disseminated to key stakeholders in Kampala City, Uganda, including Makerere University College of Health Science Department, Institutional Review Board (IRB) of Makerere University, community retail pharmacies of Kampala City, Uganda, program coordinators, and policymakers.
A final report will be published and shared with the wider public health community to inform future interventions and programs aimed at increasing participation in the CRPDDP program.

Ethical approval:
The research proposal will be submitted to the Institution Review Board (IRB) of school of Health Sciences and Research Ethics Committee (REC) for approval to carry out the study.
Consent:

Consent will be obtained from the study participants after briefing them and making sure they have understood the purpose of the study then a signature will be attached as a confirmation.

STATEMENT OF CONSENT.

..... Has described to me what is going to be done, the risks, the benefits involved and my rights regarding this study. I understand that my decision to participate in this study will not alter my usual medical care. In the use of this information, my identity will be concealed. I am aware that I may withdraw at any time. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form will be provided to me.

Name.....Signature/thumb print of research participant.....
Date.....

Name.....Signature of interviewer/Person obtaining informed consent
..... Date.....

NOTE: Do not sign this consent form if it does not have an IRB approval stamp or if the date has lapsed

MAKERERE UNIVERSITY
SCHOOL OF HEALTH SCIENCES
APPROVED
VALID UNTIL
07 APR 2026
RESEARCH & ETHICS COMMITTEE
P. O. BOX 7072, KAMPALA

Appendix 3: Research and Ethics Committee Approval

MAKERERE UNIVERSITY
P.O. Box 7072 Kampala, Uganda
E-mail: healthsciences.irb@gmail.com
deanshs@chs.mak.ac.ug
Tel: 256 0200903786
Tel: 256 414 531533
Fax: 256 414 531533

COLLEGE OF HEALTH SCIENCES
SCHOOL OF HEALTH SCIENCES
OFFICE OF THE DEAN

MAKERERE UNIVERSITY
SCHOOL OF HEALTH SCIENCES
APPROVED
VALID UNTIL
★ 07 APR 2026 ★
RESEARCH & ETHICS COMMITTEE
P. O. BOX 7072, KAMPALA

07/04/2025

To: Mbaziira Umar

0

Type: Initial Review

Re: MAKSHSREC-2025-897: Readiness And Factors Influencing Community Pharmacies Participation In The Hiv-Focused Community Retail Pharmacy Drug Distribution Point (Crpddp) Program In Kampala City, Uganda.

I am pleased to inform you that at the **181st** convened meeting on **04/03/2025**, the Makerere University School of Health Sciences REC meeting voted to approve the above referenced application.
Approval of the research is for the period of **07/04/2025** to **07/04/2026.**

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **07/04/2026** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Makerere University School of Health Sciences REC:

No.	Document Title	Language	Version Number	Version Date
1	REC forms	English	version 2	2025-04-06
2	REC forms	English	version 2	2025-04-06
3	REC forms	English	version 2	2025-04-06
4	REC forms	English	version 2	2025-04-06
5	REC forms	English	version 2	2025-04-06
6	Informed Consent forms	English	Final	2025-02-12
7	Assent form	English	Final	2025-02-12
8	Data collection tools	English	Final	2025-02-12

Yours Sincerely

Kalidi Rajab
For: Makerere University School of Health Sciences REC

Appendix 4: MAP OF KAMPALA