FACILITATING FACTORS AND BARRIERS TO OPTIMUM UPTAKE OF MULTI-MONTH DISPENSING OF ANTI RETROVIRAL TREATMENT IN MOROGORO MUNICIPALITY, TANZANIA

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FACILITATING FACTORS AND BARRIERS TO OPTIMUM UPTAKE OF MULTI-MONTH DISPENSING OF ART IN MOROGORO MUNICIPALITY, TANZANIA

By

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A Dissertation Submitted in (partial) Fulfillment of the Requirements for the Degree of Master of Public Health of the

Muhimbili University of Health and Allied Sciences
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CERTIFICATION

The undersigned certify that she has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled: **Facilitating factors and barriers to optimum uptake of multi-month dispensing of art in Morogoro Municipality, Tanzania** in partial fulfillment of the requirements for the degree of Master of Public Health of Muhimbili University of Health and Allied Sciences.

_____

Professor Frumence Gasto

(Supervisor)

Date_____

DECLARATION AND COPYRIGHT

I, Neema William Machumu declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

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A special thanks to my parents for whom I owe what I am for the inspiration and invaluable support throughout the years.

DEDICATION

This work is dedicated to my two beautiful twin daughters Ariel and Ariana, my parents William Machumu and Martha Paul; and lastly my sister Edna.

Thank you for your support and encouragement during my study.

ABSTRACT

Background: Multi-Month Dispensing - was adopted in 2018 due to increasing number of ART clients attributed by adoption of test and treat policy in 2017 to improve quality services however challenges to Multi-Month Dispensing implementation still exist despite of the facilitators to its uptake. It is therefore important to understand them so as to inform the stakeholders on how best to improve service provision in the health care system in policy and decision making to cultivate the opportunities and maximize the benefits of optimum uptake of Multi-Month Dispensing of Anti-Retroviral Therapy.

Objective: To assess the facilitating factors and barriers to optimum uptake of Multi-Month Dispensing of Anti-Retroviral Therapy in Morogoro Municipality, Tanzania.

Methodology: Mixed method study design was employed. Patients' records from the CTC2 database, Pharmacy module, and patients' files were reviewed for quantitative data on Multi-Month Dispensing coverage and proportion of stable clients. In qualitative approach, 22 in-depth interviews were conducted with 9 CTC health care providers and 13 stable PLHIV.

Findings: The study showed that Multi-Month Dispensing coverage was 77% while the proportion of stable clients was 81%. 13% of stable clients were not receiving Multi-Month Dispensing. In qualitative, facilitators reported were Test and treat policy implementation, service providers' ability to identify eligible clients, health care providers' moral support, fast track services, timely collection of HIV Viral load, Implementation of quality improvement, decongestion of clinics, client's inspiration, little interference with client's socio-economic activities, travel costs reduction. Reported challenges included insufficient gloves, inadequate drug supply of Anti-Retroviral drugs, prolonged turn-around time of HIV Viral Load results, delayed TB Preventive Therapy (TPT) initiation and staff shortage at CTC.

Conclusion and recommendations: Despite of the reported enablers, challenges still persevered in the implementation of MMD. Strengthening enablers while working towards alleviating the barriers can further lead to better achieve MMD service delivery.

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LIST OF ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ART	Anti-Retroviral Therapy
ARV	Anti- Retroviral
CBHS	Community Based HIV And Aids Services
CDC	Centre for Disease Control
CTC	Care and Treatment Clinic
HIV	Human Immunodeficiency Virus
MMD	Multi Month Dispensing
MMP	Multi Month Prescription
PEPFAR	President's Emergency Plan for Aids Relief
PLHIV	People Living With HIV
UNAID	United Nations Programme on HIV and AIDS
WHO	World's Health Organization

DEFINITION OF TERMS

Test and treat policy: A policy adopted which makes anyone testing positive for HIV eligible for immediate treatment regardless of the level of CD4 or disease stage (Ministry of health Tanzania 2017).

Differentiated Service Delivery: A client centred approach that simplifies HIV services across the treatment cascade with aim to reflect preferences and expectations of various groups of people living with HIV (PLHIV) from those who present well to those with advanced disease and from stable to those unstable (The Government of Tanzania, 2019).

Stable clients on ART: These are clients offered less frequent clinical visits and extended drug refills who meet all of the following criteria; > 5 years of age, received ART > 6 months, no adverse drug reactions, no current opportunistic infections, have good understanding of lifelong adherence with good clinic appointments, on first line drugs with viral load below 50 copies/ml and rising CD4 counts ≥ 350 cells/mm^3 in absence of viral load monitoring (The Government of Tanzania, 2019).

Unstable clients on ART: These are clients offered monthly clinical visits and drug refills who meet any of the following criteria; < 5 years of age, received ART < 6 months, presence active opportunistic infections, have poor adherence to scheduled clinic appointments, recent viral load above 50 copies/ml, rising CD4 counts ≥ 350 cells/mm^3 in absence of viral load monitoring, people who inject drugs, pregnant women, clients on second line regimen (The Government of Tanzania, 2019).

Multi month dispensing of ART: Modality where stable ART patients receive 3/6 months of ART regimens at one time, and will not need to return to health facilities and/or clinics monthly to receive their ARV (The Government of Tanzania, 2019)

CHAPTER ONE

1.0 INTRODUCTION

1.1. Background

1.1.1 HIV/AIDS Burden

HIV/AIDS emerged in the early 1980s and the majority of HIV infected people are from low- and middle- income countries, with an estimated 68% living in sub-Saharan Africa. In 2019 approximately 38.0 million were living with HIV globally and 690 000 people died from AIDS-related illnesses. Also, 75.7 million people have become infected with HIV and 32.7 million have died from AIDS-related illnesses since the start of the epidemic. In 2019, 1.59 million people were living with HIV in the Tanzania with 77,000 people newly infected with HIV and 27 000 AIDS-related related deaths. The number of new HIV infections among the uninfected population over a year (HIV incidence per 1000 uninfected) was 1.41 and prevalence was among adults (15–49 years) was 4.8% (UNAIDS 2019). Scientific advances have led to the development of antiretroviral drugs enabling access to care and treatment which has transformed HIV into a manageable, chronic disease affording infected individuals long healthy lives (Deeks et al 2013). Guidelines have adopted changes to accommodate more infected people but a large number still unaware of their status, few are linked to care and treatment programs, and death rates are still high especially in sub-Saharan Africa. (Kharsany et al, 2016).

In 2017, Tanzania adopted the World Health Organization recommended ‘test and treat’ policy, which makes anyone testing positive for HIV eligible for immediate treatment regardless of the level of CD4 or disease stage (Ministry of health Tanzania 2017). This has expanded ART coverage significantly: in 2018, 71% of people living with HIV in Tanzania were receiving ART, equivalent to 1.1 million people. This is around a 20% increase from 2015, when 52% of HIV-positive people were on ART (UNAIDS 2019). The ambitious targets to include more people in the HIV program have led to changes in treatment eligibility criteria hence a dramatic increase in the number of clients accessing services. This scale-up

strategy is expected to increase the number of people in ART services by 28 percent in 5 years. Given the targets of reducing new infections and expanding ART coverage, it is very important to adapt innovative approaches that will prioritize and maximize availability and access to resources (PEPFAR/T, 2020). The strategic key is to improve cost-effectiveness and efficiency in delivering services (WHO, 2016).

1.1.2 Differentiated Service Delivery Model

Increasing number of HIV clients on ART that is attributed by adoption of 'Treat All' policy has been overwhelming at care and treatment clinics. It has affected quality of services in Sub Saharan countries including Tanzania. Following this, WHO recommended differentiated service delivery model to carter for the increasing burden in the health systems efficiently and effectively (WHO 2016,). This model redesigns, simplifies, and adjusts the whole HIV services plan to fit individual client needs, preferences and expectations while reducing unnecessary health care burdens to the health system and barriers to accessing healthcare for PLHIV. Differentiated ART delivery being among the models aims at simplifying access to ART while reducing the unnecessary burden to patients and the health care system related to frequency visits and volume of clients routinely attended by health care providers at health facilities. Differentiated models in HIV care shows to be successful in increasing the efficiency of ART services. These strategies have been linked to good outcomes for stable clients on ART including high retention rates and adherence. Also, the model was associated with a reduction of the number of visits between stable clients and physicians, as well as medical and human resources required for treatment and allowed integration of the treatment for the co-morbidities (Moise et al., 2018).

Benefits implementation analysis of differentiated service delivery models that was conducted in Tanzania concluded that, differentiated service delivery reflects individual needs better especially key populations who are most at risk of HIV as compared to the traditional service delivery model (Lee et al, 2017). Towards the end of 2019, 34 percent (2,103 out of 6,206 facilities that provided ART services) had adopted Differentiated Service Delivery Model including the facility-based individual model (facility-based pharmacy refill model offering 3-month and 6-month prescriptions and fast track pickups) (The Government of Tanzania, 2019).

1.1.3 Multi-Month Dispensing (MMD)

The goal is to control the HIV epidemic with the key strategy of achieving the 95-95-95 targets for testing, antiretroviral treatment (ART), and viral suppression. Multi-month dispensing (MMD) of antiretroviral drugs was implemented in a way that all stable patients on ART service had to receive several months' supply of drugs. Stability is defined when PHLIV has been on ART for more than 6 months with the following features; more than 5 years of age, viral load copies less than 50/ mm3, evidence of ART adherence, no opportunistic infections, adherent to appointment dates, not pregnant nor breastfeeding. This approach has eliminated the need for monthly clinic visits, reduced travel costs, and has been significantly associated with the retention in care and adherence to treatment compared to a monthly drug regimen (The Government of Tanzania, 2019). Forsythe et al, (2016) emphasized reducing client visits from once per month to once per 6 months (with quarterly refill visits) for stable patients and cost-saving from human resources and overhead costs. In 2019, PEPFAR recommended expansion from an initial plan of a three-month regimen to a six-month regime. There is evidence that rolling out of multi-month dispensing in differentiated service delivery has resulted in a reduction of human resources for health requirements by 64 percent (HRM, 2019).

The implementation of multi-month dispensing is based on eligibility and inclusion criteria for clients at service delivery sites. The approach significantly has a positive impact on both the health system and patients' individual lives (Attah et al., 2018). Multi-month dispensing of ARVs (longer duration of ARV refills) to space out clinic attendance with fewer clinical visits for "stable clients" is the global move geared by WHO and other HIV stakeholders. Multi-month scripting being the standard of care in Malawi, it has shown significant improvement in antiretroviral therapy cost saving for patients, facilities, and the overall health system. The strategy has also facilitated the achievement of national HIV treatment goals (Prust et al., 2017).

By the end of 2018, Tanzania had more than 30 percent of people living with HIV (PLHIV) were initiated in a multi-month scripting plan. In 2019, several policy shifts were recommended including scaling up of six-month dispensing regime from an initial three-month for clients who have successful completed two rounds of three months dispensing.

Scaling up community ART refills with the support of community implementing partners by expanding multi-month dispensing via mobile clinics (The Government of Tanzania, 2019; PEPFAR/T, 2020). Lee, Forsythe and Dutta, 2017 Analyzed the efficiency gains for ART at the facilities using Multi-Month Scripting and a Differentiated Laboratory Management Algorithm in Tanzania. The paper revealed that MMD has the potential to improve efficiency in ART deliveries and reduce significant costs in human resources, laboratory commodities, and supply chain. However, since MMD started, there are very few studies documenting the success and experience of multi-month dispensing globally and none in Tanzania.

1.1.4 Barriers to ART Delivery

Economic, social, and political barriers have been affecting the delivery of HIV drugs for decades. Different strategies were established to target the inequity surrounding access to HIV treatment and care. Access to ARV in sub-Saharan Africa is unlikely to be achieved due to both the weak health system and the severity of the epidemic.

Efforts were mainly focused on financing and human resources concerning planning, implementation, remuneration, and monitoring (Schneider et al, 2006). Multi-month dispensing (MMD) of antiretroviral therapy (ART) was challenging to clients due to the associated community stigma associated with fear of unwanted disclosure since they were being mocked for carrying ART bottles in plastic bags. Providers claimed sharing of ART, poor ART storage, poor clients' health seeking behavior between appointments was associated with longer refills in Malawi. (Hubbard et al., 2020)

Multi-month scripting faced different challenges including lack of knowledge among health care workers on eligibility criteria (who to include and not include), stock-outs or low stocks rendering the program unfeasible, the desire to reduce workload by the health workers, and unnoticeable patients transition from eligible to ineligible (Prust et al., 2017).

Differentiated delivery of services affected the clinical monitoring of clients in some areas as well as the eligibility of participation in the intervention (Fatti et al., 2020). Insufficient supply of ARVs at the facility level was one of the barriers to implementation of multi month prescribing program according to Kim et al., 2019. Moreover, he suggested that this problem can be fixed to some extent through training of pharmacy staff and the use of good commodity management systems.

Financial constraints, long-distance travel, and stigma were among issues raised among women living with HIV affecting adherence to ART in rural India. These findings were important to decide on strategies for future scaling up of HIV interventions (Nyamathi et al., 2011). In sub-Saharan Africa, the worse outcomes in the HIV care cascade were linked to both geographical and transportation barriers. Different scholars recommended strengthening health care infrastructure, decentralization of services, reducing the frequency of clinic visits, enhancing information and management systems, and improving patient-provider communication as a strategy to combat these barriers (Lankowski, et al., 2014).

In scaling up the HIV care programs, sustainability and effectiveness can be ensured by strong leadership, coordination, comprehensive mentoring and capacity building for health care personnel. All these will enhance retention and adherence for HIV patients. This was reported by Chasombat et al., 2006 exploring the access to antiretroviral revealing that 85 percent of clients were adhering to medications after initiation in Thailand.

1.2 Problem Statement

In Tanzania, test and treat policy was adopted in 2017 as per WHO recommendation where clients were initiated on ART regardless of the CD4 or disease stage (WHO, 2016). Prior to this, CD4 counts and disease stage were assessed before ART initiation. With this recommendation, there has been increasing number of clients enrolled who are provided with services based on their diversity. At least 80% of PLHIV on ART should be stable to receive MMD however in Tanzania it has been difficult to attain this goal despite the adoption of test and treat policy in 2017.

Reported barriers on MMD implementation included lack of knowledge among health care workers on eligibility criteria (who to include and not include), stock-outs or low stocks rendering the program unfeasible, the desire to reduce workload by the health workers, and unnoticeable patients transition from eligible to ineligible being the stated barriers to MMD uptake. However, despite the adoption of the test and treat policy and differentiated ART delivery in Tanzania, very little is known on MMD of ART coverage, facilitating factors and barriers to its uptake in the country. No studies revealed the contextual and individual factors influencing MMD uptake in the country as well as in Morogoro region.

1.3 Conceptual Framework

This section provides the overall picture of the study and illustrates how variables are connected.

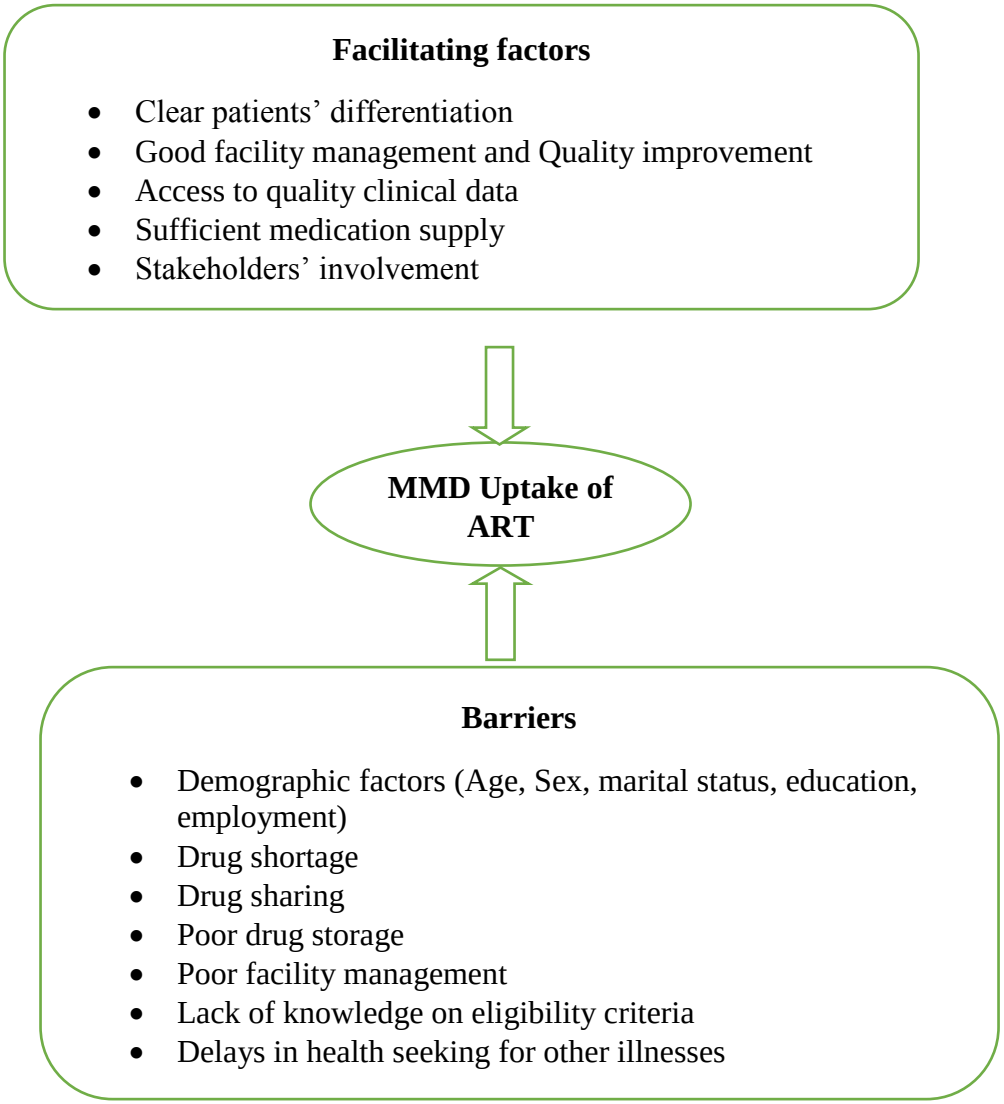


Figure 1: The conceptual Framework: Facilitating factors and barriers to the uptake of Multi-Month Dispensing (MMD) of ART

A number of frameworks are in place to analyze the implementation of policies. Walt and Gilson's policy analysis triangle framework focuses on how context, actors and process influence the implementation of any policy (Walt & Gilson, 1994). In this study, facilitating factors such as clear patients' differentiation, good facility management, access to quality clinical data, sufficient medication supply and stakeholder's involvement was analyzed to find out how they influence the uptake of MMD. Similarly, the study explored other contextual factors that hinder the uptake of MMD. In the context of this study, such factors, referred to as barriers which affect the uptake MMD, they include among others demographic factors (Age, gender, marital status, education, employment), drug shortage, poor drug storage, drug sharing, poor facility management, lack of knowledge, delay in health seeking for other illnesses.

1.4 Rationale

The study explored various contexts of MMD including identifying coverage, facilitating factors on MMD implementation and the associated barriers to achieving MMD goal. These findings will inform HCPs working in the CTCs to set up best quality improvement action plans on how best to scale up the uptake in relation to the specific barriers. Thus, improve efficiency in reducing overcrowding of clients, prolonged waiting time, and unnecessary burden to the health care workers. MMD is linked to improved adherence and retention of PLHIV resulting from reduced clinic visits, therefore, the findings from this study will also help to inform PLHIV to strengthen self-management in ART uptake hence improve their individual lives. Moreover, findings from the study will be used to inform the stakeholders on how best to improve service provision in terms of HCPs mentorships and capacity building as well as the availability of resources in the health care system hence cultivate the opportunities and maximize the benefits of the optimum MMD uptake.

1.5 Research Questions

What are the facilitating factors and barriers to optimum uptake of multi-month dispensing ART among PLHIV in Morogoro Municipality?

1.5.1 Specifically, the study will answer the following;

i. What is the uptake of multi-month dispensing of ART among PLHIV on ART in Morogoro Municipality?
ii. What is the proportion of stable clients among PLHIV on ART in Morogoro Municipality?
iii. What are the facilitating factors to the optimum uptake of multi-month dispensing in Morogoro Municipality?
iv. What are the barriers to the optimum uptake of multi-month dispensing in Morogoro Municipality?

1.6 Objectives of the Study

The main objective of the study was to assess the facilitating factors and barriers to optimum uptake of MMD of ART in Morogoro Municipality, Tanzania.

1.6 Specifically, the study aims:

i. To determine the coverage of multi-month dispensing of ART among PLHIV on ART in Morogoro Municipality
ii. To determine proportion of stable clients among PLHIV on ART in Morogoro Municipality
iii. To identify facilitating factors to the uptake and outcomes of multi-month dispensing of ART in Morogoro Municipality
iv. To describe barriers to the optimum uptake of multi-month dispensing of ART in Morogoro Municipality

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Uptake of Multi-Month Dispensing and stability of clients

Efforts to scale up the HIV program have been ongoing while incorporating a differentiated service delivery model in several aspects such as testing, initiation, and linkage. Published evidence on differentiated service delivery for HIV treatment showed that this is a favorable strategy towards the expansion of HIV care (treat all). The differentiated service delivery models support the strategies to overcome barriers to accessing HIV services and reduce the workload of health workers. This was revealed by a study exploring the formal and informal policy implementation of differentiated HIV services delivery in Malawi, Tanzania, and South Africa to women within the prevention of mother-to-child transmission (Chimukuche et al., 2020).

In 2017, a process evaluation study conducted in Malawi on using differentiated models of care to achieve national HIV treatment goal was conducted and portrayed a coverage of MMD uptake showed that 65% of stable clients were receiving MMD however 86% of all clients receiving care were stable to receive MMD. The gap was explained by an implementation gap with the possibility of eligible clients not being on MMD and vice versa.(Prust et al., 2017)

Prioritizing a differentiated delivery model for scaling-up HIV service has been proven to be the most efficient way to sustain positive patient outcomes and increase health system performance. Since long-term retention in HIV treatment program is still a challenge in health care, countries have been incorporating different strategies such as bringing services closer to the community, reducing clinic visits, and increasing clinic operation hours to combat the situation. A review comparing standard care and reduced frequency of facility visits for HIV treatment and care indicated there was no difference between the two interventions concerning morbidity, morbidity, or viral suppression. Reduced clinic visits were a more preferred model and facilitated retention in the program.

The review also suggested more attention to be given to the reduction of clinic visits as a strategy to reduce the burden of HIV care for clients and health systems (Mutasa-Apollo et al., 2020).

Differentiated HIV service delivery models focusing on screening and testing, treatment and care, and drug delivery were established to improve program quality and efficiency in Kenya and Uganda. The model enhanced the quality of the patient experience and ensured accountability and efficiency in health system functions. A systematic search informing antiretroviral therapy provision for stable HIV-infected individuals in Kenya revealed that differentiated care models compared to standard HIV care had similar outcomes concerning viral suppression, retention to care, and loss to follow-up for HIV clients. In terms of cost-effectiveness, differentiated care resulted in an overall decrease in HIV care costs, few increased start-up costs, and decreased patients' costs (Hagey et al., 2018).

Formative research assessing quality improvements at HIV treatment clinics in Lusaka, Zambia examined the impact of three-month refills on stable patients and revealed that intervention facilities had fewer patients' visits per day, decreased patient waiting time throughout the intervention at intervention sites, and no significant impact on stock availability. Cost savings was linked to a reduction in health care worker time as stable patients' transition from monthly to three-month refill. The study also concluded that the intervention is effective and sustainable and could be expanded to the rest of Lusaka and other urban areas of Zambia (McCarthy et al., 2017).

A study examined the experience of multi-monthly prescribing (MMP) on clinical outcomes amongst children and adolescents living with HIV in six African countries (Botswana, Lesotho, Malawi, Swaziland, Tanzania, and Uganda). The study indicated that adapting multi-monthly prescription (MMP) from monthly prescription (MP) was feasible and associated with favorable health outcomes concerning mortality, retention, ART adherence, viral suppression, and immunologic status.

The results provided reassurance that children and adolescents who are clinically stable and adherent to ART can do well with reduced frequency of clinical visits and extended ART refills (Kim et al, 2018).

Despite a good description of the experience of MMD reported in the reviewed literature, however, these studies had limitations as they have not explored the coverage, facilitating factors as well as challenges to MMD of ART that was assessed in this study

2.2 Facilitating factors for the implementation of Multi-Month Dispensing

A study assessing the outcome of community-based differentiated models of multi-month dispensing of antiretroviral medication among stable HIV-infected patients was conducted in Lesotho. The study pointed out that access to quality clinical data (viral load results), good medication supply, community stakeholder's involvement, frameworks to support lay worker cadre and reliable data systems are facilitated uptake of MMD of ART (Faturiyele et al., 2018). A review study on Effectiveness, Mechanisms, Targeting, and Scale on Differentiated ART services was conducted in Malawi and it suggested in order maximize the public health impact of DSD, systems need to be patient-centered and adaptive, as well as employ robust quality improvement processes.(Roy et al., 2019)

According to Mody et al., 2020, longer appointment intervals were significantly associated with the improved retention in care with 6-month intervals being the most beneficial since with longer visit intervals, clients were less likely to miss the scheduled appointments, this model also required minimal infrastructure addition. The study also pointed out that targeting barriers such as drug shortage and poor facility management are the best strategies to improve implementation hence scaling up of differentiated models of care.

A study exploring the preference of differentiated care for stable clients taking HIV medication in Zambia revealed that the models have been effective in retaining clients in HIV care with acceptable ingredients to the patients. Reduced waiting time and clinic visits from one-month to three-months was the most favorable feature of the differentiated service which all facilitated the uptake of MMD of ART (Eshun-Wilson et al., 2019).

Zanolini et al., 2018 conducted a discrete choice experiment on understanding preferences for HIV care and treatment in Zambia. Provider's attitude was another determinant for increased uptake of MMD whereby patients were willing to travel a long distance and visit the clinic frequently given that the provider's attitude was positive. The study provided an insight on the facilitating factors to MMD uptake however coverage and barriers weren't analyzed and these will entirely be analyzed in this study.

Differentiated care generated efficiencies and overall quality improvements in the ART service delivery for both patients and health care system in Malawi. From these findings Prust et al, (2017) suggested the model implementation could be improved by focusing on patients' differentiation since there were eligible patients not receiving MMS. Increasing the accuracy of patient differentiation will maximize the uptake of MMS and later benefit the patients and the health system hence improving quality of care. For maximizing the differentiated care, he also suggested clear eligibility criteria for patients' participation in differentiated service delivery models, viable incorporation of health care workers, strengthening functioning existing supply chains, emphasizing patient-centered strategies, and ensure the feasible process for quality improvement.

Despite a good description of the experience of MMD reported in the reviewed literature, however, these studies had limitations as they had not explored the coverage, facilitating factors as well as challenges to MMD of ART that was assessed in this study

2.3 Barriers to the implementation of Multi-Month Dispensing

Efforts to scale up the HIV program have been ongoing while incorporating a differentiated service delivery model in several aspects such as testing, initiation, and linkage. These endeavors are faced with different challenges including lack of access to viral load monitoring, shortage of funds to expand to community-based demand creation, poor monitoring, and evaluation system, and poor data management in the implication of the DSD (Differentiated Service Delivery) model (Ehrenkranz et al., 2019). Reluctance to join the program was another challenge reported in these areas due to a lack of understanding of the procedures and that

clients were used to the previous arrangements. Clients also preferred receiving regular HIV care in clinical settings where they have established provider/client relationships (Chimukuche et al., 2020). Lack of clarity over procedures and eligibility criteria amongst the providers was identified as the challenge that could potentially undermine the delivery of HIV services through these models (Sharer et al., 2019).

Another study that explored patients' and providers' perspectives on barriers to Differentiated ART service delivery in Uganda revealed that several factors were linked to affect it including; individualized stigma, fear of detachment from health facilities, and frequent changes in physical addresses among clients. Insufficient training of health workers in DSD delivery and shortage of supply was also identified as constraints (Zakumumpa et al., 2020). According to Kandasami et al., (2019), the implementation of differentiated models had several limitations including; shortage of resources needed for improving staff condition, training or career development, time and effort needed to establish the interventions may affect the rapid expansion strategy and health workers and facilities need for financial and non-financial incentives.

According to Prust et al., 2017, multi-monthly scripting was offered in all ART facilities in Malawi. Unfortunately, the program faced different challenges including lack of knowledge among health care workers on eligibility criteria (who to include and not include), stock-outs or low stocks rendering the program unfeasible, the desire to reduce workload by the health workers, and unnoticeable patients transition from eligible to ineligible. A study evaluating three- and six-month dispensing of ART in community-based differentiated service delivery models in Zimbabwe revealed that limited expansion of viral load testing along the differentiated delivery of services affected the clinical monitoring of clients in some areas as well as the eligibility of participation in the intervention (Fatti et al., 2020). Insufficient supply of ARVs at the facility level was also one of the barriers to implementation of multi month prescribing program according to Kim et al., 2019. The study suggested that this problem can be fixed to some extent through training of pharmacy staff and the use of good commodity management systems.

According to Hubbard et al., 2020, multi-month dispensing (MMD) of ART was challenging to clients due to the associated community stigma associated including fear of unwanted disclosure and being mocked for carrying many ART bottles in plastic bags. Moreover health care providers claimed sharing of ART, poor ART storage, poor clients' health seeking behavior between appointments was associated with longer refills in Malawi.

Literatures reviewed show that, in Tanzania very little is known on MMD of ART coverage, facilitating factors and barriers to its uptake. No studies revealed the contextual and individual factors influencing MMD uptake. Therefore, this study aimed at reducing that knowledge gap by determining the coverage of MMD of ART implementation and exploring factors that influence and hinder the implementation of MMD of ART in Morogoro Municipality

CHAPTER THREE

3.0 METHODOLOGY

This chapter explains the study area, research design, study population, inclusion criteria and sampling techniques, variables, data collection processes, methods and analysis plan. Study worthiness, limitations and mitigations; and ethical considerations will also be described.

3.1 Study Area

The study was conducted in Morogoro municipal which is among the 9 councils in Morogoro Region, with a population of 315,866 according to the national census 2012. This is the capital of the Morogoro region, the eastern part of Tanzania. According to Tanzania HIV Impact Survey 2016-2017, HIV prevalence among adults in this region was 4.2 percent. Moreover, the three leading high-volume sites were involved including Morogoro Regional and Referral hospital, Sabasaba health centre, and Mazimbu Hospital all located in Morogoro municipal.

Morogoro region was selected because of the high HIV prevalence. Morogoro municipal was further focused due to its location and existence of several activities including commercial activities. These attract influx of people from other districts and regions for business purposes posing a high risk for HIV

3.2 Research Design

It was a mixed methods study design using both quantitative and qualitative approaches of data collection. A quantitative approach used a descriptive design to collect data to determine the proportion of stable clients and the general uptake of multi-month dispensing among PLHIV on ART.

A qualitative approach enhanced quantitative results to understand the general experience including facilitating factors and barriers to multi-month dispensing implementation. elaborate specific observations/ patterns and provide contextual information based on the information collected from the participants.

3.3 Study Population

A quantitative approach included all people living with HIV (PLHIV) registered in CTCs and receiving antiretroviral therapy (ART) from the selected health facilities.

A qualitative approach included health care providers working at CTCs from the selected facilities and people living with HIV (PLHIV) registered in CTCs and receiving antiretroviral therapy (ART) for at least 6 months from the selected health facilities.

3.4 Inclusion criteria

In quantitative approach, study participants included all people living with HIV (PLHIV) registered in CTCs and receiving antiretroviral therapy (ART) current on treatment.

For qualitative, no inclusion criterion was used since we purposely selected the study respondents.

3.5 Sample Size and Sampling Techniques

For quantitative approach, records of all people living with HIV (PLHIV) registered in CTCs and currently receiving antiretroviral therapy (ART) from the selected health facilities were used to get the total number of clients on MMD of ART and number of clients that are stable for the quantitative approach. Therefore, denominator included all people living with HIV (PLHIV) registered in CTCs and currently receiving antiretroviral therapy (ART) while numerator included total number of clients on MMD of ART and number of clients on ART that are stable.

30 individuals were interviewed for the qualitative approach, 10 individuals from each selected facility with 5 health care providers at CTC and 5 PLHIV receiving antiretroviral therapy (ART) for more than 6 months.

Purposive sampling was also used to identify and approach 30 individuals with 10 from each selected facility. 5 health care providers were purposively selected at CTC based on the length of time spent with the clients with the following selection; 2 clinicians, 1 pharmacist, 1 ART

nurse and 1 community-based health service providers. The health care providers were purposively selected because they have experience working in the CTC and they are knowledgeable about the factors and barriers to the uptake of MMD, so they are expected to provide rich information to achieve the study objectives, Moreover, the selection of 5 PLHIV on ART for more than 6 months was done at the CTCs with the assistance of the CTC in-charges and CBHS focal persons at the respective facilities to identify rich information cases based on relevance, visibility and activeness of the clients. This assisted to get who participants can easily provide their experiences on facilitating factors and barriers for the uptake of MMD. Moreover, this selection process was used so as to ensure the participants selected for the in-depth interviews have rich information regarding the study and openness about their HIV statuses; therefore, they were ready to discuss different issues including HIV, ART uptake and MMD.

Purposively sampling was used to select three health facilities providing CTC services in Morogoro municipal based on high-volume of current clients receiving care, proximity and time available for data collection. Also, contextual variation across the facilities assisted to get diversity of data. However, in the course of data collection, final sample size was guided by the principle of saturation, meaning that data collection stopped when repetition of ideas occurs.

3.6 Data Collection Methods

In the quantitative approach, patients' records from the CTC2 database, Pharmacy module, and patients' files were reviewed from selected facilities providing CTC services using checklist to obtain information on number of stable clients among PLHIV on ART, clients on MMD among PLHIV on ART as well as number of all clients currently in care and treatment.

A qualitative approach used interview guide to conduct respective in-depth interviews with key informants in each selected facility and they contained questions focusing on MMD implementation particularly facilitating factors and barriers. The guiding questions were initially written in English and then translated into Kiswahili which is medium of communication that was used during the study.

Two research assistants were recruited to assist with the data collection however only one was able to assist during data collection. Factors considered in the recruitment were previous experience in working at CTC, experience in MMD services, experience in collecting qualitative data and good communication skills. The research assistants were oriented on the study objectives, overview of data collection processes, obtaining consent of the participants, interview skills, understanding the interview guides and the use of the research tools including the use of the tape recorder when conducting interviews with participants.

3.7 Data Collection Process

For quantitative approach data was collected by the principal researcher and research assistants by reviewing CTC patients' records, CTC2 data base and Pharmacy module to identify number of stable clients, clients on MMD and number of current clients in care and treatment then filling in the structured data collection checklist from the selected health facilities.

In qualitative approach, the study participants were approached, requested for informed consent and in-depth interviews were conducted at CTC while maintaining privacy and confidentiality with the help of the research assistants.

3.8 Pre-testing of the data collection instruments

Both data collection tools were pre-tested in Morogoro DC at Mkuyuni Health Centre before use to ensure consistency, validity and reliability of the data collected. Moreover, pre-testing helped to ensure that the study instruments achieved the study objectives. It also helped to determine the duration of the interview and plan it accordingly**.**

3.9 Study trustworthiness

In qualitative studies, it was suggested that different concepts could be used to ensure trustworthiness instead of validity and reliability as used in quantitative studies. He suggested use of credibility (in preference to internal validity); transferability (in preference to external validity/generalizability); dependability (in preference to reliability); and confirmability (in preference to objectivity). (Guba, 1981)

Credibility referred to how congruent the findings of this study inconsistent with reality. In this study, in-depth interview was used because they were appropriate and well recognized research methods for collecting depth information from the study participants. Triangulation was also done using different data collection methods as stated above; involving different types of participants (patients and health care providers); and by collecting data from different health care facilities with different characteristics such as from public to private health care facilities. Also, among these health care facilities some were health centers and regional hospital.

Transferability was concerned with the extent to which the findings of this study could be applied to other situations. Detailed background data to establish context of study and detailed description of phenomenon in question was collected. The information included the number of health care facilities taking part in this study, criteria of selecting study participants, the number of participants that were involved in this study, the data collection methods that were employed, the number and length of the in-depth interview and observation sessions, and the time period over which the data was collected.

Dependability was considered if this study was to be repeated, in the same context, with the same methods and with the same participants, similar results were obtained. In order for this study to be dependable in-depth methodological description of the study was done to enable future researchers to repeat the work.

Confirmability: the degree of neutrality or objectivity in the findings of qualitative studies. Findings obtained from the study were based on participants' responses and not any potential bias or personal motivations of the researcher. In order for this study to be confirmable, triangulation was used to reduce the bias effect. Triangulation involved method of data collection, participant and study sites. The reasons for favoring one approach over others were explained and weaknesses in the techniques employed was admitted.

3.10 Data Management

In Quantitative approach, data was generated from CTC patients' files, CTC2 data base and Pharmacy module to identify number of stable clients, clients on MMD and number of current clients in care and treatment then filling in the structured data collection checklist from the selected health facilities. Data was checked to ensure correctness and completeness to ensure needed information was identified and documented effectively and data entry was done in the STATA software ready for analysis. Collected data was accessible to the principal researcher and research assistant only to ensure confidentiality.

Qualitative data from the interviews was gathered on a daily basis from the in-depth interviews and information acquired through the tape recorder was also listened. Review after every interview was done to check on any new emerging data, thereafter data was transcribed in verbatim, arranged and was ready for analysis.

3.11 Data analysis

Descriptive statistics (frequency and percentage) was employed to determine the proportion of clients on MMD among people living with HIV on ART as well as proportion of all stable clients among all PLHIV current on ART; and frequency tables were generated using STATA statistical software.

In qualitative analysis, data from each interview was read and key words/themes and significant statements were selected, reviewed and put together into different clusters. It was noted that different participants often used the same or similar words and phrases to express

the same idea which helped to shed light on the research and these formed themes. Different clusters with similar themes were then grouped together for analysis. Key words (codes) were assigned and memos that explained the thinking about the data were written down. In the codes created, patterns were identified to come up with potential themes. Text that was relevant and related to the specific research concerns was taken. Refining was done where vague or less irrelevant codes were discarded. The interviews were transcribed verbatim, a critical step in preparing for data analysis (Polit and Beck 2004). Although most of the results are qualitative in nature, some areas of inquiry were enriched through blending of qualitative and quantitative data to enhance validity of the research findings (Polit and Hungler,1999). In this research therefore, descriptive statistics have been used in the presentation of demographic data in the form of tables.

3.12 Ethical Consideration

Ethical clearance for this study was sought from the Muhimbili University of Health and Allied Science (MUHAS) Ethical Review Committee. Permission was sought before conducting the study from the Regional Medical Officer (RMO), District Medical Officer (DMO), and officers in charge of the health facilities selected. Study participants was briefed on study objectives and informed consent was obtained from each participant through signing the participation agreement form.

CHAPTER FOUR

4.0 FINDINGS

4.1 General overview

This chapter presents data in relation to the four objectives of the study which includes coverage of multi-month dispensing of ART among PLHIV on ART and proportion of stable clients among PLHIV on ART in quantitative approach while in qualitative main focus included description of facilitating factors and barriers to the optimum uptake of multi-month dispensing of ART. A total of 22 in key informant were involved in-depth interviews from the selected health facilities. These included 9 health care providers (including clinicians, ART nurses, pharmacists and CBHSP) and 13 PLHIV on ART.

4.2 Quantitative study findings

4.2.1 The coverage of multi month dispensing of ART among PLHIV on ART in Morogoro Municipality

A review of patients' records from CTC2 data base, pharmacy module and patients' files show that; 77% of 8293 PLHIV currently on ART were receiving MMD with Saba Saba health center having the highest coverage (80%) and Mazimbu Hospital with the least coverage (68%).

Table 1: Coverage of MMD among PLHIV currently receiving ART

Facility	Total PLHIV currently on ART	Total PLHIV on ART receiving MMD	% Coverage of MMD uptake
Mazimbu Hospital	1009	682	68%
MRRH	3588	2724	76%
Saba Saba Health center	3696	2939	80%
Totals	**8293**	**6345**	**77%**

4.2.2 The proportion of stable clients among PLHIV on ART in Morogoro Municipality

A thorough review of data from the database and patients' files revealed that 81% of 8293 PLHIV currently on ART were categorized as stable patients per Tanzania national ART guidelines, Mazimbu with the least proportion.

Table 2: Proportion of Stable clients among PLHIV currently on ART

Facility	Total PLHIV currently on ART	Total stable PLHIV on ART	% Proportion of stable PLHIV on ART
Mazimbu Hospital	1009	754	75%
MRRH	3588	2952	82%
Saba Saba Health centre	3696	3030	82%
Totals	8293	6736	81%

The study findings also portrayed that there is a 13% gap from the 6736 PLHIV stable clients who are not on MMD but eligible to receive MMD with the greater proportion (20%) from Mazimbu and Saba Saba being the least with 11%.

Table 3: Gap of Stable clients not on MMD

Facility	Total stable PLHIV on ART	Total stable PLHIV on ART receiving MMD	Gap of stable clients to receive MMD	Percentage gap
Mazimbu Hospital	754	601	153	20%
MRRH	2952	2550	402	14%
Saba Saba Health center	3030	2687	343	11%
Totals	**6736**	**5838**	**898**	**13%**

4.3 Qualitative findings

4.3.1 Socio-demographic findings of the study participants

The study collected information on socio-demographic characteristics of the study participants, namely age, sex, duration on medication, duration at CTC, education, occupational status and the analysis yielded the following results; among the 9 health care providers interviewed, majority (44%) were aged between 25 and 34 years with 67% of them being female. On the other hand, 38% of the 13 interviewed PLHIV clients in the study aged between 35-44 years with 85% of them being females.

Among 13 PLHIV interviewed clients, a greater number (46%) were on ART between 6-10years, with mean duration of 9 years. On the other hand, a larger number (44%) of the 9 interviewed health care providers worked at CTC within 2-3 years, with a minimum number (22%) with work experience within 4-5years.

As indicated on the table below, it was important to document the various sources of income of the study respondents, PLHIV on ART and the health care providers. Two categories of potential income generating activities in the study area were included for the health care providers whereas out of 9, 45% were in the clinicians and the least was a (11%) pharmacist. For the 13 PLHIV on ART, 8 of them (62%) were engaged in small scale business.

As indicated on the table 4, it was important to document the education level of the study respondents, PLHIV on ART and the Health care providers. Out of 9 health care providers, majority (45%) had diploma with the least having primary education level. For the 13 PLHIV on ART, only 1 had secondary education while the rest 12 (92%) had primary education level.

Table 4: Socio-demographic characteristics of study participants

Characteristics	Health care providers (N=9)		Clients (n=13)	
Sex	Frequency	%	Frequency	%
Male	3	33	2	15
Female	6	67	11	85
Age (years)				
18-24	0	0	0	0
25-34	4	44	0	0
35-44	0	0	5	38
45-55	3	33	4	31
>55	5	23	4	31
Level of education				
Primary	2	22	12	92
Secondary	4	45	1	8
College/University	3	33	0	0
Client's Occupation Status				
Employed			2	15
Business			9	70
Farmer			2	15
Others specify			0	0
Clients' duration on ART (years)				
0-5			3	24
6-10			6	46
11-15			2	15
>15			2	15
Provider Cadres				
Clinician	4	45		
ART Nurse	2	22		
Pharmacist	1	11		
Community Health workers	2	22		
Work experience at CTC (years)				
<1	3	34		
2-3	4	44		
4-5	2	22		

4.4 Qualitative study findings

The findings are presented in sections mirroring the research questions and objectives through the two major themes including facilitating factors to the optimum uptake of multi-month dispensing of ART and barriers to the optimum uptake of multi-month dispensing of ART. These themes were identified from the data collected centered around 10 domains namely Policy, Ability to differentiate clients, Stakeholders involvement, Client's factors, Practice, Supply chain and equipment, Stigma, Human resource for health, Stigma and Training. Such analysis involved a process that is designed to condense raw data into categories/themes based on valid interpretations. The readability of the qualitative reports is usually enhanced by the inclusion of verbatim excerpts taken directly from the narrative data (Polit and Hungler, 1999).

During the analysis the themes were again categorized into sub-themes based on individual factors, health facility factors and stakeholders' factors.

Themes and sub-themes are summarized as seen in the Table below.

Table 5: Identified main themes and sub-themes related to MMD implementation

Main themes	Sub-themes	Codes
Facilitating factors to the optimum uptake of MMD of ART	Health system factors	• Test and treat policy facilitate the implementation of MMD • Stakeholders support on MMD implementation
	Health facility factors	• Test and treat policy facilitate the implementation of MMD • Service providers' ability to identify eligible clients for MMD • Ongoing Health care Providers' moral support to PLHIV • Fast track services of MMD clients • Timely collection of HIV Viral load facilitates MMD implementation • Implementation of Quality improvement strategies • Decongestion of clinics improves Health Care Providers' efficiency in service provision
	Individual factors	• Client's satisfaction/pleasure from MMD service • Client-client motivation increases the uptake of MMD • Increasing client's demand for MMD • Little interference with client's socio-economic activities • Travel costs reduction • Clients' awareness on MMD and its eligibility criteria • Good clients' health outcome

Barriers to the optimum uptake of MMD of ART	Health facility factors	• Insufficient gloves supply limiting HVL sample collection • Inadequate drug supply of ARVs in the facilities • Prolonged turn-around time of HVL results • Delayed TPT initiation lags behind MMD implementation • Staff shortage at CTC delaying HVL sample collection • Health care providers trained for MMD not being the implementers
	Individual factors	• Self and community stigma hinder MMD uptake • Missing appointments and Interruption in treatment

4.4.1 Facilitating factors to the optimum uptake of multi-month dispensing of ART.

Respondents had described facilitating factors to the uptake of MMD. Under this theme, 3 sub-themes emerged which were categorized based on individual factors, health facility factors and stakeholders' factors into 15 categories as described.

Health system factors

This sub theme included findings related to the health system with regard to implementation of MMD of ART among PLHIV at CTC

Test and treat policy facilitate the implementation of MMD in reducing overcrowding

Our study reveals that implementation of Test and Treat policy has led to increasing number of clients at CTC since every client tested positive is enrolled in care and started on ARTs. Therefore, this has encouraged health care providers to enroll more eligible clients to MMD, which in turn reduced clients' overcrowding during the clinic visits.

> *There are many reasons, first and foremost this is a national protocol or let's say policy which facilitates same day enrolment of clients in CTC. For example, we have more than 3000 clients on ART not as before as a result of this therefore we are pushed to enroll clients on MMD for us to reduce client's overcrowding and queue as a result of the same day ART initiation, so we serve customers timely and easier.* [Provider 2 Saba Saba Health centre]

Another respondent had this to say:

> *Multi month dispensing was adopted to reduce the overcrowding because from the test and treat protocol we no longer consider CD4 for ART initiation unlike the old days where CD4 count was the determinant factor for treatment, which in turn increased the number of clients in care. This calls us to reduce the congestion by enrolling stable clients on MMD which is also beneficial to us as providers* [Provider 5 MRRH]

Stakeholders support on MMD implementation

Stakeholders' support emerged as a finding where the provider respondents reported the contribution of stakeholders (NGO's, PORALG and MOHDGEC) in facilitating MMD implementation from their ongoing supportive supervisions and mentorships as well as through formal training to the health care providers on adherence to eligibility criteria as a way of capacity building to improve efficiency.

... So, we also have a good relationship with stakeholders who have been coaching and mentoring us through supervisions on adhering to guidelines and job aids which motivates us to efficiently implement this service… [Provider 2 Saba Saba]

…. In addition, the support from our regional stakeholders through trainings and supervisions has really enabled us in the implementation, the constant reminder from them has helped us in a good way on the implementation. [Provider 2 MRRH]

Health facility factors

This sub-theme included findings related to the health facility with regard to implementation of MMD of ART among PLHIV at CTC

Service providers' ability to identify eligible clients for MMD

The findings revealed high level of understanding of eligibility criteria for MMD clients, which has increased uptake of MMD in the study area. The respondents reported to have ability on how to clearly differentiate or classify clients as stable to receive MMD or not. This has aided MMD implementation and more eligible clients are put on MMD accordingly. Eligibility criteria included On ART for >6 months, viral load suppression/copies less than 50, CD4 count >350 copies/mm3, clinic and drug adherence, < 5 years, not pregnant, not on IPT, no opportunistic infections.

…. Also, our own ability to identify stability of clients based on criteria has enabled us in this otherwise you will not be able to implement…. [Provider 1 MRRH]

Another respondent expressed that:

… there are many factors but mostly the eligibility criteria, as I said for a client to be stable firstly has to be on ART for more than 6 months; should have viral load of less than 50 copies; no opportunistic infections, not on IPT; if it's a child, should be >5 years. All these differentiate clients to be stable for multi month dispensing [Provider 2 Saba Saba]

> *Once the client meets the stability criteria set by the Ministry of Health that not aged under 5 years, not pregnant or breastfeeding mother, free of opportunistic infections, viral load copies less than 50, CD4 count above 350, good clinic appointment adherence, they are put in a group to be prescribed 3 months ARVs….* [Provider 2 MRRH]

Fast track services of MMD clients

Fast track service to MMD clients has been reported to be among facilitating factors in the implementation especially among clients since they would spend less time at the clinic before they leave to continue with their activities unlike one monthly dispensing where they spent more time at the clinics waiting for services. This is among the frequently reported sub-themes.

> *We consider fast track services to all clients on MMD meaning they will be first served as compared to others. And clients come in blocks there is block A, B and C depending on the client's chosen time. The main goal of fast track, client to get service quickly as one would wish, which is very pleasing to customers to continue with this service* [Provider 5 MRRH]

> *I do not have a challenge with service because if I come here, I spend less than half an hour, that is, I receive the service in a fast track manner so I don't waste time at all. Like today I received my service very fast unlike the days I was on monthly prescription where I would spend 6-7 hours waiting for service because of a long queue. So, they decided to bring this service to save our waiting time* [Client 3 MRRH]

Health care Providers' moral support to PLHIV

Health care Providers' moral support was among the described findings under health facility. It has been reported that the ongoing moral support from the providers to the clients motivates them to continue being on MMD which in turn improves the coverage of MMD.

> *Congratulating clients for meeting the criteria for many-months prescription is very encouraging to us clients. You know a client maybe struggling to be adherent so if you congratulate him it gives him the motivation to keep going well. Since I started being on this service I have been very encouraged and helped a lot to keep well. So, congratulating someone really helps.* [Client 3 MRRH]

Implementation of Quality improvement strategies

It was reported that presence of quality improvement plans and ongoing revision of targeted indicators has influenced efficient provision of MMD services at the facility.

> *As a facility, we conduct quality improvement meetings where we discuss several indicators including MMD where at least 80% of all clients currently receiving care and treatment should be on MMD, so we implement that way. But also, as clinicians we sort clients based on eligibility criteria to identify stable clients for MMD. If it is unstable, we try to make him stable for example If he has a high viral load, we conduct enhanced adherence counselling for enable him to have viral suppression so become stable and adhering to viral load sample collection based on the guideline* [Provider 1 Saba Saba]

Timely collection of HIV Viral load facilitates MMD implementation

MMD implementation is reported to be facilitated by timely collection of HVL samples from clients which in turn assists to timely identify stable clients enough to be put on MMD.

> *The very first thing is that a good HVL sample collection is very keen in differentiating clients who have suppressed viral load to be stable enough and put on MMD* [Provider 1 Saba Saba]

> *The factors that enable the implementation of MMD are the ability to ensure that our clients test for viral load. And we have identified one laboratory staff whom we have assigned to support in sample collection to all clients eligible for sample collection.*

We have a sticker reminder system to not miss the clients eligible for sample collection and files are prepared a day before the clinic. [Provider 2 MRRH]

Decongestion of clinics improves Health care providers' efficiency in service provision

Clinic decongestion from MMD service has facilitated continuity of MMD implementation since reduces the workload; and improves efficiency and effectiveness in service provision.

What motivates us with MMD is that the workload becomes less…it's easier for us to reduce the congestion of customers so they have helped us to get rid of that torment, because clients were crowded until in the evening. This has made us more effective and efficient too. [Provider 2 MRRH]

… as a provider it reduces the client's queue and overcrowding as I said but it also makes us provide quality service within our capacity because we have fewer clients and we can easily classify their needs. This motivates us to increase efforts in seeking more stable clients for MMD. [Provider 3 Saba Saba]

Individual factors

This sub-theme includes finfings related to individual factors with regard to implementation of MMD of ART among PLHIV at CTC

Client's satisfaction/pleasure from MMD service

Majority of respondents reported to be satisfied and pleasured by the MMD service and this has encouraged them towards taking good care of their health and following providers' instructions in order to continue with the service and not to return to monthly dispensing.

It's a pleasure and we relax and people won't know am sick since I don't go to the hospital more often. Once you have received your medication for many months and you know what your appointment date then it eases my work to take care of myself so

that I don't return to monthly prescription because it is time demanding at a high cost... [Client 2 MRRH]

There is no challenge on the client's perspectives but most of them are very happy and given many months' prescription something that motivates the customers to continue with the service [Provider 4 MRRH]

.... you know when someone is on MMD, it feels comfortable you see? There is a certain pleasure you get so even when we are returned to monthly prescription it feels really bad…I struggle to make sure I don't go back to monthly medications by taking my medications timely and completing my doses, this service is very pleasant. [Client 5 MRRH]

Client-client motivation encourages more clients to be enrolled in MMD

Motivation among clients was among the described findings under individual sub-theme. Respondents reported on client-client motivation where those on MMD inspire those on monthly dispensing to take good care of themselves for them to be enrolled in MMD because of the reduced clinic visits and time spent at the clinics therefore they tend to inquire to the providers of why they aren't receiving MMD

.... If a client sees that his fellow has received three-months medications, then he also gets motivated to live accordingly so that he can also receive the same ... [Provider 2 Mazimbu]

……. clients themselves are also motivated by each other by MMD for example clients would inquire to us why they are not given three-months medications unlike others and that they are tired of attending on monthly basis. This then gives us a room to explain to them on the eligibility criteria for them to receive MMD and encourage them to receive MMD [Provider 1 Saba Saba]

Increasing client's demand for MMD

Moreover, it has also been reported that clients' demand is among the facilitators in the uptake of MMD which is a result of reduced clinic visits. However, this also acts as a reminder to health care providers in service provision.

> *Clients themselves are also motivated by each other by MMD for example clients would inquire to us why they are not given three-months medications unlike others and that they are tired of attending on monthly basis while seeing their fellow attending fewer clinics. This then gives us a room to explain to them on the eligibility criteria for them to receive MMD and encourage them to receive MMD* [Provider 2 Saba Saba]

Little interference with client's socio-economic activities as a facilitator to MMD uptake

Majority of respondents reported to be inspired from MMD by the fewer clinic visits therefore get more time to concentrate with other socio-economic activities. This has encouraged them to be adherent to medications and keeping appointments so as to continue being stable for MMD.

> *… It's the benefits that motivate me in so many ways… it saves time because there was a time they gave me up to six months which I found it very good… It helps us do our business well rather attending on monthly basis where you can also easily forget the return date of the next appointment.....* [Client 5 Saba Saba]

> *For us clients, this allows to peacefully continue with your income-generating activities. So even when the dates are approaching you are already engaged and have a good income to be able to provide you with the fare. This is very encouraging to continue with this service because monthly visits are challenging as you fail to do business well.* [Client 3 MRRH]

Travel costs reduction as a facilitator to MMD uptake

Furthermore, among the frequently reported findings by the respondents, travel costs reduction was among factors facilitating clients to continue being on MMD.

> *... the bus fare challenge encourages us to continue being on three- months medications and one becomes motivated to follow providers' instructions on good drug use so as not to return to monthly medications.* [Client 4 Saba Saba]

> *Also, for the clients who live far from the facilities, monthly visits become costly in terms of travel costs, so MMD gives them time to continue with their activities and will reduce unnecessary travelling costs until the next appointment in months something that motivates them continue being on many-months system....* [Provider 1 MRRH]

Clients' awareness on MMD and its eligibility criteria facilitates good uptake of MMD

It has been reported by the respondents that client's awareness on MMD has facilitated implementation of MMD particularly through drug adherence, keeping appointments and viral load suppression to continue being stable enough for MMD.

> *Currently clients are more aware on the importance of drug adherence and storage with regard to his health…. But also, the understanding of the clients is very important and we ourselves educate them on drug adherence to continue being stable for multi month medications* [Provider 1 MRRH]

> *It is due to the good drugs adherence which motivates the providers to continue prescribing three-months medications to us clients. For example, my doctor said that I was having good drug adherence that's what he told me that I was given this service meaning am doing well. The viral load test is also good and my health is good in general* [Client 1 Saba Saba]

In support of this, another study participant said that:

> *They also check if you are faring well then you are given medication for many months, when the viral load is high then you will be put on monthly prescription* [Client 5 Saba Saba]

> *It is good drug adherence which helps in suppressing the viral load then you are believed to be adherent to medications. Also, weight gain and good clinic adherence are considered by the providers* [Client 2 Saba Saba]

Good clients' health outcome as a facilitator in MMD implementation

Lastly, good clients' health outcome was among the described findings under individual sub-theme. Most of respondents reported that good client's health status facilitates them to continue seeking for MMD by being fit for the service.

> *It's just very motivating as our health is improving, let's say the given medications have been helping us that's why we are not given many-months medications until we are tested to know the viral load status which when it is high then you are given monthly medications but when it is low, they give you 3-months medications* [Client 4 MRRH]
> *I feel like I'm progressing well with the service. It also gives me benefits because of the reduced clinic visits. It feels good, I don't fall sick at all so I thank God…* [Client 3 MRRH]

As compared to those with monthly prescription, clients on MMD are faring well due to the worry of being returned to monthly drug refill therefore are reported to be more adherent to medications as well as appointments keeping them to continue with MMD.

> *Clients on MMD are faring well, the keep their clinics schedule compared to those on monthly prescription because they know if they fail to adhere to that they will be unstable and returned to monthly medications hence fail to continue with their activities. For example, these long-distance drivers or farmers. They also maintain*

good health, gain weight, have no opportunistic infection and even have their viral load suppressed. [Provider 2 Saba Saba]

4.4.2 Barriers to the optimum uptake of multi-month dispensing of ART

Respondents had described barriers to the uptake of MMD. Under this theme, 2 sub-themes emerged based on individual factors and health facility factors into 8 categories as described.

Health facility factors

This sub-theme includes findings related to the health facility with regard to implementation of MMD of ART among PLHIV at CTC

Inadequate drug supply of ARVs in the facilities

Inadequate drug supply of ARVs was among the described findings under health facility sub-theme. A great number of respondents reported on inadequate ARVs drug supply as a barrier to the uptake of MMD since clients have to be switched back to one monthly despite being eligible for MMD to accommodate the little stock of ARVs.

The biggest challenge is the shortage of medications so it leads switching clients to monthly medications even if he has viral load suppression... [Provider 4 MRRH]

However, the respondents reported that redistribution from other sites with enough stock was done but they fail to continue with MMD since the stock issued is never enough to accommodate MMD uptake.

No major challenge other than drugs availability, despite correct ordering of drugs still they don't deliver them which calls us to ask from nearby facilities where they also don't provide with enough stock. [Provider 2 Mazimbu]

Insufficient gloves supply limiting HVL sample collection

HVL sample collection being affected by inconsistency in supply of gloves has also been reported as among categories hindering the facilities not to collect enough samples leading to poor implementation of MMD while it is among the eligibility criteria for MMD uptake.

> *There is also the challenge of gloves availability which has been on and off contributing greatly to poor sample collection therefore hindering smooth MMD implementation.* [Provider 2 Saba Saba]

Prolonged turn-around time of HVL results

A greater number of respondents reported HVL results turn-around time to delay MMD uptake in clients eligible for MMD as providers have to wait for long for the results to decide if the client is eligible enough to start or continue with MMD

> *...another challenge is these criteria regarding viral load results you find that after sample collection it takes long time until the return of results therefore keeping the clients pending awaiting to be kept on MMD while awaiting all this time the client is put on monthly medications since termed unstable. In the short turn-around time of HVL results is still a problem and hindering much on MMD implementation* [Provider 2 Saba Saba]

Respondents also reported that infrequent HVL machine maintenance contributes to the delayed/failed results which in turn slows down MMD uptake

> *What challenges us mostly is the viral load test, you find that the tests were taken timely but the results take long due to faulty machines…...* [Provider 2 MRRH]

Delayed TPT initiation lags behind MMD implementation

TPT was reported to interfere with MMD uptake due to existence of some stable clients who were delayed to be started on TPT. Therefore, once started on IPT they no longer remain stable for MMD and they are to be switched to monthly prescription as they aren't stable enough.

> *…. the challenge we see here is the issue of the TPT, the guideline requires us to return all clients to unstable group even if they were stable before until 6 months of TPT completion that is when are stable enough to be returned on MMD* [Provider 4 MRRH]

Staff shortage impairing MMD implementation

Respondents reported shortage of laboratory staff that slowed up MMD uptake in the presence of on and off availability of laboratory personnel to assist with HVL sample collection at CTC rendering clients' eligibility to MMD uptake.

> *Another challenge is that we do not have special laboratory personnel for HVL sample collection at CTC as we depend on the laboratory roster. This slows down our implementation because you may find he comes once in a week otherwise clients have to be sent for the lab whereas majority are truly uncomfortable because they prefer not to intermingle with the general facility patients* [Provider 1 MRRH]

Shortage of shortage including counselors was also reported to render inefficient service provision where providers fail to continuously provide appropriate health education to the clients so that their health continue with stability and be able to continue with MMD service.

> *…and another challenge is the shortage of providers as we sometimes provide inadequate services for example we fail to provide detailed counselling to the client on how to properly take care of themselves so that they can continue with this multi-month service.* [Provider 1 Saba Saba]

Sub-theme: Health care providers trained for MMD not being the implementers

It was reported that failure to implement MMD efficiently was due to inappropriate choice of providers attending trainings since the ones who attend happen not to be the implementers hence hindering the service and creating a significant gap between eligible clients and those to be on MMD.

> *... Also, those who go to training for these services are normally not the ones implementing the service so you find many stable clients but are not on three-months medications* [Provider 2 Mazimbu]

> *... You find that this service is not as effective because the ones providing the services are different from those who received training and it is very demoralizing* [Provider 2 Saba Saba]

Individual factors

This sub-theme includes categories related to individuals with regard to implementation of MMD of ART among PLHIV at CTC as described below.

Self and community stigma hinder MMD uptake

Stigma was among the findings in individual factors where respondents reported the existence of stigma for people living with HIV and ADS in the community. Stigma was reported to slow down MMD uptake among clients because they receive 3-6 drug containers which they fail to hide them properly as compared to monthly single containers. This taper down client's morale in drug adherence since they don't know how to store the drugs to hide their identity.

> *The challenge is for example there is a scenario happened yesterday that a client who was receiving monthly medications was switched to three-months medications. Previously he was putting his pills in an envelope leaving behind the containers where none of the family members could have a clue since he never disclosed his status to them. Now that he was to receive many drugs containers because of MMD he became hesitant because he was questioning where to store the drugs scared to be exposed to his family members. it may be revealed to his relatives since he can't be put it in an envelope like before…maybe I should say that stigma exists if they are given too much medicine it becomes a burden to them….* [Provider 1 MRRH]

It was also reported that receiving 3-6 drug containers that is associated with MMD uptake causes discomfort of clients in the public transport since they are easily noticed once vehicle shakes as the drugs in the containers make sounds in turn making clients feel in-secured that they the public may suspect she is carrying ARVs.

> *Also, another challenge is the medication package meaning when you are in a bus, they make a lot of sounds when you shake so you have to find cotton to put inside the containers so no/little sound is heard. It is really uncomfortable for us because now we carry many containers and so we are sometimes forced to change the containers for them not to make sounds while carrying them while in the public transport to avoid people thinking otherwise.* [Client 3 Mazimbu]

Missing appointments and Interruption in treatment renders MMD uptake

Despite the fact that respondents on improved adherence associated with MMD but some responses were contradicting in that to the few clients who miss appointment and interrupted treatment affected the uptake of MMD since they no longer remain stable for MMD and switched to monthly dispensing despite meeting the other eligibility criteria

> *The challenge is for those few who miss the appointment. It's a challenge that if a client misses an appointment twice we have to return him to be unstable according to our protocol and you are returned to monthly medications.* [Provider 5 MRRH]

> *...Another issue is perhaps the attendance of patients you find the patient is stable on MMD but his attendance is poor coming on different appointment dates. Client has good viral load, CD4 high enough, and every other criterion is good but denies to keep his appointment dates therefore we are forced to return the client to monthly therefore retention is a problem to some clients….* [Provider 1 MRRH]

CHAPTER FIVE

5.0 DISCUSSION

5.1 Introduction

This chapter discusses key findings obtained from both quantitative and qualitative components of the study. In quantitative, results portrayed Multi-Month Dispensing coverage, proportion of stable clients and proportion of stable clients who were not receiving Multi-Month Dispensing. In qualitative, reported facilitators included Test and treat policy implementation, service providers' ability to identify eligible clients, health care providers' moral support, fast track services, timely collection of HIV Viral load, Implementation of quality improvement, decongestion of clinics, client's inspiration, little interference with client's socio-economic activities, travel costs reduction. Reported challenges included insufficient gloves, inadequate drug supply of Anti-Retroviral drugs, prolonged turn-around time of HIV Viral Load results, delayed TB Preventive Therapy (TPT) initiation and staff shortage at CTC. The following sub-sections present the discussion of key findings in more detail.

5.2 Coverage of multi-month dispensing of ART among PLHIV on ART

Our study findings showed that coverage of multi month dispensing of ART among PLHIV on ART in Morogoro Municipality was greater than that found in Malawi. The difference could be explained by consistency in supply chain, providers' ability to differentiate stable from unstable clients, and stakeholder's support (Prust et al., 2017).

5.3 Proportion of stable clients among PLHIV on ART

The proportion of stable clients among PLHIV on ART was lower than that found in Malawi from an evaluation study on differentiated care. The lower proportion in our study could be due to a number of reasons including higher low suppression of HIV viral load, low retention, more clients with opportunistic infection, larger number of <5years (Prust et al., 2017).

Nevertheless, our findings described a number of stable clients who were not receiving MMD. This portrays that there is a number of eligible stable clients who are not receiving MMD. This shows that there is an implementation gap which is explained by the qualitative findings on barriers to MMD implementation.

5.4 Facilitating factors to the uptake and outcomes of multi-month dispensing of ART

Inspiration from MMD by the fewer clinic visits, travel costs reduction and fast tracking the main facilitating factors to the uptake of MMD. This benefited them in a way that they got more time to concentrate with other socio-economic activities but also an encouragement on drug and clinic appointment adherence. This is similar to observations demonstrated in a study conducted in South Africa on implementation barriers and enablers of differentiated ART delivery that shorter waiting times was an enabler since it allows clients to spend less time in the clinic and more time at work and/or pursuing other commitments, however, it lacked findings on satisfaction and pleasure as enablers of MMD (Sharer et al., 2019). In addition to that, another study conducted in Malawi to explore MMD experience had similar findings including fewer facility visits and having the freedom to prioritize personal and work endeavours as enablers of MMD implementation (Hubbard et al., 2020). This is also supported by an exploratory qualitative study conducted in Zambia on experiences of Fast Track model in MMD implementation which demonstrated the benefits on decongestion and little waiting time at the clinics providing dedicated services (Jere et al, 2018).

The study reveals that implementation of Test and Treat policy, which included clear guidance, was beneficial and has led to increasing number of clients at CTC since every client tested positive is enrolled in care and started on ARTs. Therefore, this has encouraged health care providers to enroll more eligible clients to MMD. This echoes the study exploring the formal and informal policy implementation of differentiated HIV services delivery in Malawi, Tanzania, and South Africa to women within the prevention of mother-to-child transmission. This study published evidence on differentiated service delivery for HIV treatment, which showed that MMD was a favorable strategy following the expansion of HIV care (treat all policy) (Chimukuche et al., 2021).

Providers' high level of understanding of eligibility criteria for MMD clients was among the repeatedly reported enablers of MMD implementation in the study area. However, the findings were contradictory with an evaluation study on differentiated care in Malawi projecting lack of knowledge among health care workers on eligibility criteria being among the challenges in implementing MMD (Prust et al., 2017). However, this shows the importance of having in place clear eligibility criteria in the implementation of MMD.

Many respondents highlighted that moral support and attitude from the providers to the clients is a facilitating factor with regard to MMD implementation This is consistent with the study conducted in Zambia on understanding preferences for HIV care and treatment whereby patients were willing to travel a long distance and visit the clinic frequently given that the provider's attitude is positive (Zanolini et al., 2018). The presence of quality improvement plans was portrayed to have influenced efficient provision of MMD services at the facility including performance reviews. This aligns with the review study in Malawi, which assessed Effectiveness, Mechanisms, Targeting, and Scale on Differentiated ART services. In that study, findings portrayed feasible process for quality improvement as enabler for maximizing differentiated care (Roy et al., 2019). Moreover,

clinic decongestion was frequently reported by respondents as a facilitator to MMD implementation in the reduction of workload and improving efficiency and effectiveness in service provision. This aligns with study conducted in Malawi to explore MMD experience, which portrayed the reduction in workload as beneficial in enabling MMD implementation (Hubbard et al., 2020).

Good clients' health outcome was reported as an enabler on increasing the MMD uptake. Similarly, a study conducted in six African countries (Botswana, Lesotho, Malawi, Swaziland, Tanzania, and Uganda) that examined the experience of multi-monthly prescribing (MMP) on clinical outcomes amongst children and adolescents living with HIV indicated favourable health outcomes concerning mortality, retention, ART adherence, viral suppression, and immunologic status (Eshun-Wilson et al., 2019). It was highlighted that stakeholders had a good contribution in facilitating MMD implementation from their ongoing supportive supervisions and mentorships as well as through formal training to the health care providers. This study was in line with a study assessing the outcome of community-based differentiated models of multi-month dispensing of ARVs which demonstrated a great contribution of community stakeholders but limited context on supervisions and mentorships which were portrayed in our study (Faturiyele et al., 2018). Client's awareness on MMD and its eligibility criteria was among the enablers of MMD uptake, however, this is contradictory to a study conducted in Uganda on barriers to the uptake of MMD which highlighted that low patient literacy of DSD was a recurring response. This could be explained by insufficient client's sensitization on DSD and its advantages. It was observed that patients had not been sufficiently sensitized on the merits of enrolment in DSD models and there remained demand-side gaps in knowledge and awareness about DSD including MMD (Zakumumpa et al., 2020).

Interestingly, findings from this study were among the first to show timely collection of HIV viral load samples, increasing demand for MMD and client-client motivation as evidence of potential facilitators in increasing uptake of MMD. These findings may be attributed by the enhanced integration of MMD into the health service delivery systems and a good experience by the healthcare providers as a result of lessons learnt from day-to-day implementation of MMD.

5.5 Barriers to the optimum uptake of multi-month dispensing of ART

A great number of respondents reported on inadequate ARVs drug supply as a barrier to the uptake of MMD since clients have to be switched back to one monthly despite being eligible for MMD to accommodate the little stock of ARVs. This was consistent with a study conducted in Lesotho on outcomes of community based differentiated models of MMD that good medication supply was among the facilitating factors to MMD implementation (Faturiyele et al., 2018). However, this study was limited to the community unlike our study, which was conducted at the facility. In addition, a similar study conducted on assessing barriers to implementation of multi month prescribing program demonstrated that insufficient supply of ARVs at the facility level was also one of the barriers for smooth implementation of MMD (Eshun-Wilson et al., 2019).

Nevertheless, both studies did not describe the redistribution of drugs from other sites as an enabler during the time of stock outs to accommodate MMD uptake.

Despite the fact that timely collection of HVL was reported as among the facilitators to MMD uptake, few respondents also highlighted limited collection of HVL being affected by inconsistency in supply of gloves as a necessity as well as specific service provider or sample collection hindering eligibility of participation of clients in MMD. The findings align with the study conducted in Zimbabwe evaluating MMD in the community, which demonstrated that limited expansion of viral load testing along the differentiated delivery of services affected its implementation, however, the study was not very specific neither on the inadequacy of gloves nor specific laboratory personnel stationed at CTC for sample collection (Fatti et al., 2020).

A greater number of respondents reported that prolonged HVL results turn-around time contribute to delay MMD uptake in clients eligible for MMD as providers have to wait results for a long time to decide if the client is eligible enough to start or continue with MMD. It was also reported that infrequent HVL machine maintenance contributed to the delayed results which in turn slow down MMD uptake. Contradicting findings were described in a study conducted in Lesotho on outcomes of community-based differentiated models of multi-month dispensing of antiretrovirals which pointed out that timely access to quality viral load results was a facilitator to MMD implementation. This could be explained by difference in technical advancements, number of HVL machines as well as the level machines' maintenance (Faturiyele et al., 2018).

It was reported that failure to implement MMD efficiently was due to inappropriate choice of providers who attend MMD trainings but they are not the same providers implement the MMD program hence hindering the service and creating a significant gap between eligible clients and those to be on MMD. However, a study conducted in Uganda on implementation barriers of Differentiated ART delivery which pointed different findings on this area whereby workers trained in DSD delivery did not necessarily translate what they learnt into implementation (Zakumumpa et al., 2020).

Despite of the expected minimal human resource demand from MMD as portrayed by Forsythe et al., 2016, staff shortage has been reported contrary to the former study as a barrier to MMD implementation in terms of lacking health care providers for HIV viral load sample collection as well as continuous provision of appropriate health education to clients. Moreover, to the best of my understanding there is no study that describes shortage of staffing as a barrier to the uptake of MMD as portrayed in our study.

Community stigma was reported to slow down MMD uptake among clients because they receive 3-6 drug containers in which they fail to hide them properly once at home as compared to monthly single containers. This taper down client's morale in drug adherence since they don't know how to store the drugs to hide their identity. This aligns with the study conducted

in Malawi on assessing provider and client experiences with MMD which highlighted the existence of community stigma where clients were being mocked for carrying ART bottles, particularly when they carried their medicines in plastic bags as they can't fit in pockets. Our study also described self-stigma particularly in the public transport due to carrying many containers which make sounds as one shakes making them uncomfortable and worry of being noticed by others, however, it was not reported in this study conducted in Malawi (Hubbard et al., 2020). TPT was reported to interfere with MMD uptake due to existence of some stable clients who were delayed to be started on TPT. Therefore, once started on IPT they no longer remain stable for MMD and they are to be switched to monthly prescription as they aren't stable enough regardless of meeting all other eligibility criteria. This aligns with a similar study conducted in Uganda on implementation barriers of Differentiated ART delivery which pointed difficulty in comprehending TB drugs with MMD implementation perceiving the lost benefits of MMD (Zakumumpa et al., 2020).

Findings from other studies reported that MMD has facilitated adherence to appointments and drugs (retention) of clients and vice versa Mutasa-Apollo et al., 2020 and Moise et al., 2018, however this contradicts with the findings from our study which portrays that poor retention of clients by missing appointment and interruption in treatment affects the uptake of MMD since they no longer remain stable for MMD and therefore switched to monthly dispensing despite meeting the other eligibility criteria. In addition, this was reported for the minority (Moise et al., 2018) (Mutasa-Apollo et al., 2020).

5.6 Limitations

Limitations in this study were documentation gaps/incomplete data along with data discrepancy from patients' files and CTC2 data base in the facilities. But this was overcome by triangulating MMD data from the CTC2 data base, patients' files, dispensing register and pharmacy module to ensure that data obtained is consistent and accurate.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The coverage of multi month dispensing of ART among PLHIV on ART in Morogoro Municipality was 77% while the proportion of stable clients among PLHIV on ART in Morogoro Municipality was 81%. On the other hand, it was described that 13% of stable clients were not receiving MMD showing a gap of eligible clients who are not receiving MMD.

A number of enablers were mentioned as necessary for effective implementation and MMD uptake. These included Test and treat policy implementation, health care providers' ability to identify eligible clients, health care Providers' moral support to PLHIV, fast track services of MMD clients, timely collection of HIV Viral load Implementation of quality improvement strategies decongestion of clinics improves Health Care Providers' efficiency in service provision, client's inspiration, little interference with client's socio-economic activities, travel costs reduction, clients' awareness on MMD and its eligibility criteria as well as good clients' health outcome.

However, this study revealed that implementation of MMD is faced with a number of challenges including Insufficient gloves supply limiting HVL sample collection, Inadequate drug supply of ARVs in the facilities, prolonged turn-around time of HVL results, delayed TPT initiation lags behind MMD implementation, staff shortage at CTC, which delays HVL sample collection. All these challenges may have partly contributed to the 13% gap of eligible clients but not on MMD as observed in quantitative part of this study.

6.2 Recommendations

Globally there is a clear pressure on the health care systems to expand the implementation of MMD due to the increasing demand of care from increasing number of PLHIV enrolled into care, however, constraints emerging rendering ineffective implementation of MMD. In this aspect the following are the recommendations based on the study findings and conclusions.

Medical Store Department (MSD) should improve supply chain of ARVs, HIV viral load reagents and gloves timely at all levels will enable the increased implementation of the MMD.

The MoHCDEC and the President's Office – Regional Administration and Local Government (PO RALG) should review Human Resource for Health system and ensure good re-distribution of health care providers in the health facilities to deal with shortage that limits the efficient implementation of MMD.

There is a room for improvement by conducting frequent supportive supervisions, mentorships and coaching by the stakeholders including donor funded NGO's and Regional/Councils at all levels to capacitate health care providers at CTCs on clear patients' differentiation. This will in turn strengthen MMD implementation in the health facilities by improving quality of care and maximize the efficiency benefits of MMD to patients and the health system.

In addition, the supervisions should be extended to the laboratory service delivery points to create continuous quality improvement plans on sample collection, transporting and processing. This will reduce the turn-around time of HIV viral load results which will in turn ease the implementation of MMD at facility level

Health care providers from the facility and community level should provide an ongoing health education to clients at every clinic visit to maximize adherence to drugs and appointments to sustain on MMD. Moreover, this calls for community stakeholders to sensitize the community on stigma elimination and encourage provision of moral support to PLHIV.

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APPENDICES

Appendix I: Informed Consent, English Version

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES:

DIRECOTORATE OF REASEACRH AND PUBLICATION

Introduction: I am Neema William Machumu from Muhimbili University of Health and Allied Sciences School of Public Health and Social Science, pursuing Masters of Public Health. I'm the principle investigator in this study that entails to evaluate the coverage, facilitating factors and barriers to optimum uptake of Multi month dispensing of ART in Morogoro Municipal. This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions you can ask them and I will clarify.

Users: The study participants involve health care providers at CTC that directly prescribe ART (clinicians or nurses) and PLHIV on ART more than 6 months. As a health care provider at CTC, you have been selected to participate in this study because your experiences in MMD implementation can contribute much to our understanding and knowledge of the actual practices. Also, as a PLHIV on ART for at least 6 months you have been selected to participate in this study because you will contribute much in gaining knowledge on how MMD services are implemented including barriers and facilitating factors at individual level.

Your participation in this research is entirely voluntary such that it is your choice to participate or not and the choice that you make will have no bearing on your job or on any work-related evaluations or reports as well as your rights as a client. A maximum of one hour will be used for the interview.

Purpose of the study: The study aims to assess the coverage of MMD, the existing facilitating factors as well as in the barriers to optimum uptake of MMD will be identified. Information gain will help us to know the current practice of the implementation of MMD

against the established quality standards to inform the stakeholders on how best to improve service provision in the health care system in policy and decision making to cultivate the opportunities and maximize the benefits of the implementation.

Study procedures: Documents including client's files, CTC2 data base, dispensing registers and pharmacy modules will be reviewed using a structured checklist to obtain data on number of stable clients and clients on MMD while In-depth interview with the health care providers at CTC directly prescribing ART as well as PLHIV on ART for at least 6 months will be conducted.

Risk, benefits and confidentiality: There are no risk factors for you to participate in this study; all information will be kept confidential however a feedback will be given to you for your own benefit whereas information obtained may help you to sustain all good practices that were found during the study and all it may help to address gaps in the quality of MMD implementation at the facility and this will in turn result in improved health benefits to clients specifically their treatment outcome.

Contacts Information: In case of further queries or questions contact me on telephone number +255742244666 or through email machumun1991@gmail.com. If you ever have questions about your rights as a participant, you may call Dr. Bruno Sunguya, Chairperson of the Research and Publications Committee, MUHAS. P.O. Box 65001, Dar es Salaam-Tanzania, Tel +2552150302-6)

Statement of Consent: The purpose and nature of study has been explained to me and I understand that my participation in the study is voluntary and no consequences will result if I refuse to participate. I am free to withdraw at any time. I have the right to know the findings of the study. I consent voluntarily to be a participant in this study

Name of the participant: ..... Signature……..Dates: .....

Name of investigator: ..... Signature: ..... Dates.....

Appendix II: Informed Consent Kiswahili Version

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES:

DIRECOTORATE OF REASEACRH AND PUBLICATION

FOMU YA RIDHAA

Ridhaa ya Kushiriki katika utafiti

Utangulizi: Habari, jina langu ni Neema Machumu mwanafunzi kutoka chuo cha afya na tiba shirikishi Muhimbili kitengo cha afya ya umma na sayansi ya jamii, katika shahada ya uzamili katika maswala ya afya ya umma. Mimi ni mchunguzi kuu katika utafiti huu wenye lengo la kuchunguza huduma ya utoaji wa dawa za VVU kwa miezi mingi katika kitengo cha kliniki ya huduma na tiba ya UKIMWI. Endapo utapata changamoto yoyote usisite kunijulisha niweze kutoa ufafanuzi zaidi.

Watumiaji: Washiriki wa utafiti huu ni pamoja na madaktari na manesi wanaofanya kazi kitengo cha kliniki ya huduma na tiba ya wateja wanaoshi na maambukizi ya VVU. Kama mtoa huduma katika kitengo hiki, umechaguliwa kushiriki kwenye utafiti huu kwasababu ya uzoefu kwenye utendaji kazi katika maswala ya utoaji dawa za VVU. Pia kama mteja alietumia dawa za maambuiki ya VVU zaidi ya miezi 6 ushiriki wako utatusaidia kuona utendaji wa huduma ya kutoa dawa za miezi mingi pamoja, mambo yanayowezesha pamoja na changamoto za utekelezaji wa huduma hiyo. Kushiriki katika utafiti huu ni uchaguzi wako, kama utachagua kutoshiriki au utaamua kusimamisha ushiriki wako hautapata madhara yoyote. Unaweza kusimamisha ushirki katika tafiti hii muda woote hata kama ulisharidhi. Kukataa kushirki au kujitoa kwako katika utafiti hakutaambatana na adhabu yoyote au upotevu wowote wa faida yoyote unayotakiwa kupata

Lengo la Utafiti: Utafiti huu umelenga kutathmini ukubwa wa matumizi ya huduma ya utoaji dawa za VVU kwa miezi mingi pamoja, sababu za kuwezesha na vile vile changamoto za utekelezaji wa huduma hizi. Hii itatusaidia kujua hatua tuliofikia kwenye utekelezaji wa huduma hii dhidi ya viwango vya ubora vilivowekwa ili kuwajulisha wadau juu ya njia bora katika kuboresha utoaji wa huduma hii kwenye mfumo wa huduma ya afya ili kuongeza daida za utekelezaji.

Mbinu za Utafiti: Mahojiano ya kina yatafanyika kwa watoa huduma za afya katika kliniki ya tiba na matunzo ya wateja waishio ya VVU pamoja na wateja walioko kwenye huduma ya dawa zaidi ya miezi 6.

Usiri, Madhara na Faida: Nakumbushia kwamba taarifa zote zitakozokusanywa kutoka kwako zitakua ni siri, ni watu

wanaofanya kazi katika utafiti huu tu ndio wanaweza kuziona taarifa hizi. Tutajumuisha ripoti ambayo itakua na majadiliano kutoka kwa washiriki mbali mbali bila kuweka utambulisho wowote. Hatutaweka jina la lako wala taarifa yoyote ya utambulisho kwenye kumbukumbu za

taarifa utakazotupa.: Baadhi ya maongezi au maswali yanaweza kukufanya usijiskie vizuri. Unaweza kukataa kujibu swali au kuongelea swala lolote na unaweza kusimamisha usaili wakati wowote.

Taarifa utakayotupatia itasaidia kuonegeza uelewa wetu wa juu ya huduma za wagonjwa nyumbani na jinsi gani zinaweza kusaidia utekelezaji wa matumizi ya dawa za kupunguza makali ya virusi vya UKIMWI kwa wale wanaotumia. Pia itatusaidia kuboresha huduma ambazo zinatolewa kwa sasa, kwa kuangilia mabadiliko yaliyojotokeza kutokana na matumizi ya dawa za kupunguza makali ya virusi vya UKIMWI.

Mawasiliano: Kama una maswali kutokana na tafiti hii, unaweza kuwasiliana nami kupitia +255742244666 au barua pepe machumun1991@gmail.com. Ukiwa na maswali kuhusu haki zako kama mshiriki katika utafiti huu wasiliana na Mkurugenzi wa Utafiti na Uchapishaji, Chuo Kikuu cha Muhimbili S.L.P 65001, Dar es Salaam -Tanzania, Tel +2552150302-6.

Ridhaa ya Utafiti: Nimeelezwa lengo la utafiti na nimeelewa kuwa ushiriki wangu ni wa hiari na hakuna matokeo yatakayotokea ikiwa nitakataa kushiriki. Niko huru kujiondoa wakati wowote na pia nina haki ya kujua matokeo ya utafiti huu. Ninakubali kwa hiari yangu kushiriki katika utafiti huu.

Jina la mshiriki: ..... Sahihi……Tarehe: .....

Jina la mtafiti: ..... Sahihi: ..... Tarehe.....

Appendix III: Key informant interview guide with health care providers in health facilities.

Serial No…….

TITLE: COVERAGE, FACILITATING FACTORS AND BARRIERS TO OPTIMUM UPTAKE OF MULTI MONTH DISPENSING IN MOROGORO MUNICIPALITY, TANZANIA

I would like to inform you (participant) that your participation will be tape recorded. The information obtained will be treated in absolute confidentiality and will be used only for purposes of this study. The researcher (research assistants) will proceed to introduce the research team. Thank participants for agreeing to participate, explain to them that they all share a common feature which is that they are health care providers. Explain to them they are here to share their thinking about implementation, facilitating factors and barriers to optimum uptake of MMD. Explain the purpose of the study, purpose of this in-depth interview and reassure about confidentiality. The researcher will also seek the consent of the participants before proceeding with the In-depth interview since there will be taping/recording the discussions.

Basic Participant's Info

Job Title:	Age:
Duration at work place:	Sex:
Duration in current position:	Duration in current position:
Region:	District:
Date:	Participants Code:
Researcher's name:	Name of Facility:
Time to start interview:	Time to start interview:

Questions

1. What is your main role in this facility? (Probe: relation to MMD uptake)

2. For how long has this facility been providing care and treatment?

3. What do you understand by MMD? (Probe: when it was first adopted in facility)

3. How is MMD implemented in this facility? (Probe: categorization of clients based on stability criteria)

4. What are the facilitating factors for MMD implementation in the facility?

Probe: About facility related factors (e.g. clear patient's differentiation, access to quality clinical data, sufficient drug supply)

Probe: About client/patient related factors. (e.g. good ART adherence)

5. What are the barriers facing MMD implementation in the facility?

Probe: about facility related barriers (e.g. Availability of ARV drugs)

Probe: About client/patient related barriers (e.g. Stigma, drug sharing etc.)

6. What do you think are the benefits of MMD?

Probe: Benefits at the facility level (e.g. reduced work burden)

Probe: Benefits at the individual level (e.g. little waiting time, less transport costs, viral suppression, good drug adherence)

1. What strategies do you recommend to be put forward to tackle the barriers at this facility? (Probe: those working well and those not working well if are there)

Closing components

1. Is there anything more you would like to add?
2. I'll be analyzing the information you and others gave me and draft a report. I'll be happy to send you a copy to review at that time, if you are interested.
3. Thank you for your time

Appendix IV: Key Informant interview guide with health care

PROVIDERS IN HEALTH FACILITIES (KISWAHILI VERSION)

Utangulizi

Napenda kuwajulisha kuwa ushiriki wenu utarekodiwa kwaajili ya kumbukumbu lakini taarifa zote zitakazopatikana zitazingatia usiri na zitatumika tu kwaajili ya utafiti huu.

Maelekezo kwa mtafiti

Washukuru washiriki kwa kukubali kushiriki katika utafiti, waeleze kuwa washirika wote wana sifa moja ambayo ni kwamba wao wote ni watoa huduma za afya katika vitengo vya huduma za tiba na matunzo kwa watejaa wanaoishi na VVU. Waeleze wako hapa kushiriki mawazo yao juu ya utekelezaji, kuwezesha sababu na vizuizi kwa matumizi bora ya utoaji wa dawa za zaidi ya miezi mingi.

Eleza madhumuni ya utafiti, madhumuni ya mahojiano haya ya kina na uhakikishe juu ya usiri. Mtafiti pia atatafuta idhini ya washiriki kabla ya kuendelea na mahojiano ya kina kwani kutakuwa na kurekodi majadiliano.

Maelezo ya Msingi ya Mshiriki

Kada:	Umri:
Muda alioajiriwa kituoni:	Jinsia:
Muda katika kitengo alichopo:	Muda katika kitengo alichopo
Mkoa:	Wilaya
Tarehe:	Alama ya mshiriki
Jina la mtafiti	Jina la kituo
Muda wa kuanza mahojiano	Muda wa kumaliza mahojiano

Maswali wa muongozo wa majadiliano

1. Je! Jukumu lako kuu ni nini katika kituo hiki? (Chunguza: uhusiano na matumizi ya utoaji wa dawa za VVU za miezi mingi)
2. Je! Kituo hiki kimekuwa kikitoa huduma na matibabu kwa muda gani?
3. Je! Unaelewa nini kuhusu Utoaji wa dawa za VVU wa miezi mingi? (Chunguza: Lini ilianza kutekelezwa katika kituo hiki)
3. Je! Utoaji wa dawa za VVU za miezi mingi inatekelezwaje katika kituo hiki? (Chunguza: uainishaji wa wateja kulingana na vigezo)
4. Je! Ni sababu gani zinazowezesha utekelezaji wa utoaji wa dawa za VVU za miezi mingi katika kituo?

Chunguza: Kuhusu sababu zinazohusiana na kituo (kwa mfano, uainishaji wa wateja, ufikiaji wa data bora ya kliniki, usambazaji wa dawa za kutosha)

Chunguza: Kuhusu mambo yanayohusiana na mteja / mgonjwa. (mfano uzingatiaji mzuri wa dawa)

5. Je! Ni vizuizi vipi vinavyokabili utekelezaji wa utoaji wa dawa za VVU za miezi mingi katika kituo?

Chunguza: Kuhusu vizuizi vinavyohusiana na kituo (k.m. Upatikanaji wa dawa za ARV)

Chunguza: Kuhusu vizuizi vinavyohusiana na mteja (kwa mfano Unyanyapaa, kushiriki dawa n.k.)

6. Je! Unafikiria faida za utoaji wa dawa za VVU za miezi mingi ni nini?

Chunguza: Faida katika kiwango cha kituo (kwa mfano. Kupunguzwa mzigo wa kazi)

Chunguza: Faida katika kiwango cha mteja (kwa mfano. Muda kidogo wa kusubiri, gharama ndogo za usafirishaji, ukandamizaji wa virusi, uzingatiaji mzuri wa dawa)

7. Je! Unapendekeza mikakati gani iwekwe kushughulikia vizuizi katika kituo hiki? (Probe: zinazofanya vizuri na zisizofanya vizuri ikiwa zipo)

Hitimisho

1. Je! Kuna kitu kingine chochote ungependa kuongeza?

2. Nitakuwa nikichambua habari ambayo wewe na wengine ummenipatia ili kuandaa ripoti. Nitafurahi kukutumia nakala endapo utahitaji.

3. Asante kwa muda wako

Appendix V: Key Informant interview guide with PLHIV on art >6 months on mmd in health facilities.

Serial No…….

TITLE: COVERAGE, FACILITATING FACTORS AND BARRIERS TO OPTIMUM UPTAKE OF MULTI MONTH DISPENSING IN MOROGORO MUNICIPALITY, TANZANIA

I would like to inform you (participant) that your participation will be tape recorded. The information obtained will be treated in absolute confidentiality and will be used only for purposes of this study. The researcher (research assistants) will proceed to introduce the research team. Thank participants for agreeing to participate, explain to them that they all share a common feature which is that they are health care providers. Explain to them they are here to share their thinking about implementation, facilitating factors and barriers to optimum uptake of MMD. Explain the purpose of the study, purpose of this in-depth interview and reassure about confidentiality. The researcher will also seek the consent of the participants before proceeding with the In-depth interview since there will be taping/recording the discussions.

Basic Participant's Info

Occupation	Age:
Education level	Sex:
Region:	District:
Date:	Participants Code:
Researcher's name:	Name of Facility:
Time to start interview:	Time to end interview:

Questions

1. For how long have you been on ART care and treatment?

2. What do you know about MMD? (Probe: where they first heard about it, probe about their experience on MMD)

3. What are the benefits of MMD service provision?

Probe: Benefits at the individual level (e.g little waiting time, less transport costs, viral suppression, good drug adherence)

6. What do you think are the facilitating factors on MMD implementation?

Probe: About facility related factors (e.g sufficient drug supply)

Probe: About client/patient related factors. (e.g good ART adherence)

4. What are the barriers of MMD service provision?

Probe: About client/patient related barriers (e.g Stigma, Interruption between appointments)

Probe: about facility related barriers (e.g Availability of ARV drugs)

5. In your own words, what are your suggestions on what should be done to tackle the barriers for improvement?

Closing components

1. Is there anything more you would like to add?
2. I'll be analyzing the information you and others gave me and draft a report. I'll be happy to send you a copy to review at that time, if you are interested.
3. Thank you for your time

Appendix VI: Key Informant interview guide with PLHIV On Art For More Than 6 Months (Kiswahili Version)

Utangulizi

Napenda kuwajulisha kuwa ushiriki wenu utarekodiwa kwaajili ya kumbukumbu lakini taarifa zote zitakazopatikana zitazingatia usiri na zitatumika tu kwaajili ya utafiti huu.

Maelekezo kwa mtafiti

Washukuru washiriki kwa kukubali kushiriki katika utafiti, waeleze kuwa washirika wote wana sifa moja ambayo ni kwamba wao wote ni watoa huduma za afya katika vitengo vya huduma za tiba na matunzo kwa watejaa wanaoishi na VVU. Waeleze wako hapa kushiriki mawazo yao juu ya utekelezaji, kuwezesha sababu na vizuizi kwa matumizi bora ya utoaji wa dawa za zaidi ya miezi mingi.

Eleza madhumuni ya utafiti, madhumuni ya mahojiano haya ya kina na uhakikishe juu ya usiri. Mtafiti pia atatafuta idhini ya washiriki kabla ya kuendelea na mahojiano ya kina kwani kutakuwa na kurekodi majadiliano

Maelezo ya Msingi ya Mshiriki

Kazi	Umri
Elimu	Jinsia
Mkoa	Wilaya
Tarehe	Alama ya mshiriki
Jina la mtafiti:	Jina la kituo
Muda wa kuanza mahojiano:	Muda wa kumaliza mahojiano

Maswali wa muongozo wa majadiliano

1. Je! Umekuwa kwenye huduma na matibabu ya ART kwa muda gani?
2. Je! Unajua nini kuhusu utoaji wa dawa za VVU za miezi mingi?

Chunguza: wapoifahamu kwa mara ya kwanza, chunguza uzoefu wao juu ya utoaji wa dawa za VVU za miezi mingi

3. Je! Ni faida gani za utoaji wa huduma ya utoaji wa dawa za VVU za miezi mingi?

Chunguza: Faida katika yeye mteja binafsi (mfano; muda kidogo wa kusubiri, gharama ndogo za usafiri, kufubaza virusi, uzingatiaji mzuri wa dawa)

4. Unafikiri ni nini sababu zinazowezesha utekelezaji wa utoaji dawa wa muda mrefu?

Chunguza: Kuhusu sababu zinazohusiana na kituo (mfano; usambazaji wa dawa ya kutosha

Chunguza: Kuhusu mambo yanayohusiana na mteja (mfano; uzingatiaji mzuri wa dawa)

5. Je! Ni vizuizi gani vya utoaji wa huduma ya utoaji wa dawa za VVU za miezi mingi?

Chunguza: Kuhusu vizuizi vinavyohusiana na mteja / mgonjwa (mfano: Unyanyapaa, kukatishwa mawasiliano)

Chunguza: kuhusu vizuizi vinavyohusiana na kituo (k.m. Upatikanaji wa dawa za VVU)

6. Je! Unafikiri ni nini sababu zinazowezesha utekelezaji wa utoaji dawa wa muda mrefu?

Chunguza: Kuhusu sababu zinazohusiana na kituo (mfano; usambazaji wa dawa ya kutosha

Chunguza: Kuhusu mambo yanayohusiana na mteja (mfano; uzingatiaji mzuri wa dawa)

7. Je! Ni vizuizi gani vya utoaji wa huduma ya utoaji wa dawa za VVU za miezi mingi?

Chunguza: Kuhusu vizuizi vinavyohusiana na mteja / mgonjwa (mfano: Unyanyapaa, kukatishwa tarehe za kliniki)

Chunguza: kuhusu vizuizi vinavyohusiana na kituo (k.m. Upatikanaji wa dawa za VVU)

8. Kwa maneno yako mwenyewe, maoni yako ni nini kifanyike kukabiliana na vizuizi vya uboreshaji?

Hitimisho

1. Je! Kuna kitu kingine chochote ungependa kuongeza?

2. Nitakuwa nikichambua habari ambayo wewe na wengine ummenipatia ili kuandaa ripoti. Nitafurahi kukutumia nakala endapo utahitaji.

3. Asante kwa muda wako

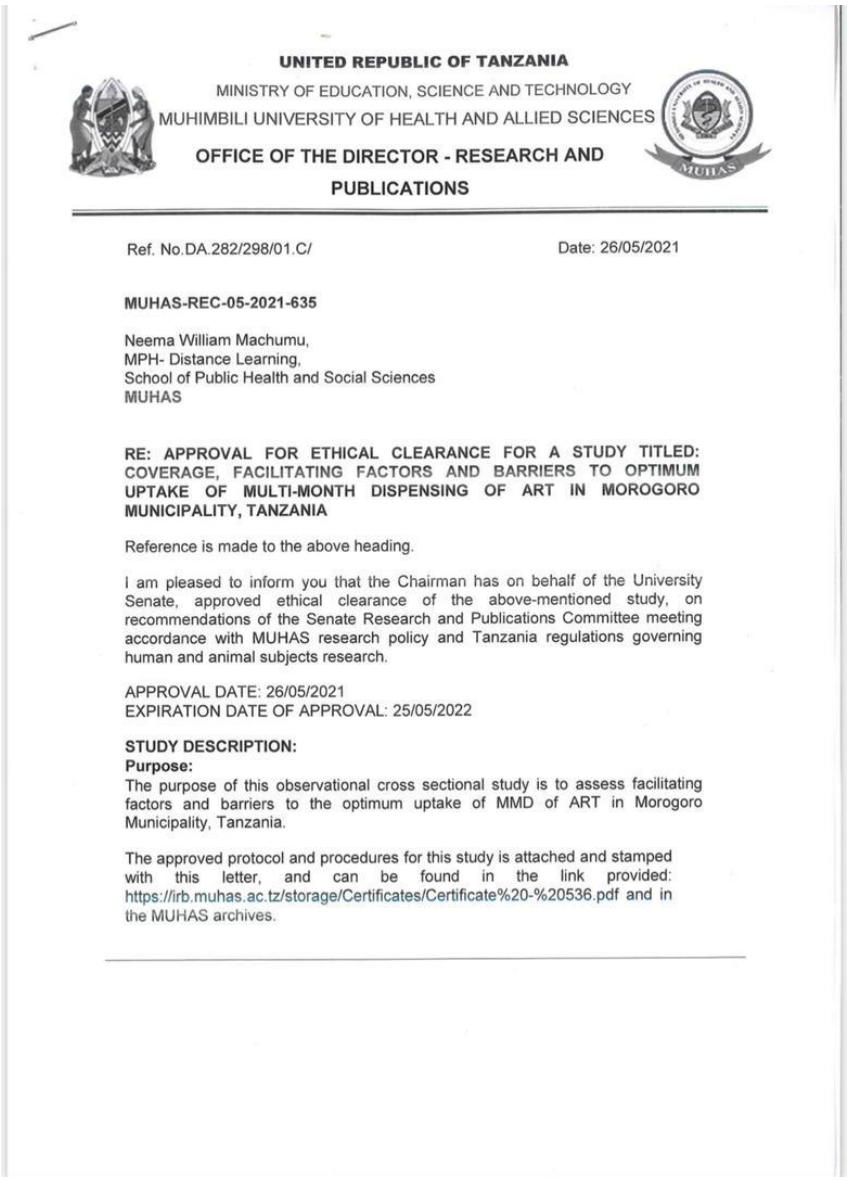
QUANTITATIVE DATA COLLECTION CHECKLIST

Serial No…….

TITLE: COVERAGE, FACILITATING FACTORS AND BARRIERS TO OPTIMUM UPTAKE OF MULTI MONTH DISPENSING IN MOROGORO MUNICIPALITY, TANZANIA

1. Number of clients on ART for more than 6 months that are currently in care _____
2. Number of stable clients on ART for more than 6 months that are currently in care _____
3. Number of clients on MMD uptake ____

Appendix VI: Letter for Ethical Clearance



UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR - RESEARCH AND PUBLICATIONS

Ref. No.DA.282/298/01.C/ Date: 26/05/2021

MUHAS-REC-05-2021-635

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School of Public Health and Social Sciences
MUHAS

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: COVERAGE, FACILITATING FACTORS AND BARRIERS TO OPTIMUM UPTAKE OF MULTI-MONTH DISPENSING OF ART IN MOROGORO MUNICIPALITY, TANZANIA

Reference is made to the above heading.

I am pleased to inform you that the Chairman has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 26/05/2021
EXPIRATION DATE OF APPROVAL: 25/05/2022

STUDY DESCRIPTION:
Purpose:
The purpose of this observational cross sectional study is to assess facilitating factors and barriers to the optimum uptake of MMD of ART in Morogoro Municipality, Tanzania.

The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided: https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%20536.pdf and in the MUHAS archives.

The PI is required to:

1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain data transfer agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain material transfer agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country,
8. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
9. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
10. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website https://drp.muhas.ac.tz/.

Dr. Bruno Sunguya
Chairman, MUHAS Research and Ethics Committee

Muhimbili University of Health and Allied Sciences
DIRECTOR
Research & Publications
Box 65001

Cc: Director of Postgraduate Studies

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Appendix VII: Introduction letter

UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR – POSTGRADUATE STUDIES

Ref. No. HD/MUH/T.443/2018 31st May, 2021

REGIONAL MEDICAL OFFICER,
P.O BOX 650,
MOROGORO.

Re: INTRODUCTION LETTER

The bearer of this letter is Neema William Machumu (HD/MUH/T.443/2018), a student at Muhimbili University of Health and Allied Sciences (MUHAS) pursuing MPH – Distance Learning.

As part of her studies she intends to do a study titled: **"COVERAGE, FACILITATING FACTORS AND BARRIERS TO OPTIMUM UPTAKE OF MULTI-MONTH DISPENSING OF ART IN MOROGORO MUNICIPALITY".**

The research has been approved by the Chairman of University Senate.

Kindly provide her with the necessary assistance to facilitate the conduct of her research.

We thank you for your cooperation.

Ms. Victoria Mwanilwa
For: DIRECTOR, POSTGRADUATE STUDIES

cc: Dean, School of Public Health and Social Sciences, **MUHAS.**
cc: Neema William Machumu.

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