PROCESS EVALUATION OF THE IMPLEMENTATION OF ENHANCED ADHERENCE COUNSELLING AMONG HIV PATIENT WITH UNSUPPRESSED VIRAL LOAD IN DAR ES SALAAM, TANZANIA

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PROCESS EVALUATION OF THE IMPLEMENTATION OF ENHANCED ADHERENCE COUNSELLING AMONG HIV PATIENT WITH UNSUPPRESSED VIRAL LOAD IN DAR ES SALAAM, TANZANIA.

By

Anna Mosses

A Dissertation Submitted in (Partial) Fulfilment of the Requirements for the Degree of Master of Science in Project Management, Monitoring and Evaluation in Health (PMMEH) of Muhimbili University of Health and Allied Sciences

October, 2024.

CERTIFICATION

The undersigned, certify that he has read and hereby recommends for examination by Muhimbili University of Health and Allied Sciences, a dissertation titled: "Process evaluation of the implementation of Enhanced Adherence Counselling among HIV patient with unsuppressed viral load in Ilala municipal Dar es salaam, Tanzania" in fulfilment of the requirements for the degree of Master of Science in Project Management, Monitoring and Evaluation in Health of Muhimbili University of Health and Allied Sciences.

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Date

DECLARATION AND COPYRIGHT

I Anna Mosses, 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/institution for a similar or any other degree award.

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Lastly, but with immense depth, I express my deepest gratitude to my cherished sisters Sara and Pendo, and my whole family for their patience, prayers and encouragement.

DEDICATION

I dedicate this dissertation to my late parents, Mosses Manyaki Marwerwe and Clara Biseko Musiba - *In loving memory.*

ABSTRACT

Background: Despite advancements in antiretroviral therapy, HIV remains a significant global health challenge, particularly in Tanzania, which has a 4.65% prevalence rate. Enhanced Adherence Counselling (EAC), introduced by the World Health Organization in 2016, aims to improve adherence among patients with unsuppressed viral loads (VL). However, many patients in Tanzania still struggle to achieve VL suppression post-EAC.

Objective: This study evaluates the implementation of EAC among HIV patients with unsuppressed VL in Ilala Municipality, Dar es Salaam.

Methods: A cross-sectional descriptive study was conducted, combining quantitative and qualitative methods. Multistage sampling was employed to select eight care and Treatment Clinics (CTCs) in Ilala, categorized by client load, with a random sampling approach applied to ensure representation. Quantitative data were collected from existing patient records using a pretested data extraction form on Open Data Kit (ODK). While qualitative data collected using Key informant interview using interview guide. Quantitative data was analyzed using STATA SE 14 (64-bit) software while thematic analysis using NVivo software was used to analyses qualitative data. Descriptive and ordered logistic regression analysis were performed at $p < 0.05$. Multivariable logistic regression analysis was conducted to assess the independent association between various factors and viral load suppression.

Results: Out of 361 patients, 86.2% were enrolled in EAC, with age significantly associated with enrollment. Among the 256 who completed EAC, 68.4% achieved VL suppression. Factors such as initial VL levels and age significantly correlated with suppression rates. Qualitative findings revealed that while counsellors understood EAC protocols, they faced challenges including outdated training and resource limitations. The median time to initiate EAC after high VL detection was 27 days, and most clients completed EAC within three months.

Conclusion: The study demonstrates a high enrolment rate of 86% among patients with unsuppressed viral loads (VL) in the Enhanced Adherence Counseling (EAC) program,

leading to a suppression rate of 64.4%, which approaches the WHO target of 70%. Initial viral load levels were found to be predictive of treatment success. However, barriers such as resource shortages and logistical delays hinder the program from reaching its full potential. Addressing these challenges is crucial to improving ART adherence and viral load outcomes. Future research should focus on interventions to optimize EAC implementation and explore patient perspectives to inform best practices.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral
CD4	Cluster of Differentiation 4
CHMT	Community Health Management Team
CTC	Care and Treatment Clinic
EAC	Enhanced Adherence Counselling
HCW	Health care worker
HF	Health Facility
HIV	Human Immunodeficiency Virus
HMT	Hospital Management Team
HTS	HIV Testing Services
HVL	High Viral Load
KII	Key informant interview
M&E	Monitoring and Evaluation
MOHCDGEC	Ministry of Health Community Development, Gender, Elderly and Children
NACP	National AIDS Control Program
NGO	Non-Governmental Organization
ODK	Open Data Kit

PLHIV	People Living with HIV
PMTCT	Prevention of Mother to Child Transmission
RRH	Regional Referral Hospital
TACAIDS	Tanzania Commission of AIDS
THIS	Tanzania HIV Indicator Survey
USAID	United States Agency for International Development
VL	Viral Load
WHO	World Health Organization

DEFINITION OF TERMS

Acquired Immunodeficiency Syndrome: AIDS is the most advanced stage of HIV characterized by weakening of body immune system making one's vulnerable to opportunistic infections and malignancies.

Antiretroviral Therapy (ART): Antiretroviral Therapy is a combination of drugs used to treat HIV to prevent replication of HIV.

High Viral Load: one is considered to have high viral load when there are more than 1000 copies in one milliliter of blood. This threshold is also indicative for treatment failure in a person who was on ART. High viral load predicts how fast the disease will progress

Enhanced Adherence counselling: is a targeted client-centered counseling strategy aims to identify and address barriers to optimal ART use and strategies to overcome them.

Unsuppressed viral load: An unsuppressed viral load is indicated when an individual has a viral load count of more than 1000 copies/mL after 6 months of ART.

Virological failure: Virological failure is suspected when an individual has been on ART for 6 months with an unsuppressed viral load. Confirmation of virological failure occurs when, despite undergoing EAC, there are no improvements in viral load levels

Human Immunodeficiency Virus (HIV): Is a virus that attacks the body's immune system. If HIV is not treated, it can lead to AIDS.

HIV Prevalence: is the proportion of people who are having HIV out of the general population at a specified time period.

Informed Consent: Informed consent is a legal condition whereby a person can give consent based upon a clear understanding of the facts, implications, and future consequences of an action. In order to give informed consent, the individual concerned must have adequate reasoning and be in possession of all relevant facts at the time he or she gives consent.

Open Data Kit (ODK): Is an open-source Android app that replaces paper forms used in survey-based data gathering. It supports a wide range of question-and-answer types, and is designed to work well without network connectivity

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

HIV remains a global health challenge, causing over one million deaths annually and affecting around 36 million people worldwide(1). Despite advances in antiretroviral therapy (ART), approximately 2 million new HIV infections occur each year (2) with the African region bearing a significant burden. Africa accounts for over half of the global HIV prevalence, with approximately 25.2 million people living with HIV, and two-thirds of new cases emerging from this region.(3). East and Southern Africa carry a particularly heavy disease burden, with 20 million reported cases(4).

In Tanzania, HIV prevalence stands at 4.4% (5), contributing to 58,000 new infections annually, with half of these occurring among individuals aged 15 to 29. The widespread use of ART has significantly reduced mortality and improved the quality of life for those affected. However, the success of ART is heavily dependent on adherence, which remains a major challenge. Poor adherence leads to suboptimal virological suppression, influenced by various factors such as socio-demographic characteristics, treatment side effects, stigma, and limited access to healthcare services(6).

Globally, non-adherence to ART is a significant issue, with an estimated 45% of users experiencing poor adherence (7,8). Tanzania has adopted the global 95-95-95 targets to achieve HIV epidemic control by 2030. This strategy aims for 95% of people with HIV to be aware of their status, 95% of those diagnosed to be on ART, and 95% of those on ART to achieve viral load suppression. As of 2019, around 60% of HIV-positive adults in Tanzania were aware of their status, 91% had initiated ART, and 78.1% had achieved viral load suppression (9).

Adherence to ART is critical for viral suppression, preventing drug resistance, improving immune function, and reducing the risk of AIDS-related complications. However, achieving a high level of adherence (at least 95%) is a significant challenge in low- and middle-income

countries like Tanzania, where 16-19% of patients fail to adhere to treatment. Barriers to adherence include stigma, lack of transportation, insufficient nutrition, healthcare access challenges, and inadequate viral load monitoring facilities.

Viral load monitoring is a crucial tool recommended by WHO for assessing ART effectiveness and detecting treatment failure. However, in Tanzania, resource constraints, high turnaround times, and limited laboratory capacity hinder routine viral load monitoring, leading to challenges in identifying and managing treatment failure effectively. Adolescents, in particular, face difficulties with adherence, highlighting the need for targeted interventions such as enhanced adherence counseling.

1.1.1 Description of intervention

EAC is a targeted client-centered counseling strategy Introduced by WHO in 2016 with the aim to improve ART adherence in order to reach the third 95% target, EAC also has the aims to identify and address barriers to optimal ART use and strategies to overcome them, it is also an ongoing program to patient with unsuppressed VL after 6 months of ART to ensure VL suppression before treatment failure is diagnosed(10). EAC has to be undergone to all patients suspected of experiencing treatment failure, indicated by factors such as a viral load exceeding 1000 copies, a drop in CD4 counts, or the development of stage 3 or 4 conditions after six months of ART, (WHO). Implementation of EAC involves a minimum of three counseling sessions before a diagnosis of treatment failure is confirmed EAC has emerged as a potential strategy to address non-compliance and improve treatment outcomes. EAC for virally unsuppressed adults can lead to 70.0% of them achieving viral load suppression (11).Tanzania has adopted and incorporate EAC into HIV management guideline which recommend 3 sessions to be done within 8 weeks, after the third sessions HVL test has to be done and if VL are above 1000copies then treatment failure is confirmed and change to another regime is recommended. Because poor adherence is a primary cause of treatment failure, whenever a patient has been on ART for at least six months and has an HIV viral load greater than 1000 copies/ml, a decline in CD4 cell count, or develops a stage 3 or 4 disease state, he or she is considered to be in treatment failure(12).

Recognizing the importance of optimizing patient outcomes, the WHO recommends an approach of EAC for a duration of 3-6 months before concluding that first-line treatment has failed in individuals with elevated viral load levels (virological failure). Despite the dedicated efforts of Sub-Saharan African nations in implementing EAC, there is a concerning trend. The number of patients facing first-line treatment failure, necessitating the transition to second-line ART, is on the rise and is projected to reach 0.5-3 million by 2030. This underscores the need for a nuanced examination of the current strategies, potential barriers, and opportunities for enhancement to ensure the sustained effectiveness of treatment interventions in the region (9). Treatment failure in patient who are on ART can be attributed by the fact that not all patient who are a suspected to have treatment failure are subjected to EAC session. Those patients who have been subjected to EAC do not receive all recommended sessions and within allocated time. Although EAC is considered to be most cost effective even on resource constrained countries setting but still, some of this facilities have inadequate guideline for conducting EAC sessions and no persistent in conducting section(13). Therefore, this study aims to assess the implementation of EAC among ART non adherence in improving ART adherence and treatment outcomes in Tanzania.

1.2 Problem statement

In Tanzania, the EAC strategy has been incorporated into HIV treatment guidelines for patients suspected of experiencing treatment failure. The goal of EAC is to identify barriers to drug adherence and help patients develop personalized adherence plans. However, despite these guidelines, challenges persist in the effective implementation of EAC.

Negative attitudes and judgmental behaviors from some healthcare providers create an unwelcoming environment for people living with HIV, discouraging patients from returning for follow-up sessions(14). Additionally, due to financial difficulties, not all facilities have the potential to perform viral load n testing. The VL testing algorithm, which requires sending samples elsewhere for testing, faces challenges such as high turnaround times(15,16). This issue has the potential to impact patient outcomes and the effectiveness of treatment and up to date the ART adherence in Tanzania at 83% which is suboptimal from the recommended 95% adherence level recommended by WHO(17).

Failure to effectively implement EAC could result in continued poor adherence, misdiagnosis of treatment failure, and increased HIV drug resistance. Therefore, it is essential to evaluate the implementation of EAC in Tanzania to ensure improved healthcare outcomes. This study aims to assess the effectiveness of EAC among HIV patients with unsuppressed viral loads attending health facilities in Dar es Salaam.

1.3 Conceptual framework

Theoretical Description of REAIM framework

The RE-AIM framework is a widely used model designed to enhance the translation of research into practice. It was originally developed to evaluate the impact of public health interventions across five key dimensions: Reach, Effectiveness, Adoption, Implementation, and Maintenance. Each dimension represents a critical factor in determining how well an intervention is delivered, adopted by participants, and sustained over time. The framework is designed to bridge the gap between clinical research and real-world practice by focusing not only on the effectiveness of interventions but also on their practicality in diverse settings. The Reach refers to the number and characteristics of individuals who participate in an intervention, determining the extent to which the intervention targets the intended population. Effectiveness measures the impact of the intervention, focusing on outcomes such as improvements in health, quality of life, and behavior. Adoption assesses how well the intervention is accepted and integrated by practitioners, organizations, or settings. Implementation evaluates how consistently the intervention is delivered, including adherence to the guidelines and protocols. Maintenance examines the long-term sustainability of the intervention at both individual and organizational levels.

Modified REAIM framework

In this study, a modified RE-AIM framework was adapted to assess the implementation of EAC among HIV patients with unsuppressed viral loads. This approach allowed us to concentrate on the critical aspects of how EAC is delivered and integrated into routine care. The Reach dimension focused on determining the proportion of eligible patients who underwent EAC. Effectiveness measures how well EAC helps HIV patients to achieve viral load suppression. Adoption delves into healthcare provider engagement, assessing the

proportion of providers offering EAC. Implementation focuses on the fidelity of the EAC intervention, examining whether the EAC package was delivered according to the guidelines. This includes assessing the median time to start EAC sessions after high viral load detection, the median time to take a second viral load test after completing the EAC sessions, the time taken to complete the EAC sessions, and the median time to conduct a repeated viral load test following the completion of the EAC sessions. By applying the RE-AIM framework, this study aims to provide a holistic understanding of the implementation of the EAC intervention potential for sustainable integration into routine healthcare practices.

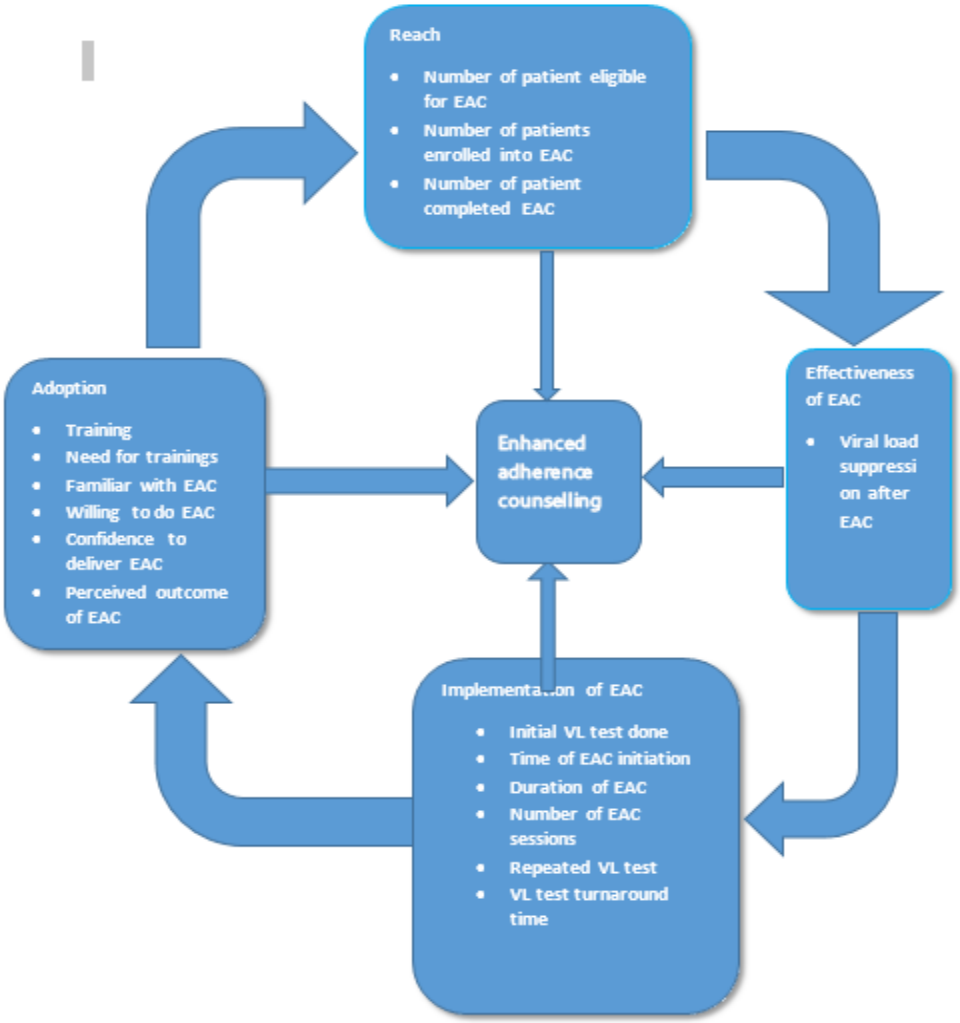


Figure 1: Conceptual framework

1.4 Rationale of the study

This research aligns with Sustainable Development Goal 3, which seeks to ensure healthy lives and promote well-being for all at all ages. Specifically, the study addresses Target 3.3 of SDG 3, which aims to end the HIV/AIDS epidemic by 2030. By improving ART adherence through EAC and achieving viral suppression among people living with HIV the study contributes to reducing the transmission of HIV and improving treatment outcomes, both of which are critical components of this target. This will provide valuable insights for healthcare providers, policymakers, and researchers by expanding our understanding of adherence and the implementation of EAC for patients with unsuppressed viral loads. Additionally, this study may pave the way for larger-scale studies, offering critical guidance for public health decision-making aimed at improving adherence and retention among individuals on ART. Generally, the findings could contribute to optimizing HIV treatment outcomes in Tanzania.

1.5 Main research question.

How is the implementation of adherence counseling effective in improving ART adherence among HIV patients with unsuppressed viral load in Dar es Salaam?

1.5.1 Specific research questions.

1. What is the proportion of HIV patients with unsuppressed viral load who were enrolled in EAC session from January to December 2023?
2. What is the effectiveness of EAC in viral load suppression among HIV patients with unsuppressed viral load?
3. What is the extent to which healthcare providers adopt the EAC intervention?
4. What is the fidelity of implementation to the EAC intervention?

1.6 Broad objectives

To assess the implementation of enhanced adherence counseling among HIV patients with unsuppressed viral load.

1.6.1 Specific objectives

1. To determine the proportion of HIV patients with unsuppressed viral load who enrolled EAC session from January to December 2023.
2. To determine the effectiveness of EAC in viral load suppression HIV patients with unsuppressed viral load.
3. To explore the adoption of the EAC intervention by healthcare providers
4. To assess the fidelity of implementation of the enhanced adherence counseling intervention

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Overview

This section discusses the overview and details of the enhanced adherence plan. Different arguments made by different scholars concerning the implementation of EAC are discussed in details in this chapter. This chapter is divided into four sections. Each section discusses one specific issue with regards to EAC according to the REAIM framework. This chapter is divided into different sections. The sections include: enrolment into EAC, Adoption, implementation and maintenance of EAC in health facilities.

2.2 Enrollment and completeness of EAC

The WHO has adopted an ambitious global target known as '95-95-95,' with the goal of closing gaps in HIV testing, treatment initiation, and viral load suppression. The final 95%, which aims for 95% of individuals in treatment to achieve suppressed viral load, is reliant on EAC. EAC is designed to facilitate viral suppression by enrolling and ensuring regular attendance of all patients with a high viral load of >1000 copies in three consecutive monthly sessions. However, not all eligible patients meeting these criteria are currently enrolled(18), Since EAC sessions are recommended to be conducted through physical visits, not all eligible clients receive all the required sessions.

A study done in Uganda assessing viral load suppression in children and adolescents showed that not all patients eligible for EAC were enrolled into the program and among those enrolled, not all of them completed all the three sessions as required. In this study seven percent of eligible patients were never enrolled in the program, 16% received either one or two sessions and only 77% had all three EAC sessions. Another study conducted in Swaziland, 2018 showed that 30.4% of patients eligible for EAC did not receive EAC at all, 16.1% received one session, 18.7% received two sessions and only 34.8% received all three sessions, similar findings were revealed in a study conducted in Zimbambwe where out of 646 patients with high VL on 75% of them were enrolled for EAC and only 69% were able get a repeated VL test after 3 months.

This is a pullback towards the 95% VL suppression agenda (19). However, this aforementioned study also showed that regardless of the number of sessions received, 92% of patients who received EAC had a repeat viral load testing. (20). More over in another study also done in Swaziland showed that only 60% of patients eligible for a follow-up VL testing received the follow up test, the other 40% did not receive a VL follow up test (21).

Some of the challenges mentioned include long travel times to the facility and transportation issues, these also hinder reaching the proposed target (22). Patient satisfaction with the quality of EAC services provided has been associated with good adherence to ART which led to viral load (23). Therefore, understanding to what extent these factors hinder progress toward viral load suppression through drug adherence will aid in developing strategies to overcome them.

2.3 Effectiveness of EAC

According to WHO estimates effective EAC has been shown to cause viral load suppression for about 70% of the individuals with initial VL count of more than 1000copies/ ml, this was evidenced in a study conducted in Ethiopia to determine viral load suppression after EAC the study revealed that viral load suppression was 66.4 percent following enhanced adherence counseling. This level was nearly WHO estimate target which is 70%(13). Similar findings were observed in Uganda were 77% of patients who had initial VL testing and complete EAC sessions had suppressed VL(24). However, these findings are not consistent they vary from site to site as in the similar study conducted in Nigeria the research found that only 50% of patient with VL of more 1000 copies/ml had suppression of viral load at the end of three EAC sessions (10).

Studies have indicated that conducting enhanced adherence counselling, particularly when initial viral load testing is conducted at 6 months of ART, is effective. Patients who underwent initial VL testing were more likely to be found with suppressed VL than those who attended routine annual monitoring or patients who have been on ART for an extended period (21).Also, EAC was seen to be ineffective in reversing virologically defined treatment failure in patients on long-term ART (ART for 4 years) who had not previously had a VL

test(25). This study will evaluate how effective is EAC in suppressing Viral load among individuals with unsuppressed viral load on ART.

2.4 Adoption of EAC by health care providers

The WHO advises providing enhanced adherence counseling to HIV-positive individuals with detectable VL (> 1000 copies/ml) after 6 months of ART before diagnosis of treatment failure is made (13,26). HIV services in Tanzania are more than 90 % donor-funded, therefore no costs from the client to access ART services(27). However, poor adherence to ART increases the risk of advanced HIV, leading to significant expenses for treating opportunistic infections, including investigation costs.

Presence of advance HIV results in increased morbidity and mortality, which could otherwise be prevented. EAC is considered the most cost-effective intervention, even in resource-limited settings, to prevent these HIV-related consequences(28). To adopt this intervention, a healthcare system must have trained or skilled healthcare providers capable of delivering the full EAC package in accordance with guidelines, including psychosocial support and have good communication skills(29).

A scoping assessment of challenges and strategies related to implementation of guidelines have identified three major categories associated with obstacles to guideline implementation and utilization. These categories included personal factors, guideline related factors and external factors. Personal factors involve those related to physician experience and knowledge such as lack of awareness and familiarity with the guideline and its recommendations, additionally attitudes such as disagreement, self-efficacy skills, outcome expectancy and motivation are also part of the personal factors. These barriers on the other hand affect the adoption of EAC by the health care providers and hence the effectiveness of the intervention. This also requires facilities with the capacity to perform VL tests.

To align with WHO recommendation Tanzania has incorporate EAC in the guideline for management of HIV which recommend the EAC to be conducted in three sessions for 8 weeks before treatment failure is declared. Adoption of EAC in Tanzania is faced with many challenges from health facility capacity to provide comprehensive EAC package to level health care providers who provide EAC. Due to financial difficulties, not all facilities have

the potential to perform viral load testing. The VL testing algorithm, which requires sending samples elsewhere for testing, faces challenges such as high turnaround times(30), health care who provide EAC are not regularly trained to provide proper adherence counselling. Therefore, this study aims to explore the adoption of EAC by counsellors in the implementation of EAC.

2.5 Adherence to the recommended guideline of EAC

To achieve the anticipated outcomes of an EAC intervention, it must be consistently delivered in accordance with the proposed guidelines across various settings. Although several other factors can influence adherence to ART, when EAC id done comprehensively, adherence can be improved for at least 70%(13). But in most settings this intervention is not fully implemented due to inadequate trainings and guidelines, overwhelming of health care provider to provide a full EAC package, as the results the intervention cannot achieve the intended results.

In some settings where EAC is done, the counselling is performed but not according to the WHO standard that is minimum of three sessions to be done within 3 months followed by repeated VL testing, this was cited in the study conducted in Ethiopia whereby out of people with high VLs counts enrolled in the EAC, only 46.8% had successful completed their sessions within the recommended timeframe (13,31). Another study conducted in Zimbabwe showed similar results whereby only 489 (75.7%) of the 646 people with high VL were enrolled for EAC; of these, 444 (69%) performed a repeat VL test at three months, with 201 (31.2%) achieving VL suppression(19).

Concurrent to the above findings, another study conducted in Uganda in 2018 among HIV children taking ART showed that only 37% of patients completed EAC sessions within the recommended time (90days) about 16% attended an average of 1-2 sessions (24). In swaziland the median time from the first elevated VL to the first, second and third EAC session was 42, 83 and 113 days respectively. Whereas the median time to the follow up VL test was 4.6 months and repeat VL test uptake at 3 and 6 months were 15.6% and 62.1% respectively (20). Another study also done in Swaziland showed that the median time to

follow-up VL testing was four months from the time of initial VL test (21). In Rwanda, the overall median time between the high initial VL and the follow-up VL was 12.5 months (32).

Lack of availability of EAC guidelines, available and adequately trained health care providers are some of the reasons for inadequate EAC. Adherence to EAC guideline will ensure completeness of EAC sessions including a repeat VL testing. Untimely implementation of EAC sessions can result in severe consequences including treatment failure. As discussed above, various studies have documented gaps in the enrolment to EAC, completeness or incompleteness of EAC and timing of EAC in various countries in Africa. However, the presence of these gaps in the Tanzanian setting are unclear. This study also aims to assess the presence of these implementation gaps existing in the Tanzania setting which in turn will inform on the current fight against HIV treatment failure.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study area

The study was conducted in Dar es Salaam, specifically in Ilala Municipality. Dar es Salaam is the largest city and financial hub of Tanzania, with a population of 5.4 million, representing 8.7% of the total national population as per the 2022 Census (33). As the largest city in East Africa (34)and the sixth-largest in Africa, Dar es Salaam is a critical economic center and one of the fastest-growing cities in East Africa(35). The city has an HIV prevalence rate of 4.7%, with a viral load suppression rate of 44.7%(36).

Dar es Salaam comprises five municipalities: Kinondoni, Temeke, Ubungo, Kigamboni, and Ilala. The study will be conducted specifically in Ilala municipal because is the municipality with a total of 68 health facilities equipped with CTC, and it has the largest number of CTC patients, specifically 212,814 out of the total 667,412 patients in the region, as of December 2020, according to DHIS 2. Whereby the municipals referral hospital alone serves around 26,427 patients as of December 2020 of whom around 500 were expected to be enrolled in the EAC program due to high viral load. Therefore, Ilala district is a promising ground for obtaining dependable and sufficient data.

3.2 Study design

It was a process evaluation using a cross-sectional descriptive study design to assess the implementation of the EAC intervention. This design was selected because it allows for the assessment of implementation processes at a specific point in time, providing a snapshot of how the intervention is functioning in practice(37). The cross-sectional design enables the collection of data from a large group of participants without the need for long-term follow-up, making it ideal for evaluating real-world interventions within the constraints of time and resources typically available. Both qualitative through KII and quantitative methods of data collection were employed, including reviewing patients' records for quantification of intervention outcomes. Inclusive of both qualitative and quantitative approaches ensured a rich and more comprehensive understanding of the subject.

3.3 Study population

For the quantitative part, a review was conducted of the records of HIV patients aged 15 years and above, attending CTCs in health facilities located in Ilala district, with unsuppressed viral load after 6 months of ART between January and December 2023.

For the qualitative part, the study involved EAC counsellors working in the selected health facilities.

3.4 Sampling procedures

3.4.1 Sampling of health facilities

In order to capture a diverse representation of health facilities within the Ilala district, a multistage sampling was employed. A comprehensive list of public CTC clinics within the Ilala district was compiled. Facilities were then clustered based on the number of clients they serve, with high-load facilities defined as those catering to 1000 clients or more and low load facilities defined as less than 1000 clients. Higher cut off that is; 1000 clients and more, have been used to ensure sample size is attained from the selected facilities.

To ensure a comprehensive representation of the health facilities, a random sampling technique was employed. The remaining 12 facilities were assigned numbers, and using simple random selection, 8 facilities were chosen from the list as indicated in table 1. A sample of 8 facilities was desired due to available resources and limited time for data collection.

3.4.2 Sample size calculation

The sample size for the quantitative data was calculated from Cochran's formula as follows.

$$n = \frac{Z^2 p\,(1-p)}{E^2}$$

Whereby:

- n = Number of sample size
- Z = Standard normal deviate=1.96 for 95% confidence level
- p = Proportion with characteristic of interest = 0.5 (50% was used since proportion of HIV patient with unsuppressed viral load is unknown)

E = Margin of error = 0.052

Therefore: $n = \frac{1,92^2 * 0,5 * (1-0,5)}{0,052^2}$

n = 355.

Non response rate= 5%

Sample size after adjusting 5% nRR=1/RR* sample

Sample size after adjusting 5% nRR=1/95%* 355=374

3.4.3 Sampling of study of study participants

For the quantitative part proportionate sampling was used to determine number of participants to be included from each site, to ensure site representation.

From the formula;

Sample proportional = Number of clients from facility / Total population of selected facilities * overall sample size

Where: overall sample size= 374 participants

Table 1: Selected facilities, number of clients and proportional sample for each facility and number of EAC counselor selected per facility

Name of the CTC	Number of Clients	Percentage (%)	sample proportion (number)	Number of HCP
Mnazi mmoja health center	6293	25.8	96	1
Amana Regional Referral Hospital	5698	23.3	87	1
Buguruni health center	4649	19	71	1
Tabata A dispensary	3130	12.8	48	1
Buguruni Anglican health center	1219	5	19	1
Kitunda dispensary	1183	4.8	18	1
Kiwalani dispensary	1163	4.8	18	1
Segerea dispensary	1097	4.5	17	1
	24432	100	374	8

A simple random sampling method was applied to select the required number of patients from each facility. The sampling frame was derived from the EAC register, where all registered patients were already enumerated. The required sample was chosen randomly using a table of random numbers.

For the qualitative data collection, we approached six EAC counselors from the selected Care and Treatment Clinics (CTCs) who met the inclusion criteria and were available during the data collection period until information saturation was attained. This approach sought to comprehensively examine the adoption rate of EAC among EAC counselors and assess the institutionalization of the EAC strategy within CTC clinics, deriving insights that reflected the collective practices and perspectives within selected healthcare settings.

3.5 Eligibility Criteria

3.5.1 Inclusion Criteria.

The study included selected health facilities within Ilala District that offer HIV care and treatment services through CTCs attending to 1,000 clients or more.

For the patient file review, files of HIV-positive individuals who have been on ART for at least six months and have an unsuppressed viral load (VL > 1000 copies/ml) were selected. Patients, who had been subjected to EAC between January and December 2023 (three months prior to the study commencement), were the focus of the review. The choice of this time frame (within one year of data collection) was made to facilitate data tracking during triangulation, as data will be extracted from multiple sources. The study specifically targets non-virally suppressed individuals to ensure focus on those who stand to benefit most from EAC interventions.

For the EAC counselor study population, the study included counselors who are full-time employees at the selected health facilities, with a minimum of one year of experience working at the CTC clinic as counselors.

3.5.2 Exclusion Criteria

The study excluded all health facilities with CTC clinics that had been established less than one year before the commencement of the study, specifically excluding tier one facilities.

This decision was made because EAC is provided to patients who have been on ART for at least six months, and EAC typically occurs over a period of three months. Consequently, a minimum of nine months is required for a new patient to be initiated on ART, subsequently enrolled in EAC, and complete the counseling. Therefore, clinics established for less than one year were deemed less likely to have an adequate number of these patients.

Regarding EAC counselors, the study excluded volunteers and health facility owners, as well as individuals holding top management roles. This measure was taken to minimize the halo effect bias, which refers to the tendency for a positive impression of something or someone in one area to positively influence one's opinion or judgment in another area (38).

For the review of patient files, pregnant and breastfeeding women enrolled in the EAC program were also excluded. This exclusion was based on the fact that pregnant and breastfeeding women have a modified approach to EAC, aimed at reducing the risk of vertical transmission of HIV.

3.6 Variables

3.6.1 Dependent variables.

Dependent variable was viral load suppression

3.6.2 Independent variables

Independent Variable were, age, sex, initial viral load, ART regime, WHO clinical staging, enrollment to the EAC, time to initiate EAC; this was calculated as the number of days between the initial HVL identification date and the date of the first EAC session, HVL turnaround time; this was calculated by subtracting the date of blood sample collection from the date when the HVL result is received, duration of EAC session which was calculated as the number of days between the first EAC session and the last EAC session EAC, completeness of EAC which was measured by looking at the status of EAC , repeated VL test and adoption of EAC by health care provider.

3.7 Data collection methods and procedure

3.7.1 Quantitative data collection method

Data were collected through data extraction tool. This data was obtained from patient medical records, viral load results and CTC 2 database. Review of existing records by using a pretested quantitative data extraction tool which was programmed into ODK in a tablet.

Selected participants were obtained from the CTC 2 database, specifically targeting patients who had High Viral Load from January to December 2023. Subsequently, patients' files were reviewed to document EAC information, including details from HVL monitoring and EAC forms. After successful selecting study participants, the researcher used data extraction form to collect data on all participants' documents at the participating health facility. The medical record review focused on patients' demographics information, ARV treatment duration and documented instances of EAC sessions, existing patient records were meticulously reviewed using a pretested data extraction form. The use of ODK to collect data facilitated systematic data collection.

Viral load results were examined to assess the effectiveness of ART adherence and VL failure treatment success. Patients with a high viral load one year prior to the study commencement were identified from the CTC2 database. Their files were reviewed to document information on HVL monitoring and EAC forms.

3.7.2 Qualitative data collection method.

The qualitative data collection for this study was designed to explore the adoption of EAC by healthcare providers. Key informant interviews were conducted to get an insight from EAC counselors, using the principle of sufficient information power to determine the sample size, this approach was chosen was to ensure that the sample size was large enough to capture diverse perspectives, yet manageable enough to reach saturation when no new themes emerged. Participants were selected by purposeful sampling, focusing on counselors from different health facilities and their working experience, representing different facility levels and strata, gender and age were not mandatory inclusion criteria. The data collection took place in May 2024, with six face-to-face interviews conducted in private settings, each

lasting between 15 and 30 minutes, all interviews were conducted at the selected health facilities in secure and private locations to maintain confidentiality.

Before each interview, written informed consent and permission to record the sessions were obtained, ensuring voluntary participation. The interviews were conducted by the researcher, rapid notes were taken to capture key issues and ensure consistency. Afterward, the audio recordings were transcribed and translated into English to facilitate analysis. The data were reviewed daily for completeness and consistency, making any necessary adjustments. To maintain confidentiality, participants' identities were anonymized using numeric identifiers, and the audio files were discarded once the final report was completed. This structured approach, which adhered to ethical guidelines, ensured thorough and reliable data collection, in line with the reviewer's recommendations for clarity and formality.

3.8 Data collection tool

The data collection technique for quantitative data involved reviewing existing records using a pretested data extraction form programmed into ODK on a tablet. Specifically, records of patients suspected to have virological failure from selected health facilities were gathered or pulled from the CTC 2 database. From this pool of patients, document review was conducted, focusing on those who underwent EAC as indicated in the EAC registers. The subsequent document review extracted pertinent information from the sampled patients' records, including details from the High Viral Load monitoring and EAC forms.

3.9 Validity and Reliability Checks

To ensure the validity of the study tools, the tools were pretested two weeks before the study commencement. Tool relevance and representativeness were assessed based on context and validity. To ensure validity and reliability, the scientific method was used in all phases of research, including data collection, processing, and analysis.

Data validation checks, which included blank, missed, out-of-range, invalid, and inconsistent responses, were incorporated into the ODK. Invisible skip patterns were also incorporated into the mobile data collection tools to streamline the process of gathering information and ensure data quality.

Data was collected by the principal investigator (myself) and competent assistant researchers who are in the medical field to avoid and/or minimize errors during data collection. Additionally, after each day of data collection, we had a brief online meeting to discuss the challenges faced during the day's data collection and how to mitigate them to progress further. On a daily basis, I did data quality checks for missing data or data inconsistency and addressed the challenges immediately the following day. A combination of all these measures ultimately ensured the trustworthiness of the collected data.

For Qualitative data, i assessed the trustworthiness of my study findings using Guba's four criteria: credibility, dependability, transferability, and confirmability. To enhance the credibility of the findings, I triangulated the study participants, researchers, data collection methods, and study settings. For dependability, in addition to the triangulation used for credibility, I collected data in the natural settings of the study participants. I enhanced confirmability through the inductive generation of the categories using NVivo to reflect the perspectives of the study participants rather than my interpretation. The categories were presented with the support of codes and succinct quotes. A detailed methodological description, including the study setting, context, data collection process, and analysis, was used to enhance the transferability of the study findings.

3.10 Pre testing of the data collection tool.

Before the commencement of the study, tool pretesting was conducted for both patient medical records using a data extraction form and interview guide. This activity was carried out at Mwananyamala Regional Referral Hospital CTC clinic in Dar es Salaam to capture health facility experience. The ODK tool was pretested for patient document review, and pilot in-depth interviews were conducted with two EAC counsellors from selected facilities. This allowed the researcher to modify the quantitative tool for patient medical records review and the interview guide as required. Therefore, unforeseen challenges were determined and mitigated before the start of actual data collection. This exercise was done by the principal investigator and selected research assistants as part of practical training to give them experience in all necessary field procedures.

3.11 Recruitment of research assistants and training

Two research assistants were recruited for data collection with education backgrounds in bachelor/diploma in nursing and medicine and experience in research. The research assistants' role was solely to assist in data collection of quantitative data from some of the selected facilities and coding of some of the qualitative data. A two-day training session was conducted for the research assistants to help them understand the purpose and aim of the study and to enable them to collect the right data.

3.12 Data management and analysis

3.12.1 Quantitative data

Throughout the data collection period, a continuous monitoring process was implemented to ensure data completeness and correctness. Daily checks were conducted to identify and address any discrepancies or missing information promptly.

Data was entered into excel sheets, cleaned and then transferred to Stata version 14.0 for analysis. Data were checked for normality and transformation. The analysis plan aims to provide a clear understanding of how well the intervention is executed and its impact on key outcome which VL suppression.

Descriptive analysis was the primary method employed to summarize and interpret the collected data. This included the utilization of frequency tables to present the distribution of categorical variables, percentages to highlight proportions, and graphs for visual representation.

To calculate the proportion of HIV patients enrolled in EAC sessions, a quantitative descriptive analysis was conducted. The frequency of patients enrolled in EAC sessions during this period was calculated and expressed as a proportion of the total number of HIV patients with unsuppressed viral loads. This analysis helped determine how effectively the intervention reached the target population. Additionally, multivariable logistic regression was conducted to assess the independent association of factors with EAC enrollment.

For the assessment of EAC's effectiveness in achieving viral load suppression, a descriptive analysis was utilized. This analysis compared the initial viral load results before the initiation

of EAC with the viral load levels after the completion of EAC sessions. Additionally, multivariable analysis was conducted to assess the independent association of various factors with viral load suppression.

To analyses the fidelity of implementation of EAC, descriptive analysis was employed to summarize and interpret the findings in percentages and proportions for each fidelity variable. Firstly, the median time to the start of the EAC sessions after high viral load detection was calculated, considering the interquartile range to understand the variation in this duration.

Secondly, the median time for participants to take a second viral load test after completing the EAC session was calculated, with attention given to the IQR for variation.

Thirdly, the time taken to complete the EAC sessions was analyzed by calculating the median duration and IQR. Gender differences in the duration of completion were examined, and the proportion of participants completing the sessions within specific timeframes was determined to assess adherence to the intervention timeline.

Lastly, the median time taken to conduct repeated VL test following completion of EAC sessions was analyzed by calculating the median duration and IQR. Gender differences in the duration of completion were examined.

3.12.2 Qualitative data

Thematic analysis of qualitative data was conducted using NVivo software to explore the adoption and fidelity of Enhanced Adherence Counseling (EAC) implementation. I systematically organized and interpreted the qualitative data collected from various healthcare facilities using NVivo. The process began with transcribing the data, which was then translated into English. Following this, the transcripts were imported into NVivo.

I created nodes that corresponded to key themes and categories related to EAC adoption and fidelity, including training, resource availability, knowledge, the conduct of EAC, and perceived benefits of EAC. By coding relevant sections of the transcripts to these nodes, I was able to identify patterns and relationships within the data.

Through this coding process, I discerned several overarching themes that encapsulate the findings. Each theme was further refined into specific subthemes that provided a deeper understanding of the nuances of EAC implementation. After the coding phase, I employed the query function in NVivo to search for keywords and generate summary reports for the nodes and queries. This systematic approach allowed me to derive comprehensive themes and subthemes that reflect the implementation experiences of EAC across the studied healthcare facilities, table 2.

Table 2: Main theme and subtheme

Domain	**Main theme**	**Subtheme**
Conduct of Enhanced Adherence Counseling	Adherence to the EAC guideline	• Adherence to the EAC guideline • Duration of EAC • Who initiates EAC • Scheduling and frequency of EAC sessions • Adjustments based on client needs
Comprehensive Approach to EAC		• Behavioral factors • Cognitive factors • Emotional factors • Socio-economic factors
Patient-Centered Counseling	Personalized counseling	• Personalized counseling • Collaboration in strategy development • Continuous follow-up and support

Designated Day for Focused EAC	Group counseling	• Group counseling • Individual counseling sessions • Scheduling specific days for high viral load clients
Challenges in EAC Implementation	Delays in viral load test results	• Delays in viral load test results • Limited availability of viral load machines • Client availability and adherence issues • Logistical challenges for clients (e.g., truck drivers, employers' permission) • Shortage of counseling staff
Man power and resources	Counsellors' knowledge on EAC	• Awareness on EAC and condition for enrollment in EAC
	Training,	• Training sessions, including on job training and when was the training conducted
	Resource	• Guidelines availability • Staff for counselling • Room for counselling
Perceived benefit	EAC impact on VL suppression	• Improved adherence strategies • Behavioral change toward adherence

3.13 Ethical consideration

The study was conducted in accordance with the principles of the Declaration of Helsinki and the guidelines of Good Clinical Practice. Ethical clearance was obtained from the National Institute for Medical Research and the Muhimbili University of Health and Allied Sciences Ethical Review Board prior to initiation. All selected participants were given detailed information about the study procedures, including potential risks and benefits, measures to ensure confidentiality, their right to withdraw at any point without consequences, and contact details for the principal investigator (PI) for any further inquiries or concerns.

Confidentiality was observed throughout the study. Study codes were used in the ODK so that any EAC counsellor or patient information cannot be traced back to their real names. Access to the data was restricted to authorized personnel, with only the principal investigator PI having full access to all study-related documents.

Data were stored on secure, encrypted servers, and access was further protected by password authentication. Upon completion of the study, all identifying information was securely disposed of in line with institutional protocols. Physical documents, such as rapid notes were shredded, and digital records were permanently deleted to ensure that participant confidentiality was fully upheld.

CHAPTER FOUR

4.0 RESULTS

4.1 Overview

This chapter presents the study results. The main objective of this process evaluation was to assess the implementation of EAC among PLHIV with unsuppressed VL in Ilala municipality, Dar es Salaam, Tanzania. The evaluation of EAC was conducted using the RE-AIM framework. The presentation of findings is divided into five subsections: the first section highlights the sociodemographic characteristics of the participants, while the remaining four sections present results according to the components of the RE-AIM framework: Reach, Effectiveness, Adoption, and Implementation/Fidelity. Specifically, Reach pertains to the proportion of patients with unsuppressed VL who were enrolled in EAC; Effectiveness examines the suppression of VL among clients with unsuppressed VL; Adoption explores the uptake of EAC by healthcare providers; and Implementation/Fidelity assesses adherence to guidelines. The first two subsections are presented in quantitative form, the Adoption subsection is presented in qualitative form, and the Implementation/Fidelity subsection is presented in both quantitative and qualitative forms.

4.2 Baseline Characteristics of Quantitative study Participants

The study included 361 participants distributed across several facilities. The largest representation was from Mnazi Mmoja HC, with 100 participants (27.7%), while Segerea Dispensary had the fewest participants, with 16 (4.4%). The majority of participants were female, totaling 241 (66.8%). Age distribution showed that 19.1% were 16-25 years old, 23.8% were 26-35 years old, 28.3% were 36-45 years old, and 28.8% were 46 years or older. The majority of participants (55.7%) started ART before 2016. The WHO clinical stage was predominantly Stage 3 (39.1%), followed by Stage 1 (36.3%). Most participants (83.9%) were on a first-line ART regimen, with 66.2% (n=239) having an initial VL of over 10,000 copies. Table 2

Table 3: Sociodemographic and clinical characteristics of participants with unsuppressed viral load

Variable	n (%)
Facility	361
Mnazi Mmoja HC	100 (27.7%)
Amana Regional Referral Hospital	83 (23.0%)
Buguruni HC	74 (20.5%)
Tabata A dispensary	45 (12.5%)
Buguruni Anglican HC	17 (4.7%)
Kitunda Dispensary	13 (3.6%)
Kiwalani Dispensary	13 (3.6%)
Segerea Dispensary	16 (4.4%)
Sex	
Female	241 (66.8%)
Male	120 (33.2%)
Age (years)	
16-25	69 (19.1%)
26-35	86 (23.8%)
36-45	102 (28.3%)
46+	104 (28.8%)
Year started Antiretroviral Therapy	
<2016	201 (55.7%)
≥2016	160 (44.3%)
WHO clinical Stage at HVL test	
Stage 1	131 (36.7%)
Stage 2	76 (21.3%)
Stage 3	141 (39.5%)
Stage 4	9 (2.5%)

ART Regimen Type at HVL test	
First line	303 (83.9%)
Second line	58 (16.1%)
Initial HVL Results (Copies/mLs)	
1000-4999	78 (21.6%)
5000-10000	44 (12.2%)
10000+	239 (66.2%)
Median (IQR)	25400 (6440, 140000)

Key IQR=Interquartile range, HC=Health centre, HVL= HIV Viral load Result

Table 4: Social demographic characteristics of Qualitative participants

Facility ID	Participant ID	Sex	Age	Level of Education	Years of Experience
Amana RRH	1	F	-	Nursing Diploma	10
Vingunguti Dispensary	2	F	28	Nursing Diploma	5
Kiwalani Dispensary	3	F	29	Certificate	5
Buguruni Anglican HC	4	F	32	Nursing Diploma	7
Buguruni HC	5	F	46	Degree	12
Mnazi mmoja	6	F	36	Nursing Diploma	10

4.3 Reach

Out of 361 analyzed clients, 311 (86.2%) were successfully enrolled in EAC. In bivariable analysis, several factors were statistically associated with enrollment in EAC. These factors included age, sex, duration on ART, viral load count before initiation of EAC, WHO clinical stage, and current ART regimen. However, in the multivariable analysis, none of these factors were independently associated with EAC enrollment, except for the age group 16-25

years. Participants in the 16-25 age group had a significantly higher probability of being enrolled in EAC compared to those aged 26-35 years. Table 5

Table 5: Demographic and clinical characteristics associated with enrolment for EAC

Characteristic	Total	Enrolled on EAC	COR (95% CI)		AOR (95% CI)	
	N	n (%)		p-value		p-value
Total	361	311 (86.2)	-		-	
Gender						
Female	241	207 (85.9)	reference		reference	
Male	120	104 (86.7)	1.01 (0.56-2.02)	0.841	0.92 (0.46-1.81)	0.800
Age in years						
16-25	69	67 (97.1)	8.25 (1.84-37.11)	0.006	7.54 (1.60-35.57)	**0.011**
26-35	86	69 (80.2)	reference		reference	
36-45	102	83 (81.4)	1.01 (0.52–2.23)	0.843	1.00 (0.47–2.13)	0.998
46+	104	92 (88.5)	1.89 (0.85-4.21)	0.120	1.68 (0.67-4.23)	0.268
Duration on ART						
1995-2015	201	178 (88.6)	1.57 (0.99-1.07)	0.140	1.24 (0.59-2.62)	0.567
2016-2023	160	133 (83.1)	reference		reference	
Last WHO stage						
1	131	109 (83.2)	1.42 (0.28-7.27)	0.677	1.36 (0.24-7.66)	0.725
2	76	68 (89.5)	2.43 (0.43–13.75)	0.316	2.12 (0.36–12.65)	0.409
3	141	123 (87.2)	1.95 (0.38-10.14)	0.426	1.47 (0.27-7.98)	0.657
4	9	7 (77.8)	reference		reference	
First Viral load						
1000–4999	78	65 (83.3)	reference		reference	
5000–10000	44	39 (88.6)	1.56 (0.52–4.71)	0.430	1.53 (0.48-4.84)	0.473
10 000+	239	207 (86.6)	1.29 (0.64-2.61)	0.472	1.39 (0.67-2.88)	0.377
ART regimen						
1st line	303	261 (86.1)	reference		reference	
2nd line	58	50 (86.2)	1.01 (0.45-2.27)	0.989	0.79 (0.30-2.06)	0.629

4.4 Effectiveness of the EAC in viral load suppression

To assess the effectiveness of EAC in achieving viral load suppression, only data from clients who completed EAC sessions and had their results available were included in the analysis. Out of the 311 clients enrolled in the study, 256 (82.3) completed EAC sessions. Among these 256 clients, there was an improvement in viral load suppression following the completion of EAC, with 175 (68.4%) achieving suppression, 47 (18.4%) 21.2% remaining unsuppressed and 34 (13.3%) with unknown status (Figure 1). The median viral suppression was 39 (IQR; 11, 493).

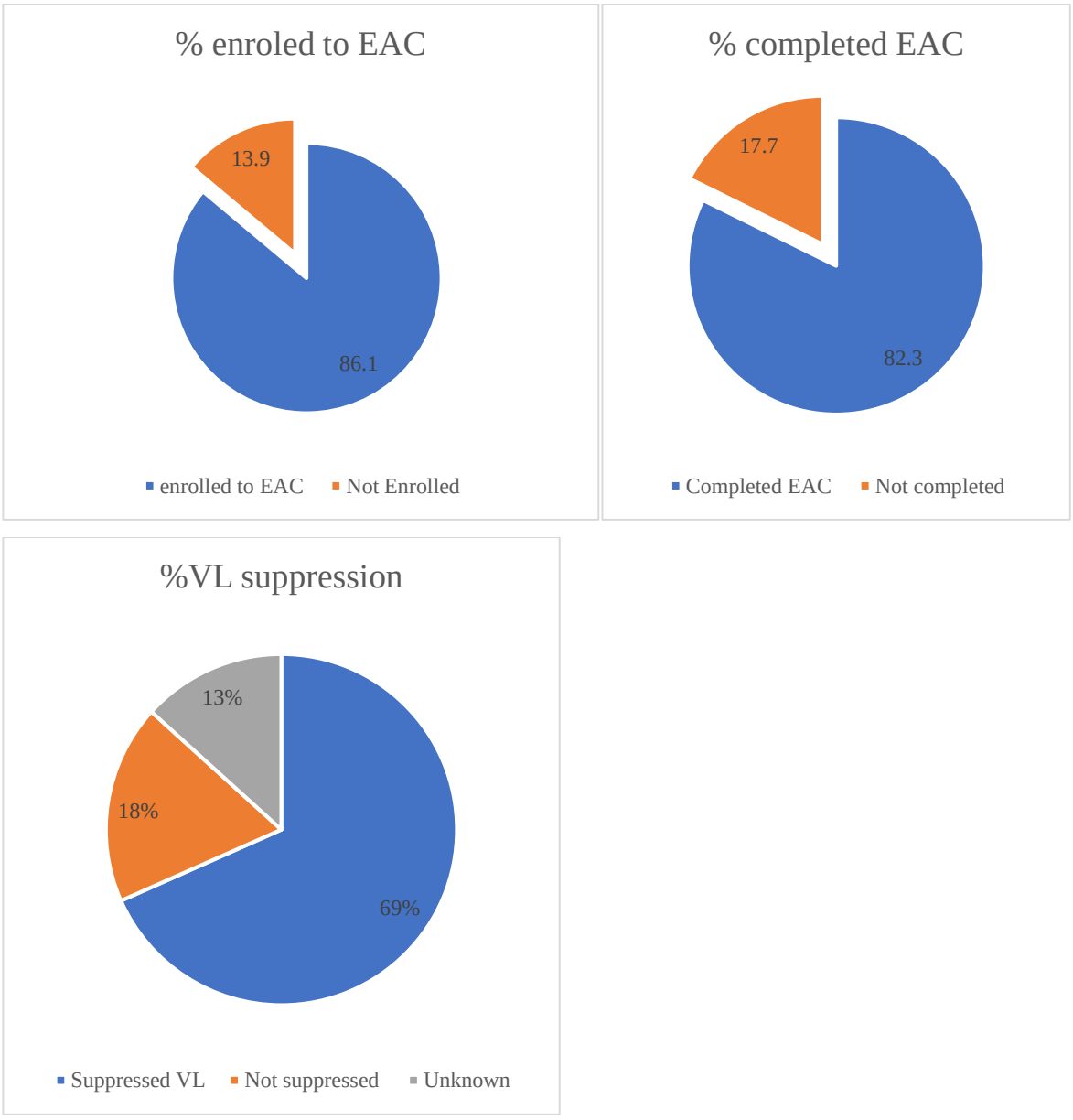


Figure 2: Pie chart showing percentage of VL suppression

4.4.1 Factors associated with Viral load suppression

In the bivariable binary logistic regression, six variables, including the Gender, Age of the participants, Duration on ART, VL count before initiation of EAC, WHO clinical stage, and Current ART regime were candidates for inclusion in the multivariable analysis. Participants with initial viral loads of 1000-4999 copies/mL had 1.41 times higher odds of achieving viral load suppression (AOR 1.41, 95% CI 1.18-1.67, P<0.05) compared to those with 10,000 copies/mL or more. Similarly, participants with initial viral loads of 5000-10000 copies/mL had 1.40 times higher odds of suppression (AOR 1.40, 95% CI 1.15-1.70, P<0.05) compared to the higher viral load group. Participants with age group 36-45 had 2.56 times higher odds of achieving viral load suppression (AOR 2.56, 95% CI 1.08–6.06, P<0.05) compared to those with age group 16-25.

Table 6: Patients factors associated with Viral load suppression

Characteristic	Total	EAC suppression	COR (95% CI)		AOR (95% CI)	
	N	n (%)		p-value		p-value
Total	256	175 (68.4)	-		-	
Gender						
Female	171	117 (68.4)	1.01 (0.58-1.76)	0.976	0.90 (0.49-1.66)	0.740
Male	85	58 (68.2)	reference		Reference	
Age in years						
16-25	53	33 (62.3)	reference		Reference	
26-35	55	37 (67.3)	1.25 (0.56–2.75)	0.586	1.43 (0.58–3.49)	0.437
36-45	67	51 (76.1)	1.93 (0.88–4.26)	1.102	2.56 (1.08–6.06)	**0.033**
46+	81	54 (66.7)	1.21 (0.59-2.50)	0.602	1.61 (0.74-3.48)	0.231
Duration on ART						
1995-2015	145	96 (66.2)	reference		Reference	
2016-2023	111	79 (71.2)	1.26 (0.74-2.15)	0.398	0.97 (0.50–1.88)	0.927
Last WHO stage						
1	91	66 (72.5)	3.96 (0.62-25.12)	0.144	4.39 (0.61-31.62)	0.142
2	53	36 (67.9)	3.18 (0.48-20.81)	0.228	3.92 (0.54-28.52)	0.177
3	104	68 (65.4)	2.83 (0.45-17.74)	0.266	3.73 (0.53-26.13)	0.185
4	5	2 (40.0)	reference		Reference	
ART regimen						
1st line	216	152 (70.4)	1.76 (0.88-3.51)	0.111	1.78 (0.80-3.95)	0.158
2nd line	40	23 (57.5)	reference		Reference	
First Viral load						
1000–4999	**56**	**46 (82.1)**	**2.99 (1.14-6.33)**	**0.004**	**3.53 (1.62-7.69)**	**0.001**
5000–10000	**30**	**26 (86.7)**	**4.23 (1.14–12.66)**	**0.010**	**3.96 (1.27-12.32)**	**0.017**
10 000+	170	103 (60.6)	reference		Reference	

4.5 Adoption of EAC among EAC counselor

In exploring the adoption of EAC among counselors in Ilala Municipality, I structured the data around four key themes.

4.5.1 Counsellors' knowledge on EAC

EAC counsellors demonstrated clear understanding of the EAC practical knowledge and criteria for enrolling clients with unsuppressed Viral load into EAC. A client is considered suppressed with EAC when the VL is less than 1000 copies/ml after repeat VL test. They conducted 3 main EAC sessions or with an extra fourth session if a barrier seems not to be addressed. This was quoted from participant number 4;

> *"We conduct EAC three times. The first session involves providing them with their results, identifying their barriers, and giving them strategies to stay away from factors that lead to high viral loads. We then continue with follow-up during the second visit, which occurs in the second month of EAC. The third and final session is conducted after the third visit, and during the fourth visit, we assess whether the strategies discussed have been effective".* Participant number 4)

All the interviewed counselors reported having awareness of the eligibility criteria for enrolling participants in EAC. This was emphasized by a participant number 2, who stated:

> **"***In the first EAC session, we sit with the client, and when we first receive their results, showing a viral load over 1000, we review their previous results. If their past results were good, we start by asking what challenges they are facing".* (Participant number 2)

Another counselor mentioned similar results that;

> ***"****All patients with a viral load of more than one thousand are started on enhanced adherence counselling for three months before taking the second viral load test".* (Participant number 6)

4.5.2 Resources for implementing EAC

All visited health facilities have been observed to have at least one EAC counselor designated to perform counseling services for clients with unsuppressed viral loads. Guidelines and forms used for EAC counseling are readily available at all facilities. However, almost all facilities visited in Ilala Municipality, including Amana RRH, reported not having a VL machine. Despite this, they perform viral load tests at Temeke RRH as a mandatory measure for all ART-naive clients after six months of ART and for all continuing clients annually, as well as after EAC to confirm VL suppression status. Facilities have also reported having rooms with necessary privacy for counseling services and have taken steps to secure a special day for clients with high viral loads, ensuring they have enough time to discuss and address their challenges. Participant number 1 mentioned*:*

> *"As you see, I'm here alone. Each counselor is supposed to have their own space; we do not mix counselors with clinicians"*. (Participant number 1)

Participant 5 stated that;

> *"The guidelines are well-established, instructing us on what to do, including forms where the client specifies their concerns"*. (Participant number 5)

4.5.3 Training on EAC

Additionally, counselors reported being adequately trained on the conduct of EAC during their practice. Some mentioned that their years of experience have equipped them with best practices, contributing to effective implementation of EAC. However, most respondents indicated that their training was outdated. Participant number 4 mentioned that;

> *"When I started working, I received on-the-job training, and fortunately, I was in a large site. I mentioned I had worked in Mnazi, so in Mnazi, you encounter different challenges. You sit and observe how people can deal with clients"*. (Participant number 4)

4.5.4 Perceived benefit of EAC

The findings from EAC counselors' experiences indicate that EAC was viewed as an effective intervention to be undertaken to patients with unsuppressed viral load. Respondents

noted that it was a very useful strategy in ensuring ART adherence and achieving VL suppression. Participant number 3 mentioned that;

> *"EAC is helpful because it allows the client to recognize their challenges and understand that these challenges have led to the high viral load".* (Participant number 3)

Another counsellor mentioned that;

> *"Among the people I work on, a large percentage benefit greatly from EAC. They come back transformed".* (Participant number 5)

4.6 Fidelity of implementing EAC intervention

Out of the 311 patients enrolled in EAC, 256 completed the EAC sessions. Of those who completed the sessions, 220 patients (94%) did so within three months, while 14 patients (6%) exceeded this timeframe. Additionally, among the 256 patients who completed EAC, 222 had their repeated viral load test results available.

4.6.1 Median Time to the Start of EAC Session after High Viral Load Detected.

The median time to the start of the EAC sessions after a high viral load (>1000 copies/ml) was detected was 27 days (IQR 16-49). Females began EAC slightly earlier compared to male 26 days (IQR 13-45). According to age groups individuals aged 26-35 showed to start later at 28 days (IQR 20-71 days).

4.6.2 Time to Complete Enhanced Adherence Counselling

The median time to complete the EAC sessions was 9 weeks (IQR 8-10 weeks). This was consistent across age groups and sex, although in this study majority of the participants 235 (91.9%) completed EAC sessions within 3 months and only 21 (8.2%) completed after 4 months of initiation of counselling sessions.

4.6.3 Median time to take second Viral load test

The median time to take a second viral load test following completion of EAC session was 30 days (IQR 28-39 days). This was slightly varying across the age and sex. The shortest median time was observed in males at 29 days (IQR 27-32 days), while the longest median time was found in the 26-35 age group at 31 days (IQR 28-49 days).

Table 7: Time from high viral detected to EAC session start and time from EAC complete to repeated viral load.

Variable	Median (IQR)		
	Time to initiate EAC (days)	**Time to complete EAC (weeks)**	**Time to repeat VL test after EAC (days)**
Overall	27 (16, 49)	9 (8, 10)	30 (28,39)
Sex			
Female	26 (13, 45)	9 (8, 11)	30 (28,40)
Male	27 (19, 57)	9 (8, 10)	29 (27,32)
Age (years)			
16-25	27 (18,38)	9(8,10)	30 (28,35)

4.7 Qualitative findings

To understand how EAC was implemented among patients on ART with high viral load counts, I identified five main themes.

4.7.1 Conduct of the EAC

Counselors emphasized that they follow the EAC guidelines to conduct Enhanced Adherence Counseling sessions. EAC is reported to be conducted after initial high viral load results, which is taken after 6 months of ART for newly diagnosed clients and yearly for other clients. EAC counselors reported that EAC is conducted in three sessions, with each session held monthly for three months. Sometimes, **an extra session** is added during the third session if the barrier seems unresolved before the second viral load test is offered, but challenges such as client availability and high workloads sometimes prevent this from happening as scheduled. Participant number 5 mentioned that;

> "*We conduct EAC over three months, for instance, in May, June, and July, and then we perform the second test in August. An extra session is added if, after three sessions, the client still shows poor adherence to their medication".* Participant number 5

4.7.2 Comprehensive Approach

Regarding the conduct of EAC, counselors reported that to identify barriers to medication adherence and subsequent VL suppression, they address all aspects highlighted in the guidelines, such as behavioral, cognitive, and emotional factors. Counselors reported that by following this approach, they can identify the specific challenges each client is facing. From there, they can determine the best way to provide assistance. This method allows counselors to tailor their support to the individual needs of each client, ensuring that the strategies developed are relevant and effective. By understanding the unique barriers to adherence, counselors can offer more personalized and impactful guidance, ultimately improving the clients' adherence to their treatment plans. This was specifically reported by participant number 4.

> **"***As we discuss, EAC covers various aspects, such as behavioral, cognitive, or emotional factors. This comprehensive approach helps us understand the client's situation in more depth and provides targeted support"*. (Participant number 4)

This was also quoted by participant number 1:

> *"Yes, this is the ministry's form. That's why I mentioned there are three aspects to consider; cognitive, behavioral, emotional, and socio-economic. By examining these, you'll understand why the patient isn't taking their medication properly and why their viral load is high"*. (Participant number 1)

4.7.3 Patient-Centered Manner

Counselors understand that patients with virological failures face unique and complex challenges. To address these, EAC is conducted in a patient-centered manner, focusing on identifying and overcoming individual barriers to medication adherence.

During EAC sessions, counselors engage with patients to explore the specific reasons behind their poor adherence. This involves a detailed discussion of behavioral, cognitive, and emotional factors that may be influencing the patient's ability to follow their treatment plan. Counselors then work collaboratively with the patients to develop tailored strategies aimed at overcoming these challenges.

Furthermore, the counseling process does not end with the initial session. Counselors continuously follow up with patients to monitor their progress towards the set strategies, ensuring that they are on track and making adjustments as needed. If new challenges arise during the follow-up period, these are promptly addressed, and new strategies are developed to ensure sustained adherence. This ongoing support and personalized approach significantly enhance the effectiveness of the counseling and improve overall treatment outcomes for the patients. Participant number 6 said*:*

> *"There is a first session where we try to identify the root cause of the problem. Once we know what the issue is, we address it and develop strategies together, or the counselor helps to create strategies. But the person must understand what the problem is and what actions they need to take since they are the one taking the medication. You advise them and then follow up on those strategies".* (Participant number 6)

4.7.4 Designated Day for Focused EAC

Due to the unique challenges faced by these clients, counseling typically requires a longer duration. To ensure effective counseling, facilities have scheduled at least one day each week dedicated to seeing these clients for an adequate amount of time. During these visits, clients first receive group counseling and then individual sessions to identify and address their adherence challenges. This was reported by participant number 1, as follows:

> ***"****All clients with a high viral load are scheduled for Tuesday, which we call the viremic clinic. So, we start with group counseling and then proceed to individual counseling".* (Participant number 1)

This approach was not unique to one facility; other facilities have also adopted this method to provide more time and focused counseling for clients in need. This was also reported by participant number 3;

> *"The challenge is that these clients need more time. We have a special clinic for our clients with high viral loads on Thursdays, like today.....Today, for example, there are fewer clients, so we have more time to talk to each one".* (Participant number 3)

4.7.5 Implementation challenges

EAC is only conducted after the initial VL results are back and indicating viral load unsuppression. Although most facilities in Ilala municipality still don't have VL machines, samples are sent elsewhere. The average turnaround time is reported to be from 2 weeks to one month; however, some samples have a higher turnaround time than expected this cause delay in initiation of EAC to eligible client. Participant number 5 mentioned that;

> "*The availability of results sometimes causes us problems. It can happen that by the time the client arrives at the center, we follow up on the results and find that we don't have them, neither in soft copy nor hard copy".* (Participant number 5)

Participant number 6 also said*:*

> *"Occasionally, there are delays. Previously, results would be available within three days, but now they can be delayed up to two weeks…. In Dar es Salaam, the viral load machine is only available at Temeke".* (Participant number 6)

Several other factors have been identified as contributing to the delay in the timely initiation of Enhanced Adherence Counseling. For instance, patients who have been adhering to their medication regimen for six months may find it challenging to promptly return for counseling upon discovering a high viral load. This reluctance is often compounded by the prospect of another six-month medication cycle. Additionally, professions that involve extensive travel, such as truck drivers, encounter logistical difficulties in attending counseling sessions regularly. Furthermore, individuals who require permission from their employers to attend counseling face additional barriers, further hindering timely initiation.

> *"Patients not showing up on time is an issue. For example, if you receive the results today and decide to call them to come in tomorrow or next week, they might promise to come but fail to show up or be unreachable. Some might say they are in a bad location and do not want to disclose their status. Others, like drivers who were given a six-month supply of medication, might be out of the country, such as at the Congo border, and sometimes cannot be reached"* (Participant number 6)

A significant challenge in the implementation of EAC, as mentioned by several counsellors, is the shortage of staff dedicated to counselling. This often hampers the proper execution of EAC, as these clients need sufficient time and attention. However, the lack of adequate staff can lead to the counsellors being overwhelmed with work, sometimes resulting in rushed counselling sessions to make room for others. participant number 2 highlighted this issue, stating:

> "*We are currently only two staff members here—my colleague is a doctor, and I am the only counsellor".* (Participant number 2)

CHAPTER FIVE

5.0 DISCUSSION, STRENGTH AND LIMITATION

5.1 Discussion

The study aimed at evaluating the implementation of the EAC using REAIM framework. The study results show that out of 361 patients with high viral loads, 311 (86%) had enrolled for EAC, 256 (82.3%) completed EAC, 71.4% had undergone a repeat viral load testing and only about (64.4%) who completed EAC had achieved viral load suppression. The implications of the study are as follows:

In this study we found that, out of 361 patients with high viral load (311) 86.1% got enrolled into EAC indicating there was enrollment inconsistency in the uptake of the EAC. This finding was consistent with the study conducted in Zimbabwe(19). But lower compared to the study conducted by Nasuuna et al, this difference could be attributed by the fact that this study was conducted 2015 before introduction of EAC in Uganda, indicating EAC has contributed the knowledge of health care workers. High uptake of EAC was contributed by adequate understanding of EAC procedures among counsellor(39).

As per our study results, except for the age group 16-25years, none of the routinely recorded demographic and clinical characteristics were independently associated with enrolment into EAC. However, other factors identified in our study which hinder consistent enrollment include; patient reluctance to return after being prescribed 6-month medications, long distances for truck drivers, lack of permission from employers, financial constraints, and changes in phone numbers or residence

There was an improvement in viral load suppression after completing EAC, with a final outcome of 68.36%. This result is similar to a study conducted in Ethiopia(40) but significantly higher than the viral suppression rates reported in Zimbabwe and Uganda(19,24). This suggests that the intervention is effective in approaching the WHO target, as the suppression rate is close to the 70% benchmark. EAC has been recommended by the WHO for patients suspected of virological failure before switching to second-line treatment. As a result, EAC plays a crucial role in preserving the second-line regime(12).

This could reduce healthcare expenses, pill burden and limit the spread of resistant strains from newly infected individuals.

Factors associated with achieving viral suppression included age and initial viral load count; In our study we found Participants with age group 36-45 had 2.56 times higher odds of achieving viral load suppression compared to those with age group 16-25. This is consistent with other studies younger individuals, including adolescents and young adults, tend to have lower rates of viral load suppression compared to older populations(41). Lower rate of viral suppression among children and adolescents compared to adults in our data indicate children and adolescents continue to have lower suppression rates following EAC. The phase of mental development in young people is often linked to mental health challenges and a lack of adequate social support. Earlier studies have indicated that the psychosocial well-being of young individuals can significantly influence their VLS, retention in HIV care, and their transition from pediatric to adult HIV care. Therefore, addressing psychological issues, facilitating a smooth transition from pediatric to adult HIV care, and providing ongoing support to young people are crucial steps(42,43).

In our study, we found that individuals with viral load levels between 1,000 to 4,999 copies/mL and 5,000 to 10,000 copies/mL are more likely to achieve viral load suppression compared to those with viral load levels greater than 10,000 copies/mL. Similar findings were reported in a study conducted in Uganda, where individuals with initial viral load results above 5,000 copies/mL were less likely to achieve viral suppression at follow-up testing compared to those with lower viral loads (44,45). These findings indicate that initial viral load levels can predict virological failure in patients who adhere well to treatment. This can be due to the fact that higher viral load easily multiplies and become resistant to ART drugs(46). Therefore, patients with high baseline adherence levels may not derive additional benefits from intensified adherence counseling. Future studies in our context should explore baseline adherence levels and evaluate the efficacy of EAC in achieving viral suppression among patients with varying adherence levels.

Even though in our findings most factors were not statistically significant, which could be attributed to the fact that our study faced challenges arising from incomplete data and only

complete and well documented EAC data were included in the logistic regression. These studies also reviewed the challenge of no collection of repeat viral loads post EAC sessions, a finding that is similar to that of our findings.

On adoption of EAC, Counselors in Ilala municipality demonstrate a clear understanding of EAC, including practical knowledge and criteria for enrolling clients with unsuppressed viral loads. This knowledge is crucial for the effective implementation of EAC, ensuring that clients who need enhanced support are appropriately identified and enrolled. According to WHO guidelines, proper identification of patient with virological failure and enrollment to EAC are vital for timely intervention and improving adherence to ART which is critical for achieving viral suppression and reducing HIV-related morbidity and mortality(47,48).

Regarding the resources available for the implementation of EAC, all visited facilities have at least one designated EAC counselor, privacy room and the necessary guidelines and readily available EAC forms, which are fundamental for standardizing the counseling process. These resources are affective for the adoption and delivery of full EAC package(29). However, most facilities lack viral load testing machines, necessitating the transportation of samples to other locations for testing. This issue is particularly prevalent in resource-limited settings, as highlighted by various studies (49).

In this study we found that all interviewed counselors reported having received training, either on-the-job or formal, these trainings were often reported to be outdated. Continuous professional development is crucial for maintaining the quality of healthcare services. Refresher trainings are essential to update existing knowledge and introduce new information, ensuring that counselors are equipped with the latest best practices to make informed decision. As mentioned in the literature, regular, up-to-date training and regular supervision enhance the effectiveness of adherence counseling interventions, leading to better patient outcomes(50).

Counselors reported that EAC enables clients to better understand the importance of adherence to their ART regimen. Through personalized support and education, clients become more aware of the challenges they face and the strategies they can use to overcome them. Research supports this view, showing that tailored counseling interventions can lead

to substantial improvements in ART adherence. World Health Organization has recommended EAC as an effective intervention to improve ART adherence among people living with HIV on ART with unsuppressed viral load(51).

In this study, we identified several implementation challenges that hinder the proper execution of EAC in Tanzania. These challenges include inadequate numbers of counselors and the absence of viral load testing machines in almost all facilities within Ilala municipality. The absence of VL machines forces health centers to send samples to other locations, causing delays in obtaining VL results and undermining the timeliness and effectiveness of EAC. Shortage of healthcare workers and the absence of multidisciplinary teams have shown to limit the comprehensive support needed for clients to improve adherence(39). Efforts should focus on increasing the number of trained counselors and enhancing the overall capacity of the healthcare system to provide comprehensive, high-quality EAC services.

The lack of immediate access to VL testing can delay the assessment of treatment efficacy and the timely adjustment of ART regimens, which is essential for maintaining viral suppression(52). To address this gap, additional VL machines should be provided to these facilities to ensure timely and efficient monitoring of patients' response to treatment and adherence. Improving the availability of viral load testing machines through the use of point-of-care (POC) testing presents significant benefits. These include rapid result delivery, expedited intervention when necessary, and improved viral suppression and retention in care. This approach removes barriers to achieving viral suppression and ensures that counselors have the necessary resources for the effective implementation of Enhanced Adherence Counseling (49).

On the conduct of EAC counselors reported to follow established EAC guidelines to provide structured support for clients with high viral loads which involves the initiation of EAC after the first high viral load result, typically 6 months post-ART for new clients and annually for others. During these counselling they address behavioral, cognitive, and emotional factors affecting medication adherence(12). By identifying and targeting these specific barriers, counselors offer personalized strategies to improve adherence. Continuous follow-up ensures

that progress is monitored and strategies are adjusted as needed, enhancing the overall effectiveness of the counseling

Facilities have dedicated specific days each week to focus on clients with high viral loads, allowing for more time-intensive and effective counseling sessions. These days typically involve both group and individual counseling to thoroughly address adherence challenges. This approach has been shown to improve efficiency and effectiveness in the provision of services, allowing extensive group interaction and discussion between healthcare workers and clients on adherence issues that may be affecting them(39).

The study highlighted significant delays in initiating EAC after detecting high viral loads, with a median delay of 27 days (4 weeks). This time was short compare the study conducted in Ethiopia by Diress et. al, where the median time to start EAC was 8 week(13). This delay suggests shortcomings in managing patients with high viral loads, potentially impacting the timely detection of treatment failure. Prompt initiation of EAC for patients with high viral load, along with the timely completion of at least three EAC sessions, is a critical part of healthcare workers' response to elevated viral loads. This approach supports patients in achieving viral suppression or identifying potential treatment failure(29). Delay in addressing their specific barriers can increase the likelihood of poor treatment outcomes(53)

While the majority (91.9%) of patients completed their EAC sessions within the recommended 12 weeks, the median time for their completion was 9 weeks. This suggests that half of the patients completed their EAC sessions sooner than the recommended time of 12 weeks.

Challenges such as long travel distances to healthcare facilities, concerns about non-disclosure and stigma, financial constraints, and difficulties obtaining permission from employers were identified as reasons for delays and incomplete sessions. Previous studies also showed that long travel distance and lack of money for traveling to health institution affect ART adherence and follow-up visit within the recommended time(54). Addressing these barriers is crucial to improve patient management and ensure timely intervention for HIV treatment adherence.

The median time to conduct a repeated viral load test following EAC was 30 days, indicating relatively prompt follow-up after adherence interventions. Although WHO guidelines recommend repeat VL testing within 3 months of an unsuppressed VL, and adherence support in the intervening period to confirm or exclude treatment failure(55), but guideline require that good adherence is first established (through EAC), after a repeat VL is offered(12).

5.2 Strength and Limitation

A major strength of the study was the inclusion of all health facilities that serve more than 1,000 individuals, ensuring broad representation. Additionally, concurrent qualitative interviews were conducted in selected facilities to complement the quantitative findings, enriching the overall analysis. Quantitative data were gathered from patient medical files, EAC forms, and the CTC 2 database, which are the primary sources of patient information in the country. The triangulation of data from these multiple sources helped address issues of incomplete data in patient files, enhancing the robustness and reliability of the study results.

The key weakness of this study is that data were collected by documentary review and hence, the analysis and interpretation of the data are restricted to only those variables that are captured in the patient records. Some of the important variables, such as wealth index, distance to health institutions, and substance use, which could have played a major role in initial viral load testing, were not accessible.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The study aimed to evaluate the implementation of EAC using the RE-AIM framework, revealing significant insights into its efficacy and challenges. Out of 361 patients with high viral loads, 311 (86%) enrolled in EAC, with 256 (82.3%) completing the program. Moreover, 71.4% underwent repeat viral load testing, and 64.4% of those who completed EAC achieved viral load suppression, indicating a generally successful uptake. The study found a final suppression rate of 68.36%, approaching the WHO target of 70%, suggesting EAC effectiveness.

Factors influencing viral suppression included age and initial viral load levels, emphasizing their predictive value for treatment success. Despite these positive outcomes, the study identified several implementation challenges, including shortages of viral load testing machines, inadequate numbers of trained counselors, and logistical issues like long travel distances and financial constraints faced by patients, leading to delays in initiating and completing EAC. All facilities had at least one designated EAC counselor, privacy rooms, and necessary guidelines, essential for standardized counseling, though up-to-date training for counselors was needed.

Counselors demonstrated a clear understanding of EAC, following guidelines to provide structured support through dedicated days for EAC sessions, enhancing adherence through personalized strategies and continuous follow-up. However, a median delay of 27 days in initiating EAC post-high viral load detection and barriers like long travel distances, financial constraints, and stigma were identified as significant issues. Addressing these barriers is crucial to improving the overall effectiveness of EAC.

6.2 Recommendations

This study provided important information regarding the status of the implementation of EAC in Dar es salaam, Tanzania. It therefore recommends the following:

1. PORALG/MoHCDGEC – The Human Resource Management and Administration departments in PORALG and MoHCDGEC should ensure sufficient staffing at CTC clinics and health facilities to alleviate the workload on staff, particularly EAC counselors. This is crucial to prevent service delivery gaps in EAC due to potential staff overload.
2. MoH and Implementing partners to address the shortage of viral load testing machines in facilities, especially in resource-limited settings by considering investing in point-of-care testing to ensure timely results, reducing delays in decision-making and enhancing patient outcomes.
3. Implementing partners- To establish and maintain a training schedule that will ensure that all new staff, either newly employed or rotated from other departments, are trained on the conduct of EAC. They should also offer refresher courses for the previously trained providers so as to keep them up to date.
4. Hospital Management Team – The HMT can support the implementation of EAC by increasing the number of trained counselors as per facility demand to reduce workload and improve the quality of EAC sessions.
5. Ministry of health and implementing partners to strengthen multi-displinary team in the management of HIV to ensure a holistic approach that involves healthcare, community, and economic support.
6. MoH to increase support for young people (adolescents and young adults) by integrating mental health services within HIV care, ensuring smooth transition from pediatric to adult care, and addressing psychological barriers to adherence.
7. EAC counsellors – Counselors can enhance the implementation of EAC by maintaining self-motivation, adhering to the EAC protocol for timely enrollment, ensuring all recommended viral load tests are conducted promptly, and properly documenting results to track patient outcomes effectively.

8. Future studies evaluating the implementation of EAC should include longitudinal follow-up of patients enrolled in the program to assess long-term adherence and viral suppression outcomes. These studies should also incorporate variables such as wealth index, distance to health institutions, and substance use, which can significantly influence initial viral load testing and treatment outcomes.

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ANNEXES

ANNEX I: PATIENT MEDICAL REVIEW- DATA EXTRACTION FORM

Name of health Facility……Questionnaire No _____

1. Participant ID _____

1. Sex
   a. Male
   b. female
2. Age in years _____
3. Name of the health facility_____
4. Level of the health facility
   a. Hospital
   b. Heath center
   c. Dispensary
5. Date of ART start_____(d/m/y)
6. ART regime
   a. First line
   b. Second line
   c. Third line
7. WHO clinical stage
   a. Stage i
   b. Stage ii
   c. Stage iii
   d. Stage iv
8. Initial HVL results _____(copies/ml)
9. Was the patient enrolled into EAC
   a. Yes
   b. No
   c. Not documented
10. Date of EAC start _____(D/M/Y)
11. Completed EAC
    a. Yes
    b. No
    c. Not documented
12. Date of EAC completion _____(D/M/Y)
13. Underwent VL test after EAC?
    a. Yes
    b. No
    c. Not documented
14. What was the level of VL after EAC?

a. _____(copies/ml)
b. Results not available

ANNEX II: EAC COUNSELLORS INTERVIEW GUIDE (English version)

BACKGROUND INFORMATION					
Health Facility Name					
Job Title or Position					
Age					
Sex			|___| Male |___| Female	
Highest education level			|___| Bachelor degree |___| Diploma |___| Certificate |___| Secondary education |___| Primary education	
Duration of service as an EAC counsellor			|___| Years and |___| Months	
Date (mm-dd-yy):		Start time (hh:mm):		End time (hh:mm):	

PRIMARY QUESTIONS	***PROBING QUESTIONS*** ***(to be supplemented by additional probes based on responses)***
1. Thank you for your time. I would like to know your roles in providing Enhanced Advice and Counseling	What circumstances can lead someone to undergo EAC?
2. How is EAC conducted for patients suspected to have a high viral load?	Please explain: (i) The number of sessions. What contributes to the delay in EAC? What leads to the increase or decrease in the number of sessions? (ii) The duration for conducting EAC and is the reason for time variation (iii) The presence of official guidelines used. Timeliness of receiving VL results? The absence of second VL results.
3. What challenges have you encountered in implementing EAC activities?	Explain i) Personal challenges ii) (ii) Facility and systemic challenges, including those related to the facility, individuals, and

	patients (such as lack of human resources and equipment, guideline or EAC forms, multiple responsibilities, and the time taken to test and return viral load results), (iii) The availability of a private room, (iv) How you have been able to address these challenges.
4. To be an effective counselor, you need to be formally prepared for this role. Can you explain how you have been prepared and supported in providing EAC services?	Probe (i) The availability of on-the-job training, (ii) How often has it been conducted? (iii) How long were the past training sessions? (iv) Areas where more training is needed.
5. Provide a real-life example to explain how you think EAC benefits patients with a high viral load.	i) How is it helpful? ii) What can be improved to increase its effectiveness?
6. Do you have any final comments or suggestions on how the services provided to EAC patients at this facility can be improved?	a. Are there any changes that could make your role as an EAC counselor easier or more effective? b. What would you advise hospital administrators and policymakers to ensure a robust EAC program?

KIAMBATANISHO III: MAPITIO YA MATIBABU YA MGONJWA/ FOMU YA UCHIMBAJI WA TAKWIMU (Kiswahili)

1. Utambulisho wa mshiriki _____

2. Jinsia

    a. Mme
    b. Mke

1. Umri kwa miaka _____
2. Jina la kituo cha kutolea huduma za afya _____
3. Ngazi ya kituo cha kutolea huduma za afya
    a. Hospitali
    b. Kituo cha afya
    c. zahanati
4. Tarehe ya kuanza ART_____(d/m/y)
5. Aina ya ART
    a. Mstari wa kwaza
    b. Mstari wa pili
    c. Mstari wa tatu
6. Hatua ya ugonjwa ya WHO
    a. Hatua ya 1
    b. Hatua ya 2
    c. Hatua ya 3
    d. Hatua ya 4
7. Majibu ya awali ya wingi wa virusi _____(kopi/ml)
8. Alianzishiwa vikao ya EAC
    a. Ndio
    b. Hapana
    c. Haijaandikwa
9. Tarehe alioanzishiwa vikao ya EAC _____(D/M/Y)
10. mgonjwa alikamilisha vikao vyote vya EAC
    a. Ndio
    b. Hapana
    c. Haijaandikwa
11. Tarehe aliyomaliza EAC _____(D/M/Y)
12. Alifanyiwa kipimo cha wingi wa viri baada ya EAC

    a. Ndio

    b. Hapana

    c. Haijaandikwa

14. Kiasi cha wingi wa virusi baada ya EAC?

    a. _____(copies/ml)
    b. Majibu hayakupatikana

KIAMBATANISHO IV: MUONGOZO WA MAHOJIANO NA WATOA HUDUMA WA USHAURI NASAHA ULIOIMARISHWA (EAC) (Kiswahili)

TAARIFA ZA AWALI					
Jina la kituo					
Cheo za kazi					
Umri					
Jinsia	|___| Me |___| Ke				
Kiwango cha juu cha elimu	|___| Shahada |___| astashahada |___| Certificate |___| Elimu ya secondary |___| Elimu ya Primary				
Muda uliokua mtoaji ushauri	|___| Miaka na |___| Miezi				
Tarehe (mm-ss-mk):		Muda wa kuanza (hh:mm):		Muda wa kumaliza (hh:mm):	

PRIMARY QUESTIONS	***PROBING QUESTIONS*** ***(to be supplemented by additional probes based on responses)***
1. Asante kwa muda wako. Ningependa kujua majukumu yako katika kutoa ushauri Ulioimarishwa/ EAC.	Ni mazingira gani yanaweza kusababisha mtu kupitia EAC?
2. EAC inafanyikaje kwa wagonjwa wanaoshukiwa kuwa na wingi wa virusi?	Tafadhali eleza (i) idadi ya vikao, Nini kinachangia kucheleweshwa kwa EAC? nina kinapelekea kuongeza au kupunguza idadi ya vikao (ii) muda unaotumika kufanya EAC (iii)uwepo wa miongozo rasmi inayotumika. Upatikanaji wa majibu ya VL kwa wakati? kutokuwepo kwa majibu ya pili ya VL.

3. Ni changamoto zipi ambazo umekumbana nazo katika kutekeleza shughuli za EAC?	Chunguza: I) changamoto binafisi, ii) changamoto za kituo na changamoto za kimfumo, kituo, binafsi, wagonjwa (ukosefu wa rasilimali watu na vifaa, majukumu mengi, muda wa kupima hadi kurudisha majibu ya wingi wa virusi, iii) chumba cha usiri. iv) Ni kwa namna gani umeweza kutatua changamoto.
4. Ili uweze kua mtoa mshauri mzuri unahitaji kua umeandaliwa rasmi kwa ajili ya kazi hii. Unaweza kunieleza jinsi gani umejiandaa na kuungwa mkono katika kutoa huduma za EAC?	chunguza; i) uwepo wa mafunzo kazini, ii) yamewahi kifuanyika mara ngapi? iii) yaliyopita yalikua ni ya muda gani, iv) maeneo wanayohitaji mafunzo zaidi.
5. Elezea kwa kutoa mfano hai unafikiri EAC ina msaada gani kwa wagonjwa wenye wingi wa virusi.	iii) Yanasaidia vipi? iv) Nini kiboreshe kuongeza ufanisi?
6. Je! Una maoni yoyote ya mwisho au maoni juu ya jinsi huduma inayotolewa kwa wagonjwa wa EAC katika kituo hiki inaweza kuboreshwa?	▪ Je! Kuna mabadiliko yoyote ambayo yanaweza kufanya jukumu lako kama mshauri wa EAC kuwa rahisi au bora? ▪ Je! Ungeshauri nini kwa wasimamizi wa hospitali, watunga sera kuhakikisha mpango madhubuti wa EAC?

ANNEX V: CONSENT ENGLISH VERSION

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIEND HEALTH SCIENCES
DIRECTORATE OF RESEARCH AND PUBLICATIONS.
PARTICIPATION INFORMATION SHEET.

Introduction

Greetings! I am Ms. Anna, a postgraduate student (PMMEH) of Muhimbili health and allied Sciences University conducting a study titled "Assessment of Implementation of Enhanced Adherence Counselling among HIV patient with unsuppressed viral load in Dar es Salaam,

Purpose of the study

The study is expected to establish a better understanding of the implementation of Enhanced adherence counselling for HIV clients who are suspected to have virological failure after 6 months of antiretroviral therapy (ART). As an EAC counselor, we would like to understand to what extent you have adopted the implementation of EAC in your health facility. The study also will be part of the partial fulfilment of the master's of project management monitoring and evaluation for health that I undertake at the Muhimbili University of Health and Allied Sciences (MUHAS).

Procedures

If you agree to participate in this study, the researcher will conduct an in-depth interview to assess your adoption of Enhanced adherence counselling in your daily activities as EAC counselor. Participation in this study is voluntary, and you are free to withdraw at any point. Your refusal will not affect the health services you are supposed to receive. The time required for the interview is approximately 30 minutes, and there is no cost associated with your participation in this study.

Confidentiality.

I would like to assure you that all the information collected will be confidential. Only people Working on this study will have access to the information. We will not use names on the Records of the information you provide.

Risks.

No harm is anticipated to come upon you by joining this study.

Rights to withdrawal and alternatives

Taking part in this study is completely at your will. If you choose not to participate in this Study or if you decide to stop participating in the study you will not get any harm. You can Stop participating in this study at any time, even if you have already given your consent. Refusal to participate or withdrawal from the study will not involve penalty or loss of any Benefits to which you are otherwise entitled.

Benefits

It will give an idea and help local authorities on well they can improve provision of Enhanced adherence counselling services among people who are living with HIV and improve their life.

Reimbursements:

You will not be paid any money for participating in this research.

Who to contact if you have any question about this study.

In case of any questions about this study please don't hesitate to contact Principal Investigator, Ms. Anna; Muhimbili University of Health and Allied Sciences (MUHAS), (Tel. No. +255717259466).

PARTICIPANT CONSENT

I have read or it has read to me loudly about the study to be conducted and its advantages, I voluntarily agree/disagree to participate in this study

Name of interviewee_____

Signature or thumb print _____date___/____/2023

Name of person obtaining consent _____

Signature _____date____/___/2023

KIAMBATANISHO VI: FOMU YA IDHINI

CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI

MKURUGENZI WA UTAFITI

KARATASI YA HABARI ZA USHIRIKI.

Utangulizi

Salamu! Mimi ni Bi Anna, mwanafunzi wa shahada ya uzamili (PMMEH) wa Chuo cha Afya na sayansi shiriki Muhimbili, naendesha utafiti unaoitwa "Kutathmini utekelezaji wa ushauri ulioimarishwa wa ufuasi (EAC) katika kuboresha ufuasi wa ART miongoni mwa wagonjwa wasiotii.

Madhumuni ya utafiti

Utafiti unatarajiwa kupata uelewa mzuri wa utekelezaji wa Ushauri wa Ufuasi ulioboreshwa kwa wateja wa VVU ambao wanashukiwa kuwa na kushindwa kwa virusi baada ya miezi 6 ya tiba ya kurefusha maisha (ART). Kama mshauri wa EAC, tungependa kuelewa ni kwa kiwango gani umekubali utekelezaji wa EAC katika kituo chako cha afya. Utafiti huo pia utakuwa sehemu ya utimilifu wa sehemu ya shahada ya uzamili ya ufuatiliaji na tathmini ya usimamizi wa mradi wa afya ambayo nitafanya katika Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili (MUHAS).

Taratibu

Ukikubali kushiriki katika utafiti huu, mtafiti atafanya mahojiano ya kina ili kutathmini kupitishwa kwako kwa Ushauri wa Ufuasi ulioboreshwa katika shughuli zako za kila siku kama mshauri wa EAC. Kushiriki katika utafiti huu ni kwa hiari, na uko huru kujiondoa wakati wowote. Kukataa kwako hakutaathiri huduma za afya unazopaswa kupokea. Muda unaohitajika kwa mahojiano ni takriban dakika 30, na hakuna gharama inayohusishwa na ushiriki wako katika utafiti huu.

Usiri.

Ningependa kukuhakikishia kwamba taarifa zote zitakazokusanywa zitakuwa siri. Watu tuwakifanyia kazi utafiti huu watapata taarifa. Hatutatumia majina kwenye rekodi za habari unayotoa.

Hatari.

Hakuna madhara yanayotarajiwa kukupata kwa kujiunga na utafiti huu.

Haki za kujiondoa na njia mbadala

Kushiriki katika utafiti huu ni kwa hiari yako kabisa. Ukichagua kutoshiriki au kuamua kuacha kushiriki wakati wowote, hutapata madhara yoyote. Unaweza kujiondoa kwenye utafiti huu hata baada ya kutoa kibali chako. Kukataa kushiriki au kujiondoa haitasababisha adhabu au upotevu wowote. Haki zako zote zitaheshimiwa.

Faida

Mawazo yako yatasaidia mamlaka za mitaa ili ziweze kuboresha utoaji wa huduma za ushauri nasaha za uzingatiaji zilizoboreshwa miongoni mwa watu wanaoishi na VVU na kuboresha maisha yao.

Marejesho

Hutalipwa pesa yoyote kwa kushiriki katika utafiti huu.

Nani wa kuwasiliana naye ikiwa una swali lolote kuhusu utafiti huu.

Iwapo kuna maswali yoyote kuhusu utafiti huu tafadhali usisite kuwasiliana na Mtafiti mkuu, Bi Anna; Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili (MUHAS),

(Nambari ya simu +255717259466).

RIDHAA YA MSHIRIKI

Nimesoma au imenisomea kwa sauti kubwa kuhusu utafiti utakaofanywa na faida zake,

Ninakubali/sikubali kwa hiari kushiriki katika utafiti huu

Jina la mhojiwa_____

Sahihi au alama ya kidole gumba _____tarehe___/____/2023

Jina la mtu anayepata kibali _____

Sahihi _____ tarehe____/___/2023

ANNEX VII: ETHICAL CLEARANCE LETTER

UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR – RESEARCH, PUBLICATIONS AND INNOVATIONS

Ref. No.DA.282/298/01.C/ Date: 11/03/2024

MUHAS-REC-03-2024-2085
ANNA MOSSES
Shool of Public Health and Social Sciences
MUHAS

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: ASSESSMENT OF IMPLEMENTATION OF ENHANCED ADHERENCE COUNSELLING AMONG HIV PATIENT WITH UN SUPPRESSED VIRAL LOAD IN DAR ES SALAAM, 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: 11/03/2024
EXPIRATION DATE OF APPROVAL: 11/03/2025

STUDY DESCRIPTION:
Purpose:
The purpose of this process evaluation with a cross sectional descriptive design is to assess the implementation of enhanced adherence counseling in improving ART adherence among non-compliant patients.

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-%2015281.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. Apply for and obtain permission to publish the results from National Institute for Medical Research. The application should be before submitting to a publisher and not concurrently through the email publications@nimr.or.tz.
9. 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)
10. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
11. 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. Nahya Salim Masoud,
CHAIRPERSON, MUHAS RESEARCH AND ETHICS COMMITTEE

ANNEX VIII: 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

In reply quote;
Ref. No. HD/MUH/T.597/2022

13th March, 2024

REGIONAL ADMINISTRATIVE SECRETARY,
P.O BOX 5429,
DAR ES SALAAM.

RE: INTRODUCTION LETTER OF ANNA MOSSES

We would like to inform you that the carrier of this letter is Anna Mosses with registration number HD/MUH/T.597/2022 a student in the School of Public Health and Social Sciences at Muhimbili University of Health and Allied Science (MUHAS), pursuing MSc. Project Management Monitoring and Evaluation in Health.

As part of her studies, she will be doing an elective research titled ***"ASSESSMENT OF IMPLEMENTATION OF ENHANCED ADHERENCE COUNSELLING AMONG HIV PATIENT WITH UN-SUPPRESSED VIRAL LOAD IN DAR ES SALAAM, TANZANIA".***

The Ethical Clearance for doing the said research has been given by the University.

Kindly request your assistance and cooperation to our student.

Yours Sincerely,

Ms. Victoria Mwanilwa
For: DIRECTOR, POSTGRADUATE STUDIES

cc: Anna Mosses

9 United Nations Road; Upanga West; P.O. Box 65001, Dar Es Salaam: Tel. G/Line: +255-22-2150302/6; Ext. 1015; Direct Line:+255-22-2151378;Telefax:+255-22-2150465;E-mail:dpgs@muhas.ac.tz;Web:https://www.muhas.ac.tz

ANNEX IX: PERMISSION LETTER –AMANA

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH

AMANA REGIONAL REFERRAL HOSPITAL

Telegram "HEALTH", DODOMA
Phone No.: +255 026 – 2323267
Email: ps@afya.go.tz

P.O. Box 25411
DAR ES SALAAM
Phone: 022—2861903

REF. NO. MoHCDGEC/ARRH/R.1/VOL II 21

Date: 26/03/2024

Director, Postgraduate Studies,
MUHAS,
P.O. B ox 65001,
DAR ES SALAAM.

Re: PERMISSION FOR DATA COLLECTION

Refer to your letter dated 13th March, 2024 which requested us to allow Anna Moses to conduct research and collect data in our institution.

We are here to acknowledge your request with the following conditions, that she must submit the results of her research after completion of analysis in order the hospital to make use of data's to solve hospital problems.

Regards.

For: MEDICAL OFFICER I/C
AMANA REGIONAL REFERAL HOSPITAL
P. O. Box 25411
DAR ES SALAAM

Dr. Rose Ntamboto
FOR: MEDICAL OFFICER INCHARGE
AMANA REGIONAL REFERRAL HOSPITAL

ANNEX X: PERMISSION LETTER –BUGURUNI ANGLICAN

HALMASHAURI YA JIJI LA DAR ES SALAAM

BARUA ZOTE ZIPELEKWE KWA MKURUGENZI WA MANISPAA

SIMU NO. 2128800
2128805

FAX NO. 2121486

OFISI YA JIJI
1 MTAA WA MISSION
P.O.BOX 20950
11883 DAR ES SALAAM

04 April 2024

Ref: IMC/DF.3/IX/18

Mganga Mfawidhi.

BUGURUNI ANGLICAN

Buguruni Anglican Health Centre
P. O. Box 25016, Dar-es-Salaam

YAH: KIBALI CHA KUFANYA UTAFITI UNAOHUSU ASSESMENT OF IMPLEMENTATION OF ENHANCED ADHERENCE COUNCELLING AMONG HIV PATIENTS WITH UNSUPPRESSED VIRAL LOAD IN DAR ES SALAAM"

Tafadhali husika na kichwa cha habari hapo juu.

2. Napenda kumtambulisha kwako Mwanafunzi ANNA MOSSES kutoka Chuo kikuu cha Afya na Sayansi Shirikishi, anayesoma Shahada ya Uzamili (Masters of Science in Project Management Monitoring and Evaluation in Health). Amepewa kibali cha kufanya tafiti katika Halmashauri ya Jiji la Dar es Salaam.

3. Lengo kuu la tafiti hii ni kuweza kujua namna gani huduma za EAC zinavyoendeshwa kwa wagonjwa wanaoishi na Virusi vya UKIMWI. Matokeo ya utafiti huu yatasaidia kuboresha huduma ya afya hususani kwa wanaoishi na virusi vya UKIMWI. Utafiti huu unatarajia kuanza tarehe **05/04/2024** hadi tarehe 28/05/2024 na utahusisha maojiano na watoa huduma wa CTC na Kupitia mafaili ya wagonjwa

5. Kwa barua hii naomba umpokee mtafiti huyu na kumpa ushirikiano kulingana na taratibu na miongozo iliyopo.

Natanguliza shukrani zangu za dhati.

Anence Kamasho
Kny: MGANGA MKUU HALMASHAURI YA JIJI LA DAR ES SALAAM

Kny: MGANGA MKUU
HALMASHAURI YA JIJI LA DAR-ES-SALAAM

ANNEX XI: PERMISSION LETTER –BUGURUNI HEALTH CENTER

HALMASHAURI YA JIJI LA DAR ES SALAAM

BARUA ZOTE ZIPELEKWE KWA MKURUGENZI WA MANISPAA

SIMU NO. 2128800
2128805
FAX NO. 2121486

OFISI YA JIJI
1 MTAA WA MISSION
P.O.BOX 20950
11883 DAR ES SALAAM

Ref: IMC/DF.3/IX/18

04 April 2024

Mganga Mfawidhi.
BUGURUNI HEALTH CENTER

YAH: KIBALI CHA KUFANYA UTAFITI UNAOHUSU ASSESMENT OF IMPLEMENTATION OF ENHANCED ADHERENCE COUNCELLING AMONG HIV PATIENTS WITH UNSUPPRESSED VIRAL LOAD IN DAR ES SALAAM"

Tafadhali husika na kichwa cha habari hapo juu.

2. Napenda kumtambulisha kwako Mwanafunzi ANNA MOSSES kutoka Chuo kikuu cha Afya na Sayansi Shirikishi, anayesoma Shahada ya Uzamili (Masters of Science in Project Management Monitoring and Evaluation in Health). Amepewa kibali cha kufanya tafiti katika Halmashauri ya Jiji la Dar es Salaam.

3. Lengo kuu la tafiti hii ni kuweza kujua namna gani huduma za EAC zinavyoendeshwa kwa wagonjwa wanaoishi na Virusi vya UKIMWI. Matokeo ya utafiti huu yatasaidia kuboresha huduma ya afya hususani kwa wanaoishi na virusi vya UKIMWI. Utafiti huu unatarajia kuanza tarehe **05/04/2024** hadi tarehe **28/05/2024** na utahusisha maojiano na watoa huduma wa CTC na Kupitia mafaili ya wagonjwa

5. Kwa barua hii naomba umpokee mtafiti huyu na kumpa ushirikiano kulingana na taratibu na miongozo iliyopo.

Natanguliza shukrani zangu za dhati.

Anence Kamasho

Kny: MGANGA MKUU HALMASHAURI YA JIJI LA DAR ES SALAAM

HALMASHAURI YA JIJI LA DAR ES SALAAM

mepokelewa
10/4/2024

MEDICAL OFFICER I/C
BUGURUNI HEALTH CENTRE
ILALA MUNICIPAL COUNCIL

ANNEX XII: PERMISSION LETTER –VINGUNGUTI DISPENSARY

HALMASHAURI YA JIJI LA DAR ES SALAAM

BARUA ZOTE ZIPELEKWE KWA MKURUGENZI WA MANISPAA

SIMU NO. 2128800
2128805

FAX NO. 2121486

OFISI YA JIJI
1 MTAA WA MISSION
P.O.BOX 20950
11883 DAR ES SALAAM

04 April 2024

Ref: IMC/DF.3/IX/18

Mganga Mfawidhi. Jmapitishwa 16/05/24
VINGUNGUTI DISPENSARY

DOCTOR
VINGUNGUTI DISPENSARY
P. O. BOX 25411
DAR ES SALAAM

YAH: KIBALI CHA KUFANYA UTAFITI UNAOHUSU ASSESMENT OF IMPLEMENTATION OF ENHANCED ADHERENCE COUNCELLING AMONG HIV PATIENTS WITH UNSUPPRESSED VIRAL LOAD IN DAR ES SALAAM"

Tafadhali husika na kichwa cha habari hapo juu.

2. Napenda kumtambulisha kwako Mwanafunzi ANNA MOSSES kutoka Chuo kikuu cha Afya na Sayansi Shirikishi, anayesoma Shahada ya Uzamili (Masters of Science in Project Management Monitoring and Evaluation in Health). Amepewa kibali cha kufanya tafiti katika Halmashauri ya Jiji la Dar es Salaam.

3. Lengo kuu la tafiti hii ni kuweza kujua namna gani huduma za EAC zinavyoendeshwa kwa wagonjwa wanaoishi na Virusi vya UKIMWI. Matokeo ya utafiti huu yatasaidia kuboresha huduma ya afya hususani kwa wanaoishi na virusi vya UKIMWI. Utafiti huu unatarajia kuanza tarehe **05/04/2024** hadi tarehe 28**/05/2024** na utahusisha maojiano na watoa huduma wa CTC na Kupitia mafaili ya wagonjwa

5. Kwa barua hii naomba umpokee mtafiti huyu na kumpa ushirikiano kulingana na taratibu na miongozo iliyopo.

Natanguliza shukrani zangu za dhati.

Anence Kamasho
Kny: MGANGA MKUU HALMASHAURI YA JIJI
DAR ES SALAAM

MGANGA MKUU
HALMASHAURI YA JIJI DAR-ES-SALAAM

ANNEX XIII: PERMISSION LETTER –KIWALANI DISPENSARY

HALMASHAURI YA JIJI LA DAR ES SALAAM
BARUA ZOTE ZIPELEKWE KWA MKURUGENZI WA MANISPAA

SIMU NO. 2128800
2128805
FAX NO. 2121486

OFISI YA JIJI
1 MTAA WA MISSION
P.O.BOX 20950
11883 DAR ES SALAAM

04 April 2024

Ref: IMC/DF.3/IX/18

Mganga Mfawidhi.
KIWALANI DISPENSARY

P.O. BOX 25411
DAR ES SALAAM

YAH: KIBALI CHA KUFANYA UTAFITI UNAOHUSU ASSESMENT OF IMPLEMENTATION OF ENHANCED ADHERENCE COUNCELLING AMONG HIV PATIENTS WITH UNSUPPRESSED VIRAL LOAD IN DAR ES SALAAM"

Tafadhali husika na kichwa cha habari hapo juu.

2. Napenda kumtambulisha kwako Mwanafunzi ANNA MOSSES kutoka Chuo kikuu cha Afya na Sayansi Shirikishi, anayesoma Shahada ya Uzamili (Masters of Science in Project Management Monitoring and Evaluation in Health). Amepewa kibali cha kufanya tafiti katika Halmashauri ya Jiji la Dar es Salaam.

3. Lengo kuu la tafiti hii nl kuweza kujua namna ganl huduma za EAC zinavyoendeshwa kwa wagonjwa wanaoishi na Virusi vya UKIMWI. Matokeo ya utafiti huu yatasaidia kuboresha huduma ya afya hususani kwa wanaoishi na virusi vya UKIMWI. Utafiti huu unatarajia kuanza tarehe **06/04/2024** hadi tarehe **28/05/2024** na utahusisha maojiano na watoa huduma wa CTC na Kupitia mafaili ya wagonjwa

5. Kwa barua hii naomba umpokee mtafiti huyu na kumpa ushirikiano kulingana na taratibu na mlongozo iliyopo.

Natanguliza shukrani zangu za dhati.

Anence Kamasho

Kny: MGANGA MKUU HALMASHAURI YA JIJI LA DAR ES SALAAM

MGANGA MKUU
HALMASHAURI YA JIJI LA DAR-ES-SALAAM