College Of Medicine

A Comparative Analysis of Primary Antiretroviral Therapy Outcomes by Service Provider Type in Blantyre District, Malawi

By

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DECLARATION

I, Stuart Rodney Chuka, hereby declare that this dissertation is my original work and has not been presented for any other awards at the University of Malawi College of Medicine or any other university.

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Date: 31st December, 2020

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ABSTRACT

The Antiretroviral Therapy (ART) Program for Malawi started in 2004 and the key providers in provision of ART services in Malawi include; the public sector, the private sector for-profit and non-profit and Christian Health Association of Malawi (CHAM). Since then, no known studies have been conducted to compare primary ART treatment outcomes by service provider type thus public, private and CHAM. In addition, information on variation of primary ART treatment outcomes by service provider type is not known and probably has not been published The Objective was to examine primary Antiretroviral Therapy outcomes in Blantyre District using ART data from 1st January 2017 to 31st December, 2018 in public, private and Christian Health Association of Malawi ART clinics

This was a cross-sectional study and utilized both quantitative and qualitative methods. The quantitative method used facility level secondary data from the Malawi National ART Program in the Ministry of Health HIV AIDS Department. The qualitative method used in-depth interviews using an interview guide to key informants. Data was analysed using STATA statistical software package version 15.Analysis of Variance (ANOVA) was used to compare the variations of primary ART outcomes among in public, private and CHAM ART sites. To compare proportions, the researcher used Scheffe's-Test. The qualitative data was analyzed using thematic analysis to explain the relationship between the variables.

Overall the findings indicate that Primary Antiretroviral Therapy Outcomes in Public, Private and CHAM ART Clinics are different. According to the results, there are more defaulters in the public ART clinics followed by private and lowest in the CHAM ART sites. This may be attributed lack of privacy and confidentiality, stigma and discrimination

and long distance to the health facility which result in high cost expenses.Overall died on ART outcome is higher in private ART clinics compared to public and CHAM ART clinics and no significant differences between public and private ART clinics. The study has also clearly demonstrated that the private ART clinics have more transfer outs than public and CHAM due to change of location for work related issues of the clients. Retention in care (Alive on ART) is high in CHAM ART Clinics followed by public then lastly private. Generally, stop on ART is not a common outcome in all service provider types.

Overall the findings indicate that Primary Antiretroviral Therapy Outcomes in Public, Private and CHAM ART Clinics are different. Some of the factors contributing to the primary Art outcomes include; lack of privacy and confidentiality, stigma and discrimination and long distance to the health facility which result in high cost expenses and change of location for work related issues of the clients. Generally, stop on ART is not a common outcome in all service provider types.

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LIST OF ABBREVIATIONS

ART	Antiretroviral Therapy
CHAM	Christian Health Association of Malawi
MOH	Ministry of Health.
MBCA	Malawi Business Coalition Against HIV/AIDS
HIV	Human immunodeficiency Virus
AIDS	Acquired immunodeficiency Syndrome
LGPI	Local Government Performance Index
NGO	Non-governmental organisations
QECH	Queen Elizabeth Central Hospital,
MCC	Malawi Council of Churches
ECM	Episcopal Conference of Malawi
WHO	World Health Organization
MOH	Ministry of Health
HIVDR	HIV Drug Resistance

DEFINITION OF TERMS

Follow-up outcomes: Defined as the latest status of a patient enrolled in care and are divided into two: Primary outcomes and Secondary outcomes in the Malawi HIV program.

Primary outcomes: Latest status of a patient enrolled in carei.e. Alive, Death, Default, Stopped treatment and Transferred out to another site.

Secondary outcomes: latest status of all patients that are alive which includes current ART regimen, adherence, TB status, pregnant and breastfeeding while on ART.

Transfer Out: Patient continues ART at other sites, can be Official transfer out or Unofficial transfer out.

Defaulter: A patient who has not reported to an ART site after 2 months after running out of ARVs depending on number of tins given at last visit.

Died: Any death which occur to a patient who is taking ART regardless of the cause of death.

Stop: Any patient last known to be alive and known not to be on ART for whatever reason.

Alive on ART: Any patient retained alive in care known to be on ART.

ART Clinic: Is a functional unit within a health facility that provides comprehensive package of AIDS services that include counseling, support, prophylaxis, treatment of opportunistic infections, ARV treatment, follow-up of clients and referrals where necessary.

CHAPTER 1: INTRODUCTION AND LITERATURE REVIEW

1.0 Introduction

There has been concerns by the general public that some clients taking antiretroviral therapy in Malawi do not take their ARVs from nearby health facilities because of issues related to privacy and confidentiality, stigma and discrimination and poor quality of services in particular from public health facilities(1). A study on factors influencing adherence to antiretroviral treatment among adults accessing care from private health facilities in Malawi indicated that the main reason for defaulting in antiretroviral treatment(ART) was fear of disclosing an HIV status to avert potential stigma and discrimination(1). Other concerns have been that some private sector health facilities providing antiretroviral therapy do not follow national guidelines when providing HIV services as compared to the public sector and CHAM ART Clinics. The outcomes of all these may affect the primary antiretroviral therapy outcomes namely; Default, Stop, Transfer Out, Dead and Alive(2). However, since the Antiretroviral Therapy Program for Malawi started in 2004, no known studies have been conducted to compare primary ART treatment outcomes by service provider type thus public, private and CHAM. In addition, information on variation of primary ART treatment outcomes by service provider type is not known and probably has not been published. This study therefore, was important in order to generate data on the variations of the antiretroviral therapy in the private, public and CHAM as service providers.

This chapter presents the Background; Overview of the Malawi's Healthcare Delivery System, Organisation of the Antiretroviral Therapy (ART) Programme in Malawi, the Goal of World Health Organization (WHO) and Malawi Ministry of Health, Literature

Review, problem statement and Rationale/justification for the research project and Objectives of the study and the conceptual framework on which this thesis is based.

1.1 Background

1.1.1 Overview of the Malawi's Healthcare Delivery System

Health services in Malawi are provided by the public, private for profit and private not for profit sectors(3)(4). Nearly 60% of all formal health care services in Malawi are provided by the Ministry of Health. The Christian Health Association of Malawi (CHAM) (37%) and the Ministry of Local Government (1%). Other providers, namely private practitioners, commercial companies, army and police provide 2% of health services(4). There are also traditional healers and traditional birth attendants, whose exact number and extent of service provision is unknown(5)(6). These private for profit sector offers curative services with minimal laboratory support. The private not for profit sector comprises of religious institutions under the Christian Health Association of Malawi (CHAM), an ecumenical organization committed to providing administrative and technical support to all member units, so that they are able to provide holistic, quality, affordable and accessible gender sensitive health services that have preferential treatment for the poor(7). It provides essential services, such as maternal and child health care, especially in rural and remote areas(3). It also coordinates health services and health workers training delivered by various colleges under different churches(7). It provides up to 30% of health care and trains up to 80% of the midlevel health workforce in Malawi.

Malawi's Health Care System has four delivery levels namely: - community, primary, secondary, and tertiary, with inter-level referrals as required(4.)Primary level: services are

delivered through rural hospitals, health centres, health posts, outreach clinics and community initiatives. Secondary level: includes district hospitals and CHAM hospitals and some of these have limited specialist functions. Tertiary level hospitals provide services similar to those at secondary level, along with a small range of specialist surgical and medical interventions(5)(3).The community first accesses the healthcare system in Malawi at either a rural hospital or a health centre. Problems that cannot be effectively solved at this level are referred to a district hospital, located in each district's largest population centre(8). Referrals can also be done from a district hospital to a central hospital.

The human resource for Malawi include specialists, general practitioners, clinical officers, medical assistants and nurses. The backbone of the health services particularly primary and secondary levels are the clinical officers and Medical Assistants. Other health care workers include pharmacists, nurses, public health nurses and midwives.

1.1.2 Organisation of the Antiretroviral Therapy (ART) Programme in Malawi

1.1.1.1 Public Sector Antiretroviral Therapy Program

The Ministry of Health assumed responsibility for the national scale-up of ART, adhering strongly to the principle of equitable access to therapy for everyone in Malawi, regardless of geographical location or type of health facility in the area(9). The implementing partners and stakeholders, including the private sector, worked together with the HIV department of the ministry of health to develop national scale-up plans and implement one standardized system to deliver and monitor ART(10).The key providers in provision of ART services in Malawi include the public sector, the private sector for-profit and non-profit organisations, and non-governmental organisations.

The public sector provides free ARV drugs in all government facilities. By December 2018, 63% of 750 static ART sites in Malawi were managed by government(7). The Government of Malawi has played a key role by developing policy guidelines and treatment operational guidelines(11)(12). It proved overall leadership in as far as ART provision in Malawi.

1.1.1.2 Christian Health Association of Malawi

CHAM supports the provision of ART services in Malawi as public and 19% of 750 ART site in Malawi are managed by Christian Health Association of Malawi (CHAM)(7). CHAM is considered as providing public ART services as they also don't charge ART clients despite that they are private not for profit. All these private health facilities are provided with ART drugs and other HIV commodities from Ministry of Health through a push in system of drug delivery. In case of stock outs, all facilities are allowed to get reallocation from a hub site or another facility with adequate stocks of the commodity.

1.1.1.3 Private Sector Antiretroviral Therapy (ART) Programme in Malawi

Following the development of the 'Position Paper on Equity in Access to Antiretroviral Therapy (ART) in Malawi' in 2004(12), The Malawi Government entrusted the Malawi Business Coalition Against HIV/AIDS (MBCA) with the responsibility of coordinating the government's scale up programme for Antiretroviral Therapy (ART) in the private sector in Malawi. The Policy on Equity Access to Antiretroviral Therapy (ART) in Malawi states that ART will be provided in the private sector health facilities at the subsidized rate of MK500 (inclusive of drug costs, logistics and monitoring activities) and the private sector health care providers shall be trained to understand the implications of ART and participate in national monitoring activities(12). The purpose of offering this 'subsidy' is to scale up ART provision faster, build capacity within the private sector, relieve the burden on the public sector, and equity(12).

The memorandum of understanding between the Clinic and the MBCA clearly states that the clinic will charge MK500 per month for the supply of ARVs regardless of regimen prescribed as a service charge(13). Other services such as consultations, procedures, laboratory services, drugs other than ARVs, opportunistic infections drugs and other HIV related commodities and services will be charged according to the prevailing prices at the health facility(13). The ART site will not charge patients on ART higher costs than patients with other ailments.

The private sector health facilities are categorised into private based clinics which are for profit and company based clinics(13). The company based clinics provide ART services to their staff free of charge. All these private health facilities are provided with ART drugs and other HIV commodities from Ministry of Health through a push in system of drug delivery. In case of stock outs, all facilities are allowed to get reallocation from a hub site or another facility with adequate stocks of the commodity. There are 77 private health facilities providing ART services in the country. By December 2018, 13% of 750 static ART sites in Malawi were managed by private(7).

1.1.1.4 Malawi's National Monitoring System

The National HIV Program on quarterly basis, collects quarterly and cumulative data for the program mainly for purposes of planning, reporting to donors , drug procurement and distribution(2). Data analysis and reporting is done from patient cards and clinic registers at most facilities. While the national monitoring and reporting system initially performed well at facility and national level, it was essentially paper-based, and in busy clinics the rapidly growing cumulative burden of patients registered for ART threatened to overwhelm the capacity to collect, collate and analyse data on a quarterly basis(9).

The introduction of electronic data systems at sites with many patients (EDS)(9)has been instrumental in analysing data from these sites. Every quarter, the ministry of health and

its implementing partners conducts joint ART/TB supportive site supervision visits to 750 health facilities with HIV services in public, private and CHAM(2). This system combines regular data verification and review of clinical notes from primary patient records with continuous quality improvement and targeted clinical mentoring.

Malawi's national monitoring system for ART uses one patient master card for each patient and one ART register per facility. At enrolment, patient demographics, occupation, stage defining conditions and clinical stage are recorded on the master card and copied into the register(9). At every ART visit, follow-up details are entered in the master card, including ambulatory and working status, pill-count, ART-regimen and drug side-effects. Follow-up outcomes such as transfer to another ART clinic, treatment discontinuation and death are also entered in the master card(9). A patient cohort analysis is conducted at all sites every quarter. In preparation for this, clinic staff systematically review the follow-up status of all patients, updating the master cards and register with the latest outcomes. The supervisors check the accuracy, completeness and consistency of the register and master cards. Cohort analyses are checked and collected for aggregation and national level reporting(14).

1.1.1.5 The Goal of World Health Organization (WHO) and Malawi Ministry of Health

World Health Organization advocates for a strongest health system to provide universal health coverage so that all people can access health care when they need it without being impoverished by the costs. Services are distributed equitably so that people in even the most remote areas can reach them and services meet the needs of all residents, including women, youth, and minorities(15). This is done through the defined six building blocks of a strong health system by WHO. There are; Health service delivery; Health workforce; Health information systems; Access to essential medicines; Health system financing; and

Leadership and governance(16). The Ministry of health In Malawi supports all six building blocks, while also supporting local governments to increase coordination amongst the six health system areas(16). When you strengthen a health system, you improve the six health system building blocks and manage their interactions in ways that achieve more equitable and sustained improvements across health services and health outcomes(16).

1.1.1.6 Summary

This dissertation was aimed at comparing primary ART treatment outcomes by service provider type thus public, private and Christian Health Association of Malawi and has attested the hypothesis that primary ART outcomes are different in the private, public and Christian Health Association of Malawi ART Clinics in Blantyre District, Malawi. The results of this study will assist in improving the health care service delivery across and public, private sector and CHAM health facilities in Malawi through policy decisions which will have a major impact in the National Program and the world as a whole. This thesis therefore, presents literature review, problem statement and rationale/justification for the research project, the methodology used in conducting the study, presentation of results, discussion of results and finally conclusion and recommendations for the study.

1.2 Literature Review

1.2.1 The impact and response of HIV and AIDS in Malawi

Malawi is among the countries in Southern Africa at the epi-centre of the HIV and AIDS pandemic(17). The current population of Malawi is over 17.5 Million(18). Over one million people in Malawi are living with HIV, 60% of which are women(19). It is estimated that 834,000 Malawians have died of AIDS since the start of the epidemic in 1985 and that new infections reduced from 55,000 in 2011 to 28,000 in 2016 due to

effective prevention, treatment, care and support interventions in the national response(20).

In Malawi, recent statistics among the adult population aged between 15 and 49 (21) show urban and rural disparities in HIV prevalence with higher prevalence being registered in the urban areas as compared to rural areas; the national HIV prevalence (women and men age 15-49 years) who are HIV positive) is at 8.8% while 14.6% of urban residents are infected compared to 7.4 % for the rural areas. It is also higher in urban women at 17.8% versus rural women at 9.2% and HIV prevalence in urban men at 11.0% versus rural men at 5.4 % (22). In addition HIIV prevalence for Blantyre City alone is 18%(21).

Malawi adopted the 90:90:90 global targets through its new National HIV and AIDS Strategic Plan (2015-2020) aiming at ending the AIDS epidemic by 2030(17). In accordance with the new Malawi National Strategic Plan (NSP) for HIV and AIDS (2020–2025) the targets have been revised upwards to 95.95.95 targets(19). The efforts done in the earlier strategic plan have contributed to a drastic decline in the number of new infections from 111,000 in 1992 to 33,000 in 2019 and AIDS deaths from 71,000 in 2004 to 13,000 in 2019. Progress on 90.90.90 UNAIDS Fast-Track targets was at 93. 84. 92 by end of September 2019. The 95.95.95 HIV targets states that 95% of all people living with HIV will know their HIV status, 95% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy and 95% of all people receiving antiretroviral therapy will be virally suppressed to undetectable levels.(19)

1.2.2 Infrastructure and Organisation

The predictor of HIV disease progression is Viral Load which was not assessed in order to compare private, public and CHAM. Inversely, study results from a donor funded, private

GP-run outpatient clinic in rural Mpumalanga, in South Africa initiating treatment naïve patient on ART that also demonstrated higher rates of viral suppression (70%) and the cohort's 12-month virological outcomes were comparable to public sector programs(23). More studies on this outcome is required.

At study by Tweya H. etal. titled "Loss to follow-up before and after initiation of antiretroviral therapy in HIV facilities in Lilongwe, Malawi"(24) explored factors associated with loss to follow-up (LTFU) and revealed that Non- compliance to clinic and receiving ART in a rural facility or high-volume facility were associated with increased risk of loss to follow-up from ART care.

1.2.3 Human Resource

In Malawi, the ART provision is done by doctors, Clinical Officers, medical assistants and nurses. However, Health Surveillance Assistants and expert Client support the provision of ART services in Malawi. An Expert Client is a person who is HIV+ and has openly declared their status(25)(26). Expert clients add value to the ART services at a tertiary referral HIV clinic in Malawi. They carry out shifted tasks acceptably, saving formal health staff time, and also act as 'living testimonies' of the benefits of ART and can be a means of achieving greater involvement of People Living with HIV in HIV treatment programs(25). A recent study commissioned by IMPACT revealed that salaried service providers believe that Expert Clients are contributing to improved quality of HIV services and have increased the uptake of HIV testing and treatment (26). Expert Clients also assist with tasks like measuring vital signs, recording weights in patient's health passports, filing patient records and tracing patients who have stopped taking their HIV medications(26)(25).

1.2.4 Drugs and other HIV Commodities

The number of people receiving antiretroviral treatment (ART) in Malawi has increased considerably in recent years and is expected to continue to grow in the coming years(27). A major challenge is to maintain uninterrupted supplies of antiretroviral (ARV) drugs and prevent stock outs. This system for ARVs, paid for by the Global Fund to Fight AIDS, Tuberculosis and Malaria, and bypassing the government Central Medical Stores(27). The system, managed by staff in the department of HIV and AIDs in the Ministry Of Health and is characterized by a centrally coordinated quantification based on verified data from all national ART clinics, parallel procurement through UNICEF, and direct distribution to ART clinics in the country(27). It includes public, private and CHAM. The supply of HIV comedies includes ARVs, drugs for opportunistic infections, drugs for sexually transmitted infections and condoms.

1.2.5 Financing and Location

A number of studies have attributed cost as a reason for lost to follow up in patients on antiretroviral therapy because cost of travel as most of them stay far from the ART site. A study by Pinto AD et-al in 2013 on Patient costs associated with accessing HIV/AIDS care in Malawi (28)found that even within a system of HIV/AIDS care where patients do not pay to see clinicians or for most medications, they still incur travel related costs which resulted in lost to follow up.(28) This mainly occurred in poorer patients who live at a distance from health facilities for whom these costs may be significant.(28) In South Africa, Pretoria, a study which looked at reasons for default follow up of ART treatment at Thekganang clinic(29) indicated that lack of money for transportation was the main cause of defaulting treatment. A study designed to investigate factors associated with failure to pick up drugs and non-adherence to scheduled clinic visits by patients on antiretroviral therapy with a view to suggest intervention measures at Murchison hospital in the Ugu

District of Kwa-zulu Natal Province in 2009(30) found that 76% of the respondents failed to pick up their medication due to distance and logistics.

A study titled "What happens to patients on antiretroviral therapy who transfer out to another facility?" (31) showed that one fifth of patients transferred out from a central hospital institution over a 30-month period as new ART sites were set up in the country and started to deliver therapy closer to patients' homes. A study titled "Why are antiretroviral treatment patients lost to follow-up? A qualitative study from South Africa(32) which was aimed at understanding the reasons why patients default from antiretroviral treatment (ART) programmes to help design interventions that improve treatment retention and ultimately, patient outcomes. It found out that despite improved health from taking ART and worse health when treatment is stopped, serious barriers to treatment remained: transport costs, time needed for treatment, and logistical challenges were barriers to treatment, whereas stigma around HIV/AIDS, and side effects associated with ART were less influential(32).

1.2.6 Stigma and Discrimination

Stigma remains the single most important barrier to public action(33). AIDS related stigma refers to the prejudice and discrimination directed at people living with HIV and AIDS and the groups and communities that they are associated with(33).

A study by Lusungu et al, (1) agrees with this finding which stated that Fear of disclosure of one's status was the most common reason for defaulting from ARVs(1).Another study conducted in rural Malawi also agrees with our findings and identified stigma (43%) as the main reasons for defaulting(34).

This findings are supported by the a study conducted in Malawi titled "Barriers and facilitators to the uptake of ART in Option B+ in HIV Care in Lilongwe" which revealed

that women do not disclosure their HIV status to their partners for fear of stigma and discrimination(35). This was common to women. Another study done by Mwale(36) also stipulated that social related factors that influenced patient retention in care were stigma and non-disclosure of HIV status, faith healing, use of herbal remedies and alcohol use(36). This is in agreement with a study that was conducted to explore stigma and discrimination among people living with HIV and AIDS who were on home based care in the Lilongwe district of Malawi(33).The findings were that the fear of stigma experienced by people on ART results in non-adherence to medication through a number of ways. Firstly, it was noted that patients prefer a distant ART Clinic to the extent of avoiding health facilities available near to their homes, thereby risking irregular replenishment of their ARVs. This is because they fear being seen by people who know them as friends and neighbours(33). Secondly, the study has shown that stigma reinforced the concealment of HIV status. Not wanting to tell others about an HIV positive status has been found to be a major impediment to the optimal uptake of ARVs (33).

1.2.7 Services provided in public and private

In several low and medium countries, services offered by private hospitals are considered to be superior to those of public hospitals because the private sector will always take advantage of the market mechanisms within the public control of the provision of essential services such as healthcare(37). Despite this, other comparative cohort and cross-sectional studies suggested that providers in the private sector more frequently violated medical standards of practice and had poorer patient outcomes, but had greater reported timelines and hospitality to patients(38).

A study in Neno District, that compared facility-level HIV outcomes between the Neno programme and all other health facilities nationally to estimate impact and describe

programme performance over a 3-year period (2013–2015) according to the 90-90-90-aligned outcomes along the HIV care continuum, it observed that a 1-year survival and retention in care for ART-treated patients in Neno District is higher than all other districts nationally, suggesting the effectiveness of the Neno HIV programme across the HIV care continuum(39). This entails that a health care delivery system plays an important role in treatment outcomes.

According to Local Government Performance Index (LGPI)(40), a heavily clustered, multidimensional, experience-based survey implemented in Malawi from March 24 to April 27, 2016 which looked at Perceptions of Care by Different Providers as one of the selected findings on Health indicated that about 18 % of the population believe that medical care at the nearest private doctor or clinic was excellent, and almost half (48%) say it was good(40). In contrast, only 8 % think it was poor, and 1% of the population considered it to be very bad. However, 25 % of Malawians did not have an answer. 12% think the care provided at the nearest public clinic is excellent, 47 % think it is good, 24 % see it as poor, and 6 % as very bad. About one in 10 Malawians (11 %) did not answer(40). These findings vary by education, urban–rural divides, and types of providers.

The survey(40)also looked at Experienced Satisfaction with Medical Treatment at different types of facilities. Malawians perceive that mission hospitals do offer the highest quality medical care, than public-health facilities, and finally private hospitals.(40)However, according to medical care experiences, both mission and private facilities offer equally good care, while public facilities offer lower-quality care(40). Twice as many of those who went to a public facility (22 %) were very unsatisfied with the quality of their care, compared to those who went to a mission (10%) or private facility (10%).In contrast, for women who gave birth, 76 %

reported being very satisfied with the patient care at the public facility where they gave birth.(40)Surprisingly, satisfaction with patient care was reported as significantly higher at public hospitals and clinics than in private hospitals in Malawi(40).

The cumulative effects of the deficiencies in public service provision is that community residents perceive services provided at the public sector as inappropriate and poor in quality, compared to those provided in the private sector(41). They, therefore, expressed a stronger preference to seeking care at private facilities(41).

A study in India by Shet A. et al(42)which aimed at understanding patient characteristics and treatment outcomes from different HIV healthcare settings in Bangalore, India, found that more participants reported ≥ 95% adherence among public and public-private groups compared to private participants (public 97%; private 88%; public-private 93%)(42). Treatment interruptions were lowest among public participants (1%, 10% and 5% respectively). Although longer clinic waiting times were experienced by more public participants (48%, compared to private 27%, public-private 19%), adherence barriers were highest among private (31%) compared with public (10%) and public-private (17%), participants(42).Viral load was detectable in 13% public, 22% private and 9% public-private participants suggesting fewer treatment failures among public and public-private settings. Drug resistance mutations were found more frequently among private facility patients (20%) compared to those from the public (9%) or public-private facility (8%) it was then concluded that adherence and treatment success was significantly higher among patients from public and public-private settings as compared to patients from private facilities(42).

Despite the widely documented success of antiretroviral therapy (ART),stakeholders continue to face the challenges of poor HIV treatment outcomes(43). While many studies have found that patient-level causes of poor treatment outcomes, data on the effect of health systems on ART outcomes are scarce. A retrospective cohort analysis which compared treatment outcomes among patients receiving HIV care and treatment at a public and private HIV clinic in Johannesburg, South Africa, revealed that there were differences in treatment outcomes between the two HIV clinics(43). This study result suggested that the type of clinic at which ART patients initiate and receive treatment can have an impact on treatment outcomes.

A study tilted ‘’Unravelling the quality of HIV counselling and testing services in the private and public sectors in Zambia”(44)showed levels of underperformance in VCT services across the sectors. It reveals serious underperformances in counselling about key risk reduction methods. Less than one-third of clients received counselling on reducing number of sexual partners and only approximately 5% of clients received counselling about disclosing test results to partners(44).In terms of client profiles, the NGO sector attracts the most educated clients and less educated Zambians seek VCT services at very low rates (7%). The private for-profit performs equally or sometimes better than other sectors even though this sector is not adequately integrated into the Zambian national response to HIV(44).The study concluded that the private for-profit sector provides VCT services on par in quality with the other sectors(44).Most clients did not receive counselling on partner reduction or disclosure of HIV test results to partners(44). In a generalized HIV epidemic where multiple concurrent sexual partners are a significant problem for transmitting the disease, risk-reduction methods and discussion should be a main focus of pre-test and post-test counselling(44).

Table 1: The attributes of the mode of service delivery already known

ATTRIBUTES	MODE OF SERVICE DELIVERY		
	PUBLIC	**CHAM**	**PRIVATE**
Access of general services(12)	Free services	Paying for cost recovery	Paying for profit
ART Service Charge(12)	Free service	Free service	Pay K500 as service charge
Availability of OIs drugs(45)	Available	Available	Available with more options
Number of clients(2)	More clinic registrations	More clinic registrations	Few clinic registrations

1.2.8 The conceptual framework

The conceptual framework (Figure 1) has been developed in this thesis so as to conceptualise factors affecting ART treatment outcomes whether directly and indirectly in private, public and CHAM Health facilities in Blantyre city. This study aims at making an analysis of Antiretroviral Therapy outcomes in the public, private and Christian Health Association of Malawi by service delivery model in Blantyre Malawi. This conceptual framework is based on World Health Organization six building blocks of a strong health system.

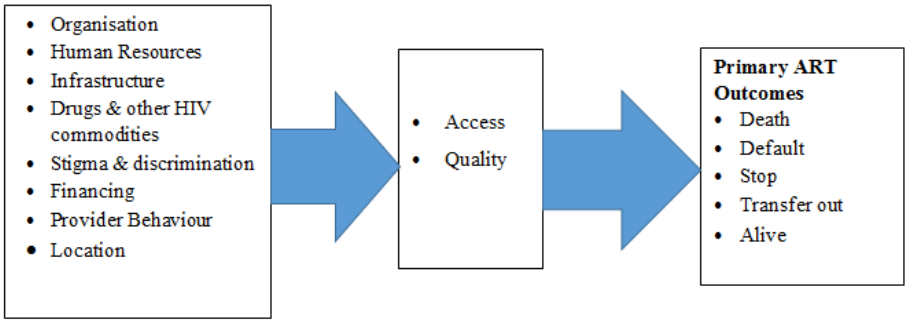

Figure 1: The conceptual framework

1.3 Problem statement and Rationale/justification for the research project:

The Antiretroviral Therapy Program for Malawi started in 2004 and since then no known studies have been conducted to compare ART primary outcomes across private sector, CHAM and Public health facilities by service provider type. In addition, information on variations of ART primary outcomes by service provider type thus; private, public and CHAM is not known and probably has not been published. A recent study done by Chirambo et al(1),looked at factors influencing adherence to antiretroviral treatment among adults accessing care from private health facilities in Malawi(1). However, this study did not compare ART outcome by service provider type. This thesis therefore, is assessing primary ART outcomes of Antiretroviral Therapy (ART) Program by service provider type in Blantyre. The results of this study will assist in improving the health care service delivery across private sector, CHAM and Public ART Clinics in Malawi through policy decisions which will have a major impact in the National Program and the world as a whole.

1.4 Objectives of the study

1.4.1 Broad Objective

To examine primary Antiretroviral Therapy outcomes i.e. successful primary Antiretroviral Therapy (ART) outcomes (alive on ART and transfer out) and poor outcomes (death while on ART, default and stopped)in Blantyre District using ART data from 1st January 2017 to 31st December, 2018 in public, private and Christian Health Association of Malawi ART clinics

1.4.2 Specific objectives

1. To assess the proportion of primary Antiretroviral Therapy outcomes in Blantyre District using ART data from 1st January 2017 to 31st December, 2018in the public, private and Christian Health Association of Malawi ART Clinics in Blantyre District, Malawi

2. To compare the proportion of primary Antiretroviral Therapy outcomes in Blantyre District using ART data from 1st January 2017 to 31st December, 2018in the public, private and Christian Health Association of Malawi ART Clinics in Blantyre District, Malawi
3. To identity factors affecting primary antiretroviral therapy outcomes in public, private and Christian Health Association of Malawi ART Clinics between1st January 2017 and 31st December, 2018 in Blantyre District, Malawi

1.4.3 Hypothesis:

The study wanted to attest the hypothesis that primary ART outcomes are different in the private, public and Christian Health Association of Malawi ART Clinics in Blantyre District, Malawi.

CHAPTER 2: METHODOLOGY

2.1 Study Design

This was a cross-sectional study that utilized both quantitative and qualitative methods. The quantitative method used facility level secondary data from the Malawi National ART Program in the Department of HIV in the Ministry of Health. The qualitative method used in-depth interviews using interview guide to key informants. The key informants that were interviewed included; Medical Officers, Clinical officers, Medical Assistants and Nurses that underwent training in the Clinical management of HIV in adults and children and were certified to be ART/PMTCT/TB providers in Malawi.

2.2 Study Place(s):

The study was conducted at the following ART clinics in order to collect the qualitative data for the identification of factors affecting primary antiretroviral therapy outcomes in public, private and CHAM ART Clinics: These clinics were Blantyre Adventist Hospital, Masm Medi Clinic, ESCOM Clinic, Mtengoumodzi Private Hospital, Bangwe Health Centre, Ndirande Health Centre and Mlambe Mission Hospital, Lumbira Health Centre in Blantyre urban, Lirangwe Heath Centre, Mdeka Health Centre, Madziabango Health Centre and Soche Maternity Clinicin Blantyre Rural. These study areas were randomly selected because they have a mixed of facilities of the rural and urban, high burden and low burden, privately owned and company based ART clinics.

2.3 Eligibility Criteria

The eligibility criteria was based on the type of facility thus public, private and CHAM, the location of the facility, whether rural or urban, whether the facility was high volume or low volume and the facility that was already providing the ART services by 1st January, 2017. In addition, the study only included ART clinics that according to their nature, were not expected to have a lot of primary ART outcomes. Queen Elizabeth Central Hospital was excluded because patients with co-morbidities and very sick which leads to increased

deaths. Chichiri Prison was also excluded as it always has transfer outs because ART clients are released on bail and after completion of their sentences.

2.4 Study Population:

The study population for this research was the total number of all health facilities providing antiretroviral therapy in Blantyre District. These ART sites comprises public, private and Christian Health Association of Malawi ART Clinics. By January 2017, there were 69 ART clinics in Blantyre district that were operational and providing ART services. According to the inclusion and exclusion criteria, 54 ART clinics were eligible for sampling.

2.5 Study Period:

The study was conducted for a period of ten months from 1st December, 2019 to 31th December2020. This included preparation of the proposal, submission and approval, training, data collection, data analysis, report preparation, final submission, and dissemination of the findings.

2.6 Sample Size:

The sample size for objective one and two was 45 ART clinics that were operational and providing ART services by 1st January, 2017in Blantyre District. The 45 ART clinics were randomly selected from 54 ART clinics that were eligible for sampling.

In order to determine how many health facilities to be used for analysis, a sample size formula for descriptive study was used as given below:

$$n = \frac{DEFF * Np(1-p)}{d^2 / z^2_{1-\alpha/2}} \times (N - 1 + p \times (1-p))$$

https://www.openepi.com/SampleSize/SSPropor.htm

Where: DEFF is the Design effect

N is population size (for finite population correction factor or fpc) of 54 facilities

P is Hypothesized % frequency of outcome factor default in private facilities using the Ministry of Health ART Quarterly Report (45) was (p): 12%+/-5

D is Confidence limits as % of 100(absolute +/- %)(5%)

For analysis, the researcher needed 41 facilities at 95% confidence level and adjusting for 10% missing information in the facilities thus the sample size was 45 facilities for analysis.

To effectively address objective three, a total sample size of twelve (12) ART sites were selected. The participants were purposively selected one from each ART site in order to get the relevant and appropriate information. This included; ART providers that underwent training in the Clinical Management of HIV in Adults and Children, more than 2 years of experience in ART provision and willingness to consent for the participation in the study.

2.7 Data Collection

The study used facility site level secondary cumulative data from the Malawi National ART Program in the Department of HIV in the Ministry of Health for objective one and two. The data collection for objective three was done by the researcher who was conversant with the ART program in Malawi. Face to face in-depth interviews were conducted using interview guide to key informants. The information was collected using audio tape and later transcribed.

2.8 Data Credibility Dependability and Trustworthiness

Creswell 2008(46), indicated that use member checking to determine the accuracy of research findings through taking the final report or specific descriptions or themes back to the participants and determining whether these participants feel that they are accurate. In this context, member checking was deployed for the participants to support determination of trustworthiness of the data(47)(48). Summaries of the interviews were read out to the study participants to allow them check if the records match with what the participants

themselves said during data collection. To ensure data dependability, detailed records were kept to provide opportunity for other researchers to conduct a similar study within the same context and replicate results

2.9 Data Management

Data from Ministry of Health-Department of HIV and AIDS data base was accessed after authorization from the Director. There was separation of data to categorize private, CHAM and public health facilities. The data was checked for consistency and managed in a confidential manner. The research findings were disseminated through the college library.

2.10 Data Analysis

The quantitative data analysis for objective one and two was done using STATA statistical software package version 15. T-test and Analysis of Variance (ANOVA) was used to compare the variations of primary ART outcomes among in public, private and CHAM ART sites. To compare proportions, Scheffe's. Test was used. The analysis included 45 ART clinics in Blantyre of which 23 were public, 16 were private and 6 were Christian Health Association of Malawi.

For objective three, after the information was collected and transcribed, it was coded and organised according to thematic areas. Manual analysis was used to describe data and to explain the relationship between the variables. The presentation of the analysed data is inform of bar graphs, tables and descriptions using statistical measures of associations such as odds ratios and risk ratio.

2.11 Qualitative Data Analysis

The qualitative data analysis was done using thematic analysis. Also defined as a method for identifying, analyzing, and reporting patterns or themes within data (50). Deductive and inductive analysis was used in the thematic analysis process. Coding was done in

order to break data into smaller pieces and then recombining those pieces in order to identify and explore relationships and discover new connections(51). Similar concepts were grouped together forming categories. Other themes were deductively realized from the interview guides and the conceptual framework.

The initial stage of data analysis was listening to the audio tape for several times after the in-depth interview and transcribing the interview verbatim. This was to ensure that no information is lost. The second stage was re-reading the transcripts until the researcher was familiar with them. New information was discovered while researcher was re-reading the transcripts. Important issues and concepts were identified, and then the content of the data was analyzed to categorize the recurrent themes, this was the theme stage. During theme development, the initial draft was coded by two independent people and be able to agree on the codes, this was done to measure the quality. After developing the themes and coding the data, researcher re-arranged them accordingly in a systematic way, so that factors affecting primary antiretroviral therapy outcomes in public, private and Christian Health Association of Malawi ART Clinics were organized. This allowed data to be compared with each ART service provider type. The final stage of data analysis was the checking and interpretation of data. This involved carefully going through the data and writing down the phenomena that was studied using thematic categories from the analysis as sub-heading.

2.12 Ethical considerations

The research involved interviewing people in order to determine factors affecting HIV treatment outcomes COMREC authorized the research and permission was sought from the Private Clinic Management, Ministry of Health-Department of HIV and AIDS and Blantyre District Health Office. All participants were asked to consent before they were

interviewed. The data did not include names of participants and all participants were identified using numbers to ensure confidentiality.

CHAPTER 3: PRESENTATION OF RESULTS

3.1 Introduction

This chapter presents the main findings of the study. It begins with a brief description of the source of data for the quantitative analysis addressing objective one and two of the study and key characteristics of the respondents and facilities where in-depth interviews were done to address qualitative objective 3. This is followed by the graphic and tabular presentation of the results from the quantitative analysis then by themes that emerged from the qualitative data analysis.

The quantitative analysis used facility level secondary data from the Malawi National ART Program in the Department of HIV in the Ministry of Health. The qualitative data was collected and analysed from 6 public ART sites, 4 private ART sites and 2 CHAM ART sites. 4 out of the 12 ART clinics were from the rural setting and 8 from the urban setting. The list of the ART clinics is summarised in **Table 3.1.1.** The themes included are Access to the Facility, Capacity and Availability of Human Resource, Infrastructure and organization, Stigma and discrimination, other services are provided together with ART services, Reasons for Default, Reasons for Transfer out, Reasons for Stop and Reasons for Death on ART. Direct quotes from the recorded interviews are used to illustrate respondents' views. For the quantitative analysis, results were presented according to the primary antiretroviral therapy outcomes namely; Default, Stop, Transfer Out, Dead and Alive

The characteristics of the participants that were interviewed to address objective three included the following; 4 Clinical officers and 8 Nurses. Out of these, 3 were males and 9 females that underwent training in the Clinical management of HIV in adults and children and were certified to be ART/PMTCT/TB providers in Malawi.

Table 2: The list of the ART clinics Visited, cadre interviewed and gender

1.	Soche Maternity Clinic	Public	Rural Setting	Nurse	Male
2.	Madziabango Health Centre	Public	Rural Setting	Nurse	Female
3.	Mdeka Health Centre	Public	Rural Setting	Clinical Officer	Male
4.	Lirangwe Heath Centre	Public	Rural Setting	Nurse	Female
5.	Bangwe Health Centre	Public	Urban Setting	Clinical Officer	Female
6.	Ndirande Health Centre	Public	Urban Setting	Nurse	Female
7.	Masm Medi Kanjedza Clinic	Private	Urban Setting	Nurse	Female
8.	ESCOM Chichiri Clinic	Private	Urban Setting	Nurse	Female
9.	Blantyre Adventist Hospital	Private	Urban Setting	Nurse	Female
10.	Mtengoumodzi Private Hospital	Private	Urban Setting	Clinical Officer	Male
11.	Mlambe Mission Hospital	CHAM	Urban Setting	Nurse	Female
12.	Lumbira Health Centre	CHAM	Urban Setting	Clinical Officer	Male

3.2 Presentation of graphs and tables for variation of primary ART outcomes

The graphs and tables for variation of primary ART outcomes originates from the analysed data from 45 ART clinics of which 23 were public, 16 were private and 6 were CHAM between1st January 2017 and 31st December 2018 in Blantyre District. At the beginning of 2017, public had 61,930, private 12,927 and CHAM 14,102 cumulative clinic registrations and as of 31st December 2018, public had 82,488, private 14,588 and CHAM 16,833 cumulative clinic registrations.

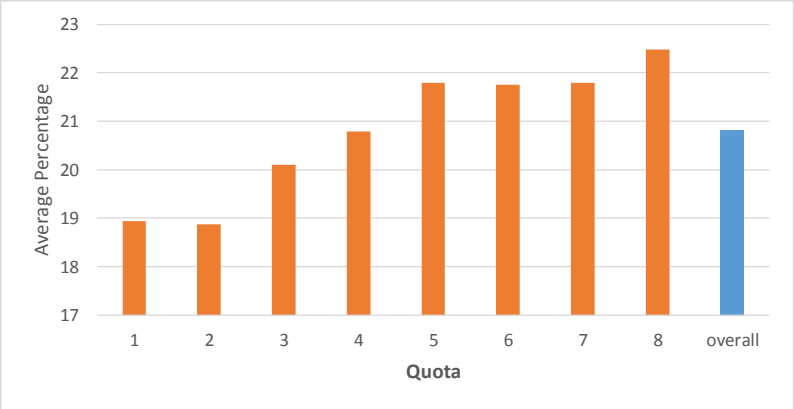

Figure 2: Overall Default Outcome

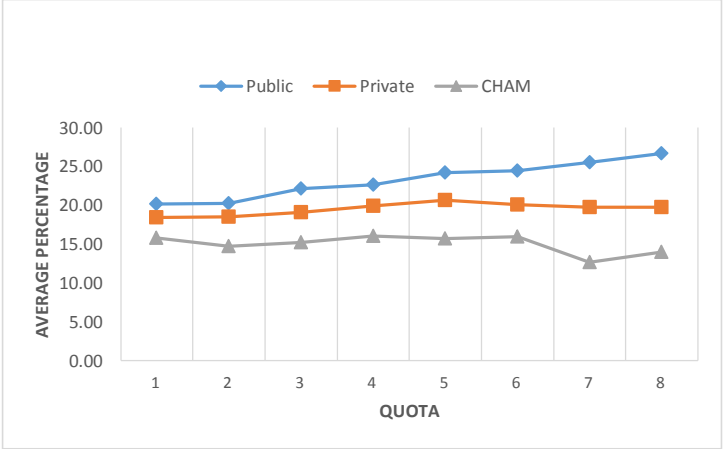

Figure 3: Default Outcome by Service Provider Type

Table 3: Percentages of Cumulative Quarterly Default Rate

Quarter	**Public**	**Private**	**CHAM**	**P-value**
1	20.12	18.42	15.78	0.5164
2	20.20	18.52	14.72	0.3634
3	22.13	19.04	15.19	0.2474
4	22.65	19.90	15.99	0.3512
5	24.16	20.60	15.71	0.1220
6	24.43	20.05	15.96	0.1185
7	25.51	19.73	12.67	0.0108
8	26.63	19.72	13.97	0.0079
Overall Mean	**23.23**	**19.49**	**15.00**	**<0.001**

Table 4: Comparison of Default outcomes

Quarterly	**Overall**
Quarter 7: Public vs. CHAM (0.017)	Public vs. private (0.002)
Quarter 8: Public vs. CHAM (0.019)	Public vs. CHAM (<0.001)
	Private vs. CHAM (0.016)

Overall, graph (Figure 3.2.2) showed that there was persistently high default rate in public ART clinics compared to private ART clinics (P-value: 0.002). Comparing public sector health facilities with CHAM health facilities, the default rate was higher in public ART clinics (P-value: <0.001). While private sector ART clinics compared to CHAM health facilities, the default rate was also higher in private ART clinics (P-value: 0.016). Overtime, it was observed that there was steady increase in default rate in public ART clinics, stagnant in the private and CHAM ART clinics. However, analysing the data by quarter, significant differences have been noted in quarter 7 and 8 if you compare public versus CHAM ART clinics (P-value: 0.017) and (P-value: 0.019) respectively.

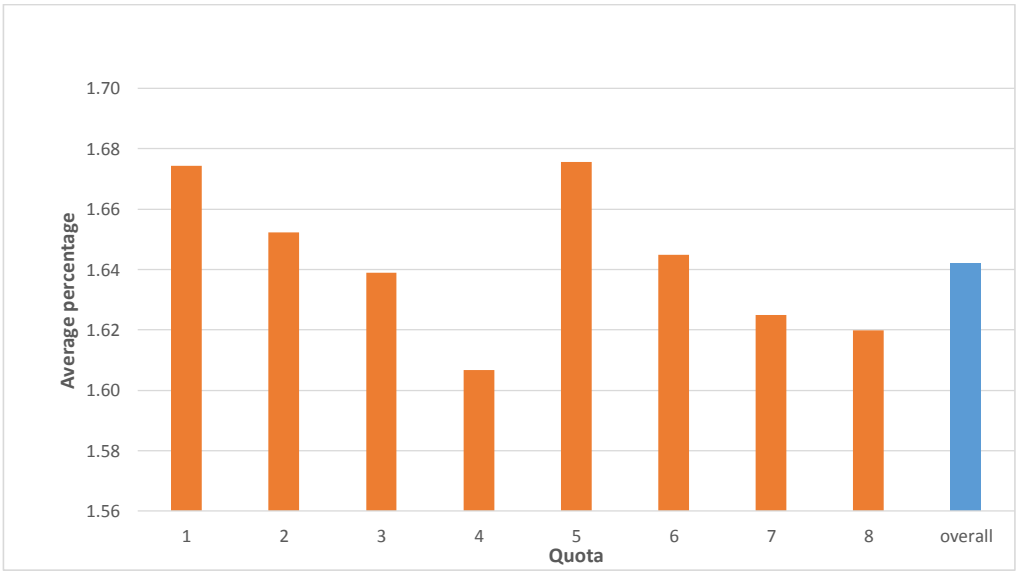

Figure 4: Overall Died on ART outcome

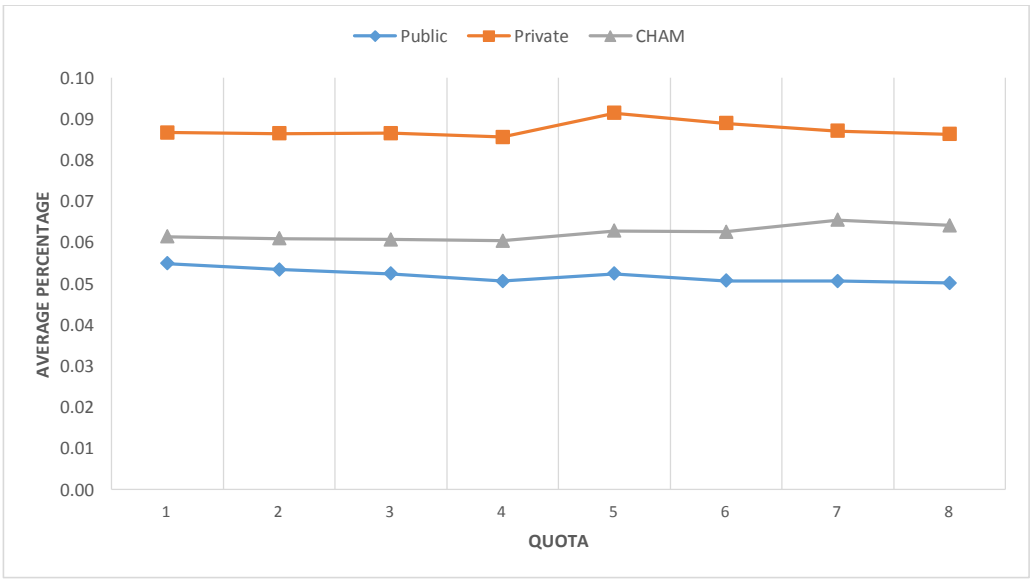

Figure 5: Died on ART Outcome by Service Provider Type

Table 5: Percentages of Cumulative Quarterly Death Rate

Quarter	**Public**	**Private**	**CHAM**	**P-value**
1	0.055	0.087	0.061	0.0216
2	0.053	0.086	0.061	0.0173
3	0.052	0.086	0.061	0.0098
4	0.051	0.086	0.060	0.0098
5	0.052	0.091	0.063	0.0018
6	0.051	0.089	0.063	0.0047
7	0.051	0.087	0.065	0.0075
8	0.050	0.086	0.064	0.0055
Overall	**0.052**	**0.087**	**0.062**	**< 0.001**

Table 6: Comparison of Death outcomes

Quarterly		**Overall**
Quarter 1: Public vs. Private (0.023)	Quarter 5: Public Vs. Private (0.002)	Public vs. Private (<0.001)
Quarter 2: Public Vs. Private (0.018)	Quarter 6: Public Vs. Private (0.005)	Private vs. CHAM (<0.001)
Quarter 3: Public Vs. Private (0.010)	Quarter 7: Public Vs. Private (0.008)	
Quarter 4: Public Vs. Private (0.010)	Quarter 8: Public Vs. Private (0.005)	

Overall this graph (**Figure 3.2.3)** showed that high death rate in private ART clinics compared to public ART clinics (P-value: <0.001). Comparing private ART clinics with CHAM ART clinics, the overall death rate was higher in private sector health facilities (P-value: <0.001). However, no significant differences between public and CHAM ART clinics.

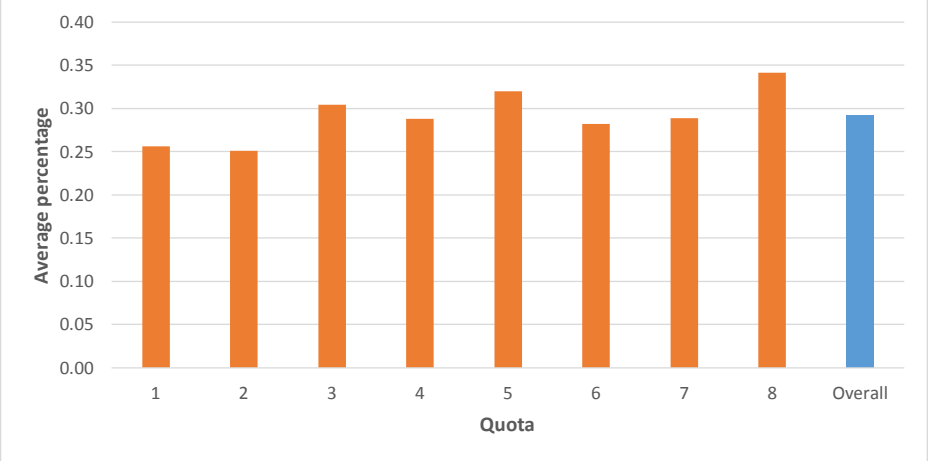

Figure 6: Overall Stopped ART Outcome

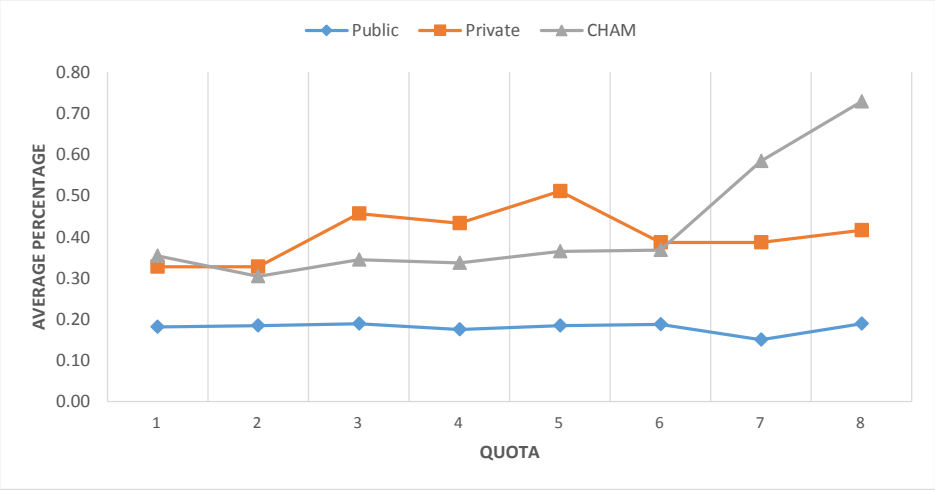

Figure 7: Stop Outcome by Service Provider Type

Table 7: Percentages of Cumulative Quarterly Stop Outcome

Quarter	Public	Private	CHAM	P-value
1	0.18	0.33	0.35	0.2784
2	0.18	0.33	0.30	0.3325
3	0.19	0.46	0.34	0.1676
4	0.17	0.43	0.34	0.1243
5	0.18	0.51	0.36	0.0577
6	0.19	0.39	0.37	0.2501
7	0.15	0.39	0.58	0.0438
8	0.19	0.41	0.73	0.0425
Overall	**0.18**	**0.40**	**0.42**	**<0.001**

Table 8: Comparison of stop outcomes

Quarterly	Overall
Quarter 7: no specific difference but overall different	public vs. Private (<0.001)
Quarter 8: no specific difference but overall different	pubic vs. CHAM (0.001)

Overall, this graph (**Figure 3.2.6**) shows that the stop rate was lower in public ART clinics compared to CHAM (P-value: 0.001), and lower in public compared to private ART clinics (P-value: <0.001). However, in the second half of 2018 (quarter 7 and 8), there was a remarkable increase of stop outcomes in CHAM ART sites even though there were no specific difference. However, there was an overall difference.

Comment [u1]:

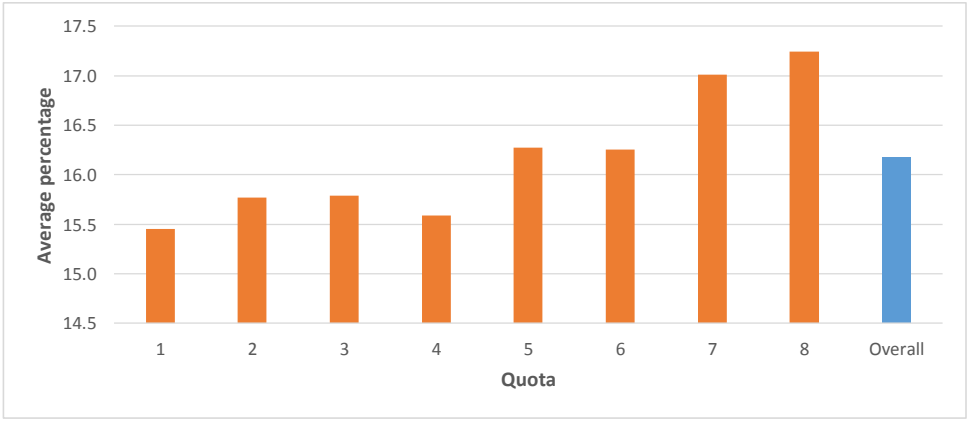

Figure 8: Overall Transfer out Outcome

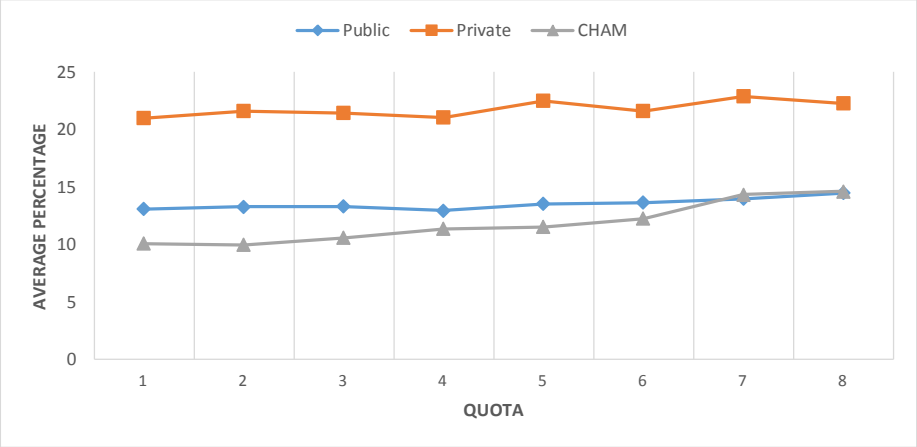

Figure 9: Transfer Out Outcome by Service Provider Type

Table 9: Percentages of Cumulative Quarterly Transfer Out Outcomes

Quarter	Public	Private	CHAM	P-value
1	13.05	20.94	10.03	0.0035**
2	13.24	21.58	9.94	0.0071**
3	13.26	21.39	10.54	0.0057**
4	12.91	21.03	11.33	0.0101**
5	13.51	22.44	11.47	0.0029**
6	13.61	21.56	12.22	0.0065**
7	13.92	22.84	14.30	0.0048**
8	14.46	22.25	14.58	0.0183**
Overall	**13.50**	**21.74**	**11.80**	**<0.001**

Table 10:Comparison of Transfer Out Outcomes

Quarterly		**Transfer Out Outcomes**
Quarter 1: Public vs. Private (0.013), Private vs. CHAM (0.020)	Quarter 5: Public vs. Private (0.007), Private vs. CHAM (0.027)	Public vs. private (<0.001),
Quarter 2: Public vs. Private (0.023), Private vs. CHAM (0.033)	Quarter 6: Public vs. Private (0.013)	Private vs. CHAM (<0.001)
Quarter 3: Public vs. Private (0.017), Private vs. CHAM (0.033)	Quarter 7: Public vs. Private (0.007)	
Quarter 4: Public vs. Private (0.020	Quarter 8: Public vs. Private (0.024)	

Overall, this graph (**Figure 3.2.8)** showed that Transfer out outcome was different in public ART clinics compared to private ART clinics (P-value: <0.001) and private ART clinics with CHAM ART clinics (P-value: <0.001). In case of quarters, there was significant difference between public and Private and private and CHAM ART Clinics.

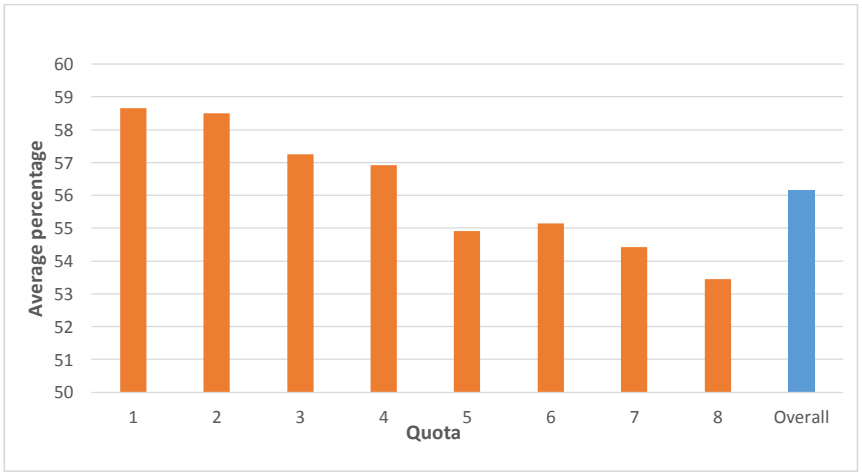

Figure 10: Overall Alive Outcome

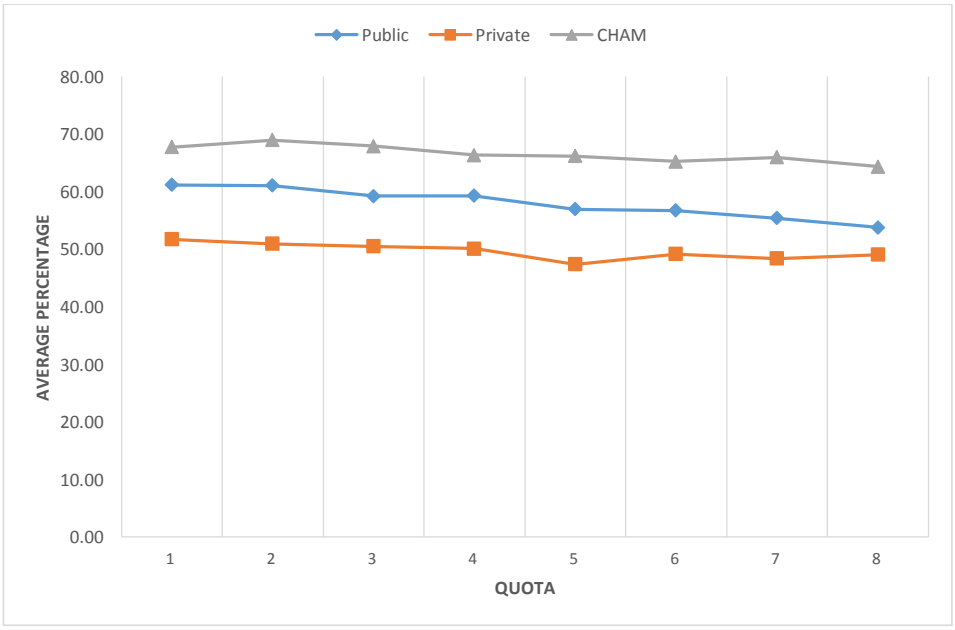

Figure 11: Alive Outcome by Service Provider Type

Quarter	Public	Private	CHAM	P-value
1	61.17	51.66	67.70	0.0194**
2	61.04	50.93	68.95	0.0128**
3	59.19	50.47	67.87	0.0253**
4	59.21	50.08	66.31	0.056
5	56.91	47.31	66.18	0.0057**
6	56.70	49.12	65.20	0.0307**
7	55.37	48.35	65.90	0.0177**
8	53.72	48.98	64.31	0.0484**
Overall	**57.91**	**49.64**	**66.55**	**<0.001****

Figure 12:Percentages of Cumulative Quarterly Alive Outcome

Table 11:Comparison of Alive outcomes

Quarterly		**Overall**
Quarter 1: Private vs. CHAM (0.042)	Quarter 6: Private vs. CHAM (0.041)	Public vs. private (<0.001)
Quarter 2: Private vs. CHAM (0.026)	Quarter 7: Private vs. CHAM (0.020)	Public vs. CHAM (<0.001)
Quarter 3: Private vs. CHAM (0.038)	Quarter 8: Private vs. CHAM (0.049)	Private vs. CHAM (<0.001)
Quarter 5: Private vs. CHAM (0.010)		

Overall, this graph (**Figure 3.2.10**) showed that Alive outcome was different in public ART clinics compared to private ART clinics (P-value: <0.001). Comparing public ART clinics with CHAM ART clinics, Alive outcome was different (P-value: <0.001). While private sector ART clinics compared to CHAM ART clinics, Alive outcome is also different (P-value: <0.001). Throughout the quarters except quarter 4, there was significant difference between private and CHAM ART Clinics having more high survival rate in CHAM compared to Private.

3.3 Findings from the Qualitative Analysis

The third objective of the study was "To identity factors affecting primary antiretroviral therapy outcomes in public, private and Christian Health Association of Malawi ART Clinics between 1st January 2017 and 31st December, 2018 in Blantyre District, Malawi." The study, therefore, looked at the following areas for the purpose of addressing the objective either directly or indirectly; Access to the Facility, Capacity and Availability of Human Resource, Infrastructure and organization, Stigma and discrimination, Other

services are provided together with ART services, Reasons for Default, Reasons for Transfer out, Reasons for Stop and Reasons for Death on ART.

3.3.1 Access to the Facility; Access to the facility, 11 out of 12 respondents reported that distance to the facility contribute negatively to primary ART outcomes. 7 out of 12 respondents reported that Cost of ART and associated expenses contributing negatively to primary ART outcomes

One participant from a public facility had this to say; *"service charge at private facilities might not affect ART primary outcome since it's a choice made by the client after self-assessment and knowledge that they are going to meet the demand.*

3.3.2 Capacity and Availability of Human Resource; On the capacity and availability of human resource, 11 out of 12 respondents said that there were adequate staff and all of them reported that all staff were trained in the clinical management of HIV in children and adults.

3.3.3 Infrastructure and organization; 5 out of 12 respondents indicated that location of the clinic in relation to other services contributes negatively to primary ART outcomes (defaulters).

One respondent from a public facility had this to say *"And I remember when we entered into this building that was built for ART services, but when we started ART provision here, we had a lot of defaulters and we later found out that the geographical position of this ART Clinic is not okay because it was at the open and we went back to our previous place where everything else was done inside that room apart from viral load"*

Another respondent from a CHAM facility had this to say *"We even receive patients from far areas such as Neno, and Mwanza; this might be because of the care that we provide to them; because you can see that donors built us this ART Clinic at this open place where*

everyone could see the patients, because of lack of privacy, It took us the providers to ask management to put iron sheets fence for confidentiality".

Another respondent from a public facility had this to say *"There wasn't a fence and it was challenging to access medication, therefore some people default because they don't like to be seen publicly because there was no fence."*

One respondent from a public facility had this to say "*The position of the ART clinic causes discomfort to most of the clients since it was located to the front of the main hospital, therefore a lot of clients feel shy to access ART services because they feel exposed hence an increase in defaults."*

The client flow in relation to infrastructure contributed negatively to primary ART outcomes in 2 out of 12 respondents. 4 out of 12 respondents stated that the clinic integrates ART services with other services surprisingly, all the four respondents are from the private clinics. 8 out of 12 respondents indicated that expert clients were responsible for ART treatment adherence and follow up of patients.11 out of 12 respondents said that daily ART clinic days affected primary ART outcomes positively. All respondents indicated that ART Dispensing affected positively on patient primary ART outcomes. 8 out of 12 respondents said that unavailability of some OIs drugs affected negatively on patient primary ART outcomes.

3.3.4 Stigma and discrimination; Incidences related to stigma and discrimination was found in 2 out of 12 respondents, Incidences related to breech of privacy and confidentiality in 3 out of 12 respondents, Provider accessing ART at their facility they are working if they are HIV + 7 out of 12 respondents.

3.3.5 Other services provided together with ART services; In Nutritional assessment 11 out of 12 respondents, Cancer Screening 7 out of 12 respondents, TB screening 12 out of 12 respondents (100%) and Viral load monitoring 12 out of 12 respondents.

3.3.6 Reasons for Default; 9 out of 12 respondents said that distance to the facility was a reason for default, Stigma and discrimination 9 out of 12 respondents, Privacy and confidentiality 10 out of 12 respondents.

One respondent from a public facility had this to say *"The position of the ART cherub causes discomfort to most of the clients since it was located to the front of the main hospital, therefore a lot of client shy out to access ART services because they feel exposed hence an increase in defaults."*

Another respondent from a public facility had this to say *"Clients default because of gender based violence because of failure to disclose and their spouse realizes that they were on ART treatment."*

3.3.7 Reasons for Transfer out; Change of location 12 out of 12 respondents, not conducive environment 1 out of 12 respondents.

One respondent from a private facility had this to say *"Some Patients transferred-out so that they could access free services even though there were some other challenges at those places."*

Another respondent from a private facility had this to say *"Work related issues also contribute to default of clients because client leave without obtaining a transfer after they had been transferred to another working place and they start accessing treatment at the facility where they were transferred to."*

3.3.8 Reasons for Stopping ART; Religious Belief; 7 out of 12 respondents, to get married and avoid disclosing their status to the spouse 2 out of 12 respondents, Stigma and discrimination 9/12, Feeling improved and Health 2 out of 12 respondents, Side effects 1 out of 12 respondents .

One respondent from a private facility had this to say *"Some clients stop treatment due to religious beliefs after being told that they had been healed after being prayed for. However, some of the clients were able to restart ART treatment after experiencing some changes in their bodies,"*

3.3.9 Reasons for Death on ART; Late presentation of illness in all respondents.

One respondent from a public facility had this to say *"Most of the deaths that occur at ART were due to opportunistic infections and since Queen Elizabeth central Hospital was far; and you were able not to refer them, and when some of them consider their financial capability, they just gave up and go home; and that was the number one reason for having a lot of ART death outcomes.*

Another respondent from a private facility had this to say *"Clients die mostly when their immunity decreases after they had stopped taking medication and some patients also die when opportunistic infections attacks them aggressively because of lack of adherence."*

CHAPTER 4: DISCUSSION

We examined primary Antiretroviral Therapy outcomes i.e. successful primary Antiretroviral Therapy (ART) outcomes (alive on ART and transfer out) and poor outcomes (death while on ART, default and stopped) in Blantyre District using ART data from 1st January 2017 to 31st December, 2018 in public, private and Christian Health Association of Malawi ART clinics.

4.1 Default Outcome

Overall, there is persistently high default rate in public ART clinics compared to private ART clinics. Comparing public sector health facilities with CHAM health facilities, the default rate is higher in public ART clinics. While private sector ART clinics compared to CHAM health facilities, the default rate is also higher in private ART clinics. Overtime, it is observed that there is steady increase in default rate in public ART clinics, stagnant in the private and CHAM ART clinics. However, analysing the data by quarter, significant differences have been noted in quarter 7 and 8 of 2018 if you compare public versus CHAM ART clinics.

There are more defaulters in the public sector followed by private and lowest in the CHAM ART sites. This may be attributed lack of privacy and confidentiality, stigma and discrimination and long distance to the health facility which result in high cost expenses. The results of the qualitative analysis found that reasons for defaulting were lack of privacy and confidentiality in 83% of the respondents, stigma and discrimination (75% of the respondents). 67% and 50% of the respondents in the public ART clinics admitted that incidences related to stigma and discrimination and privacy and confidentiality respectively. 75% of the respondents attributed defaulting to long distance to the health

facility. However, public and CHAM have similar settings and the high default rate in public can also be greatly attributed to lack of privacy and confidentiality due to the location of the ART clinic in relation to other services at the health facility. The majority of those who expressed concern about the negative impact of location of the ART clinic in relation to other services were from the public ART clinics. This has been well demonstrated in one of the public ART clinic facility where the position of the ART clinic causes discomfort to most of the clients since it is located to the front of the main hospital, therefore a lot of clients feel shy to access ART services because they feel exposed hence an increase in defaults."

4 out of 12 respondents (33%) stated that the clinic integrates ART services with other services surprisingly, all the four respondents are from the private clinics pointing to the fact that integration is one of the important strategies in averting stigma and discrimination and lack of privacy and confidentiality.

Since public and CHAM facilities have similar settings, there could be other factors attributing to low defaulters in CHAM ART sites worth exploring. "Tracing" studies that evaluate outcomes among lost patients in the community provide insight into retention in care by documenting patient movement across clinic sites(52). In many instances, patients who are lost to follow-up continue to receive care at other, more local facilities(52). 8 out of 12 respondents indicated that expert clients were responsible for ART treatment adherence and follow up of patients. All these who responded were from public and CHAM ART sites. It is believed that ART expert clients play a major role in defaulter tracing. This is supported by a recent study commissioned by IMPACT revealed that salaried service providers believe that Expert Clients are contributing to improved quality of HIV services and have increased the uptake of HIV testing and treatment (26). However, adversely we see more defaulters in the public ART clinics.

4.2 Died on ART outcome

The quantitative analysis shows that high death rate in Private ART clinics compared to public ART clinics. Comparing private ART clinics with CHAM ART clinics, the overall death rate is also higher in private sector health facilities with no significant differences between public and CHAM ART clinics. This may be due to the fact that clients tend to go private facility when they are very sick in anticipation of accessing quality services. In identifying factors contributing to death on ART outcome, the qualitative analysis of this study revealed that the reasons why patients die on ART is the late presentation of illness to the clinic in of all respondents across all service providers. Some of these are those in denial, stopped ART treatment for various reasons and possibly those that are failing on treatment. This probably can be attributed to poor clinical monitoring of clients. The predictor of HIV disease progression is Viral Load which was not assessed as a service in this study in order to compare private, public and CHAM. However, these results are supported by a study in India by Shet A. et al(42) which aimed at understanding patient characteristics and treatment outcomes from different HIV health care settings in Bangalore, India. It was found that more participants reported ≥ 95% adherence among public and public-private groups compared to private participants (public 97%; private 88%; public-private 93%)(42). Treatment interruptions were lowest among public participants (1%, 10% and 5% respectively). Although longer clinic waiting times were experienced by more public participants (48%, compared to private 27%, public-private 19%), adherence barriers were highest among private (31%) compared with public (10%) and public-private (17%), participants(42).Viral load was detectable in 13% public, 22% private and 9% public-private participants suggesting fewer treatment failures among public and public-private settings. Drug resistance mutations were found more frequently among private facility patients (20%) compared to those from the public (9%) or public-private facility (8%) it was then concluded that adherence and treatment success was

significantly higher among patients from public and public-private settings as compared to patients from private facilities(42).

Inversely, study results from a donor funded, private GP-run outpatient clinic in rural Mpumalanga, in South Africa initiating treatment naïve patient on ART that also demonstrated higher rates of viral suppression (70%) and the cohort's 12-month virological outcomes were comparable to public sector programs(23). More studies on this outcome are required.

4.3 Stop Outcome

In this quantitative analysis, it was found that patients who stopped ART was lower in public ART clinics compared to CHAM and Private ART clinics. However, the reasons for stopping in public, private and CHAM were the same according to the qualitative analysis. The reasons ranged from Religious Belief in 7 out of 12 respondents, to get married and avoid disclosing their status to the spouse 2 out of 12 respondents. Stigma and discrimination 9 out of 12 respondents, Feeling improved and Health 2 out of 12 respondents, Side effects 1out of 12 respondents, 75% respondents indicated that the reasons was to avoid disclosing their HIV status to other people for fear of stigma and discrimination and 42% of the respondents said was religious beliefs that they are healed.

These findings are supported by the a study conducted in Malawi titled Barriers and facilitators to the uptake of ART in Option B+ in HIV Care in Lilongwe which reviled that fear of disclosure to their partners(35). This was common to women. Another study done by Mwale(36) also stipulated that social related factors that influenced patient retention in care were stigma and non-disclosure of HIV status, faith healing, use of herbal remedies and alcohol use(36). However, this study did not bring issues of herbal remedies and alcohol abuse. Other reasons given were; to get married and avoid disclosing their status to

the spouse (17% of the respondents) and Feeling improved and health in 8% of the respondents.

4.4 Transfer out outcome

The quantitative analysis has clearly demonstrated that the private ART clinics have more transfer outs than public and CHAM. The assumption though is that continued access to ART services in the private ART Clinics is hampered by cost(9) which is directly related to the ART or other costs incurred at a private facility. It could also be that the quality of HIV services are not satisfactory to the patients.

Secondly, the clients go to private to start ART services only and just to get transferred to continue the service in other service provider types(9). The study results from the qualitative analysis on identification of factors affecting primary antiretroviral therapy outcomes in public, private and Christian Health Association of Malawi ART Clinics indicates that all patients who transfer out to access ART services in another facility is mainly due to change of location. 100% of the respondents indicated that the reason for transfer out is changing place of residence. This could be permanent or temporal. A study titled "What happens to patients on antiretroviral therapy who transfer out to another facility?"(31)showed that one fifth of patients transferred out from a central hospital institution over a 30-month period as new ART sites were set up in the country and started to deliver therapy closer to patients' homes.

4.5 Alive on ART Outcome

Overall, Alive outcome is different in public ART clinics compared to private ART clinics; comparing public ART clinics with CHAM ART clinics, Alive outcome is different. While private sector ART clinics compared to CHAM ART clinics, Alive outcome is also different. Throughout the quarters except quarter 4, there is significant difference between private and CHAM ART Clinics having more patients retained in care in CHAM compared to Private ART Clinics. This is not surprising to see alive outcome

(retention to care) lowest in private followed by public and finally CHAM ART clinics. Alive outcome is not only affected by the number of people dead, but is also affected by all other outcomes i.e. default, stop and transfer out.

Retention on lifelong antiretroviral therapy (ART) is essential in sustaining treatment success while preventing HIV drug resistance (HIVDR)(53).There is a critical need to develop and implement strategies to improve retention, thereby maximizing the benefits of ART(54).

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

In conclusion, this study was a Comparative Analysis of Primary Antiretroviral Therapy Outcomes by Service Provider Type in Blantyre District, Malawi. Overall the findings indicate that Primary Antiretroviral Therapy Outcomes in Public, Private and CHAM ART Clinics are different. According to the results, there are more defaulters in the public ART clinics followed by private and lowest in the CHAM ART sites. This may be attributed to lack of privacy and confidentiality, stigma and discrimination and long distance to the health facility which result in high cost expenses. Overall death rate on ART outcome is higher in private ART clinics compared to public and CHAM ART clinics and no significant between public and CHAM ART clinics.

The study has also clearly demonstrated that the private ART clinics have more transfer outs than public and CHAM due to change of location for work related issues of the clients. Retention in care (Alive on ART) is high in CHAM ART Clinics followed by public then lastly private. Generally, stop on ART is not a common outcome in all service provider types.

5.2. Recommendations

1. The investigator noted that the study did not reveal clear reasons for the high death rate on ART outcome in private ART clinics compared to public and CHAM ART clinics hence recommends that another study be done specifically to look at factors contributing to high death rate on ART in private ART sites.

2. The Ministry of Health should reconsider the location of the ART clinics in relation to other services in order to reduce the default rate of clients on ART as some locations promote stigma and discrimination and lack of privacy and confidentiality.
3. The investigator further recommends a study to find out whether the expert clients are negatively impacting of default outcome in the public ART clinics since they can interfere with privacy and confidentiality of other clients within the community they stay. In additional, expert clients are not trained health care workers who by their training ensure privacy and confidentiality.
4. There is need to learn from CHAM ART Clinics for having more patients retained in care compared to Private and Public ART Clinics and therefore an assessment to closely look at factors facilitating the retention of clients in the CHAM facilities is needed.
5. The Ministry of Health should continue to scale up the provision of ART services to address the challenge of distance which negatively affect the primary ART outcomes
6. The Ministry of Health should consider segmentation of private ART clinics to have a non-paying private sector clinics so that cost should not be a barrier to access ART services in some private facilities.
7. The Ministry of Health should consider providing integrated health care services that include the provision of ART services to prevent stigma and discrimination which has been one of the most important reason for defaulting ART treatment in the public sector

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7.0 APPENDICES

Appendix 7.1 Interview Guide

1. Where do most of your clients come from?

Human Resources

2. Who is involved with the provision of ART services at this health facility?

3. How many staff are involved with the provision of ART services at this health facility

4. Out of the number of ART providers, how many are trained in the clinical management of HIV in children and adults

Infrastructure and organisation

5. Explain the flow of ART clients until they have collected their ARVs

6. How does the flow of ART clients affect the patient primary ART outcomes?

7. In what ways does the infrastructure facilitate privacy and confidentiality in ART Services

8. What process do you follow when initiating patients on ART?

9. Who provides ART treatment adherence? How do you follow up your patients?

10. Where do you dispense the ARVs and how does is affect patient primary ART outcomes?

11. What problems do you face regarding dispensing arrangement or ARVs?

12. Which days of the week do you conduct the ART clinics and how does this affect patient primary ART outcomes?

13. Which other services are provided together with ART services? How can the provision of these services affect primary ART treatment outcomes

14. What problems do you face in the treatment of opportunistic diseases?

15. What are the main reasons for default at this facility?

16. Why do you transfer to access ART services in another facility?

17. What are the common reasons for stopping antiretroviral therapy?

Stigma and discrimination

18. Do your patients feel comfortable to come and access ARVs at any time in this health facility? Give reasons for your answer.

19. How does stigma and discrimination affect the ART treatment outcomes at your health facility

20. Suppose you are HIV positive and you need to access antiretroviral therapy, where will you access them and WHY?

ART Financing

21. How does the cost (transport, paying of service charge and other related costs) incurred by patients accessing antiretroviral therapy affect primary ART outcomes:

Appendix 7.2 Consent Form in English

Consent to Participate in a Research Study

Participants: Antiretroviral Therapy Service Providers

Title of Study: A Comparative Analysis of Primary Antiretroviral Therapy Outcomes by Service Provider Type in Blantyre District, Malawi

Principle Investigator: Stuart Chuka, Malawi Business Coalition Against HIV and AIDS (MBCA), P.O. Box 32221, Blantyre 3, Cell: +265 888 875 793, Email: stuchuka@gmail.com

Supervisors: Dr. Dominic Nkhoma, College Of Medicine, Lilongwe Campus

Sponsor: Self

General knowledge about research studies

You are asked to take part in this study on a voluntary basis. You may refuse to join or opt out at any time after consenting to take part in this study. Research studies aims at obtaining information regarding quality of clinical care that may help inform decision on improving patient and program management for adolescents and youth receiving HIV care in CHAM hospitals. You may not benefit directly for participating in this study as well as incurring some unanticipated risks. Refusing to take part or withdrawing your consent will not affect you in any way.

You are asked to understand details of this study below so that you can make an informed choice to take part in this study. You will be given a copy of this informed consent. In case there are any questions please contact the Principle investigator whose details have been provided on top of this form.

The Purpose of this Study

The purpose of this study is to analyse of Antiretroviral Therapy treatment outcomes in the public, private and Christian Health Association of Malawi by service delivery model in Blantyre City of Malawi.

This research will offer an opportunity to assess ART treatment outcomes of Antiretroviral Therapy (ART) Program by service delivery system in Malawi across private sector, CHAM and Public health facilities in Malawi through policy decisions which will also have a major impact in the National Program and the world as a whole.

You have been approached to take part in this study because you are one of the ART Providers at this facility and you have been purposefully considered for this study.

Required number of participants

If you accept to take part in this study, you will be one of the participants who will participate in this study.

Duration

The expected duration of the interview is about 60 minutes.

Procedures

If you choose to take part in this study, the interviewer will ask you questions record your answers both on the questionnaire and recorded using a tape recorder in case other information was not written correctly.

Possible risks or discomfort

Your privacy and confidentiality will be fully protected in this study. You should be assured that there are no anticipated risks for participating in this study, however you

might feel uncomfortable to answer questions about your opinion and experiences. Where you feel uncomfortable to answer certain question, you should tell the interviewer to skip to the next question. If you decide to quit, you may as well do so at any stage or time.

Protection of privacy

The information collected will be kept in a confidential manner during interview and analysis and you will be identified by your assigned ID number not your name.

Compensation

You will not be compensated for your time.

Your rights as a research participant

All research on Human volunteers are reviewed by the College of Medicine Research Ethics

Committee at the University of Malawi. This is a Committee that works at protecting your rights and welfare. You may contact this committee on 011871911 or Stuart Chuka on +265 888 875 793 in case you have questions or concerns about your rights as a study subject.

Participant's Agreement:

If you have read this consent form or had it read and explained to you such that you understand the information contained herein, and you voluntarily agree to participate, please sign your name or thumb print below.

PART A: LITERATE PARTICIPANT

Participant is literate:

---------- ---------- ----------

Participant ID (print) Participant Signature Date

---------- ---------- ----------

Research assistant (print) Research assistant sign Date

PART B: ILLITERATE PARTICIPANT

Participant is illiterate:

The research assistant must complete this section, ONLY if an impartial witness is available.

---------- ---------- ----------

Participant ID (print) Participant thumb print Date

---------- ---------- ----------

Research assistant (print) Research assistant sign Date

---------- ---------- ----------

Impartial Witness Name Impartial witness sign Date

Appendix 7.3: Letters of Support

Telephone: + 265 789 400
Facsimile: + 265 789 431

All Communications should be addressed to:
The Secretary for Health and Population

In reply please quote No.
.....
MINISTRY OF HEALTH AND POPULATION
P.O. BOX 30377
LILONGWE 3
MALAWI

Ref. No. Med/69/B **19th March, 2020**

Mr. Stuart Chuka
Malawi Business Coalition Against HIV/AIDS (MBCA),
Box 32221,
Chichiri,
BLANTYRE 3.

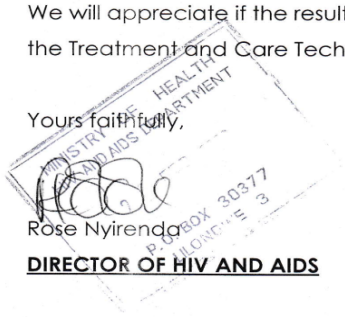
Dear Sir,

RE: PERMISSION TO USE MINISTRY OF HEALTH AND POPULATION DATA FOR A RESEARCH STUDY

I hereby grant the permission to Mr Stuart Chuka, a Master of Global Health Student at the College of Medicine to use secondary data from the Department HIV database. I am aware that the data will be used for a research study titled ***"A comparative analysis of Antiretroviral Therapy treatment outcomes in the public, private and Christian Health Association of Malawi by service delivery system in Blantyre City of Malawi"***, as a requirement in partial fulfilment for the award of the Master's Degree in Global Health Implementation.

We will appreciate if the results of the study are shared with the Department through the Treatment and Care Technical Working Group.

Yours faithfully,



Rose Nyirenda
DIRECTOR OF HIV AND AIDS

Mr. Stuart Chuka
Malawi Business Coalition Against HIV/AIDS (MBCA),
Box 32221,
Chichiri,
BLANTYRE 3.

The Director
District Health and Social Services
Private Bag 66,
Blantyre

1st February 2020

Dear Sir,

REQUEST FOR APPROVAL TO INTERVIEW TWO ANTIRETROVIRAL THERAPY PROVIDERS AT NDIRANDE HEALTH CENTRE AND MPEMBA HEALTH CENTRE FOR A RESEARCH STUDY

Please! Accept my request for your approval to interview two Antiretroviral Therapy Providers at Ndirande Health Centre and Mpemba Health Centre for the purposes of a research study titled ***"A comparative analysis of Antiretroviral Therapy treatment outcomes in the public, private and Christian Health Association of Malawi by service delivery system in Blantyre City of Malawi"*** as a requirement in partial fulfilment for the award of the Master's Degree in Global Health Implementation. I am a student in Master of Global Health Implementation Year Two at the College of Medicine.

I will appreciate if you considered my application.

Yours faithfully,

Stuart Chuka (M201870094874)
STUDENT: COLLEGE OF MEDICINE

Blantyre District Council
Director of Health & Social Services
02 MAR 2020
Private Bag 66
Blantyre

P.O. Box 1254, Blantyre, Malawi. Tel. +265 01 820 298, Fax. +265 01 820 217. Email: management_mmcl@mediclinics.mw

KANJEDZA MEDI CLINIC

27th February 2020.

Mr. Stuart Chuka

Malawi Business Coalition Against HIV/AIDS (MBCA)

P.O. Box 32221

Chichiri

BLANTYRE 3.

Dear Mr. Chuka,

RE: REQUEST FOR PERMISSION TO INTERVIEW TWO ANTIRETROVIRAL THERAPY PROVIDERS FOR A RESEARCH STUDY.

Reference is made to your letter dated 26th February 2020 regarding your request for permission to conduct interviews with two Antiretroviral therapy providers in our clinic, as part of your research study for the fulfillment of the award of the Masters in Global Health Implementation.

You are hereby being informed that permission has been granted to do the interviews with the providers, once you have the ethical clearance from relevant regulatory authorities. Please share with us a copy of the ethical clearance and results of your study upon its completion.

Best wishes in your research and entire course.

Sincerely,

DR. SEKELEGHE KAYUNI (MBBS, DTM&H, DLSHTM, MSc)

MEDICAL OFFICER IN CHARGE.

Mlambe Hospital
P.O. BOX 45, LUNZU, MALAWI

Reference: 26th February 2020

Mr. Stuart Chuka

Malawi Business Coalition against HIV/AIDS (MBCA),

Box 32221,

Chichiri,

BLANTYRE 3.

Dear Mr. S. Chuka,

PERMISSION TO INTERVIEW TWO ANTIRETROVIRAL THERAPY PROVIDERS AT BLANTYRE ADVENTIST HOPSPITAL FOR A RESEARCH STUDY

I write to advise you that following your request, a permission has been granted to you Mr. Stuart Chuka, a Master of Global Health Implementation Student the College of Medicine to collect data by interviewing two Antiretroviral Therapy Providers at Mlambe Hospital for the purposes of a research study titled ***"A comparative analysis of Antiretroviral Therapy treatment outcomes in the public, private and Christian Health Association of Malawi by service delivery system in Blantyre City of Malawi"*** as a requirement in partial fulfilment for the award of the Master's Degree in Global Health Implementation.

We will appreciate if the results of the study are shared with the health facility in order to improve the delivery of the Antiretroviral Therapy in Malawi.

Yours faithfully,

PP: Sr. C. Makweya

Principal Hospital Administrator

PRINCIPAL
HOSPITAL ADMINISTRATOR
26 FEB 2020
MLAMBE HOSPITAL
P.O.BOX 45, LUNZU

Phone: 0999 120 738 / 0881885126 / 088 124 6332
Email: mlambehosp@gmail.com

Malawi Business Coalition Against HIV/AIDS (MBCA),
Box 32221,
Chichiri,
BLANTYRE 3.

26th January, 2020

The Hospital Director
Blantyre Adventist Private Hospital
P.O. Box 692
BLANTYRE

Dear Sir / Madam,

REQUEST FOR PERMISSION TO INTERVIEW TWO ANTIRETROVIRAL THERAPY PROVIDERS FOR A RESEARCH STUDY

Please! Accept my request for your approval to interview two Antiretroviral Therapy Providers at your institution for the purposes of a research study titled ***"A comparative analysis of Antiretroviral Therapy treatment outcomes in the public, private and Christian Health Association of Malawi by service delivery system in Blantyre City of Malawi"*** as a requirement in partial fulfilment for the award of the Master's Degree in Global Health Implementation. I am a student in Master of Global Health Implementation Year Two at the College of Medicine.

I will appreciate if you considered my application.

BLANTYRE ADVENTIST HOSPITAL
30 APR 2020
P.O. BOX 51, BLANTYRE

Yours faithfully.

Stuart Chuka (M201870094874)
STUDENT: COLLEGE OF MEDICINE

Approved by Dr. Vavama
30.04.2020

Malawi Business Coalition Against HIV/AIDS (MBCA),

Box 32221,

Chichiri,

BLANTYRE 3.

26th January, 2020

The Director
Lumbira Health Centre
BLANTYRE

Dear Sir / Madam,

REQUEST FOR PERMISSION TO INTERVIEW TWO ANTIRETROVIRAL THERAPY PROVIDERS FOR A RESEARCH STUDY

Please! Accept my request for your approval to interview two Antiretroviral Therapy Providers at your institution for the purposes of a research study titled ***"A comparative analysis of Antiretroviral Therapy treatment outcomes in the public, private and Christian Health Association of Malawi by service delivery system in Blantyre City of Malawi"*** as a requirement in partial fulfilment for the award of the Master's Degree in Global Health Implementation. I am a student in Master of Global Health Implementation Year Two at the College of Medicine.

I will appreciate if you considered my application.

Yours faithfully.

Stuart Chuka (M201870094874)

STUDENT: COLLEGE OF MEDICINE

MITSIDI HEALTH CENTRE

Approved by IC Logs

30/04/2020

Appendix 7.4: List of randomly sampled ART clinics in Blantyre district

	ART Clinic	Service Delivery Type
1	Chileka SDA Health Centre	CHAM
2	Lumbira / Mitsidi Health Centre	CHAM
3	Malabada Health Centre	CHAM
4	Mlambe Mission Hospital	CHAM
5	Soche Adventist Health Centre	CHAM
6	St Vincent Health Centre Chadzunda	CHAM
7	Blantyre Adventist Hospital	Private
8	Blantyre Water Board Clinic	Private
9	BLM Lunzu	Private
10	Carlsberg / Sobo Clinic Blantyre	Private
11	Chitawira Private Hospital	Private
12	Lafarge Cement Clinic	Private
13	Limbe Diagnostic Centre	Private
14	Limbe Leaf Tobacco Clinic Limbe	Private
15	Malmed Private Clinic	Private
16	Masm Medi Clinic Limbe	Private
17	Medicare City Centre Clinic	Private
18	Mtengoumodzi Private Hospital	Private
19	Mwaiwathu Private Hospital	Private
20	Nyambadwe Private Hospital	Private
21	Pace Clinic	Private
22	Shifa Private Clinic	Private
23	Bangwe Madina Health Centre	Public

24	Blantyre City Assembly Clinic	Public
25	Chavala Health Centre	Public
26	Chikowa Health Centre	Public
27	Chilomoni Health Centre	Public
28	Chimembe Health Centre	Public
29	Chirimba Health Centre	Public
30	Dziwe Health Centre	Public
31	Kadidi Health Centre	Public
32	Kanjedza Police Clinic	Public
33	Limbe Health Centre	Public
34	Lirangwe Health Centre	Public
35	Madziabango Health Centre	Public
36	Makata Health Centre Lunzu	Public
37	Makhetha Clinic	Public
38	Mbayani Health Centre	Public
39	Mpemba Health Centre	Public
40	Mpingo Maternity	Public
41	Namikoko Health Centre	Public
42	Ndirande Health Centre	Public
43	Soche Maternity	Public
44	South Lunzu Health Centre	Public
45	Zingwangwa Health Centre	Public

Appendix 7.5 Certificate of Ethical Approval

CERTIFICATE OF ETHICS APPROVAL

This is to certify that the College of Medicine Research and Ethics Committee (COMREC) has reviewed and approved a study entitled:

P.05/20/3051 - "A comparative analysis of Antiretroviral Therapy treatment outcomes in the public, private and Christian Health Association of Malawi by service delivery system in Blantyre City of Malawi" by Stuart Chuka

On 11-Nov-20

As you proceed with the implementation of your study, we would like you to adhere to international ethical guidelines, national guidelines and all requirements by COMREC some of which are indicated on the next page for your study

11-Nov-20

Prof. E. Umar -Chairperson (COMREC) — Date

Approved by College of Medicine
11-Nov-2020
(COMREC)
Research and Ethics Committee

Appendix 7.6: Journal article

A Comparative Analysis of Primary Antiretroviral Therapy Outcome by Service Provider Type in Blantyre District, Malawi

Authors and Institutional affiliations.

Stuart Chuka [1, 2], Dr. Dominic Nkhoma [1]

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2. Malawi Business Coalition Against HIV and AIDS

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Word count: 21256

Abstract

Introduction: The Objective was to examine primary Antiretroviral Therapy outcomes in Blantyre District using ART data from 1st January 2017 to 31st December, 2018 in public, private and Christian Health Association of Malawi ART clinics

Methods:

This was a mixed methods study of both quantitative and qualitative design. The quantitative method used facility level secondary data from the Malawi National ART Program in the Ministry of Health HIV/AIDS Department. The qualitative method used in-depth interviews

using an interview guide to key informants. Data was analysed using STATA statistical software package version 15. Analysis of Variance (ANOVA) was used to compare the variations of primary ART outcomes among in public, private and CHAM ART sites. To compare proportions, the researcher used Scheffe's-Test. Manual analysis was used to describe qualitative data and to explain the relationship between the variables.

Results: We have found that differences in Primary Antiretroviral Therapy Outcomes between Public, Private and CHAM ART Clinics. There are more defaulters in the public ART clinics followed by private and lowest in the CHAM ART sites. Overall died on ART outcome is higher in private ART clinics compared to public and CHAM ART clinics and no significant differences between public and private ART clinics. More transfer outs were found in private ART clinics than public and CHAM. Retention in care (Alive on ART) is high in CHAM ART Clinics followed by public then lastly private. Generally, stop on ART is not a common outcome in all service provider types.

Conclusion: Overall the findings indicate that Primary Antiretroviral Therapy Outcomes in Public, Private and CHAM ART Clinics are different. Some of the factors contributing to the primary Art outcomes include; lack of privacy and confidentiality, stigma and discrimination and long distance to the health facility which result in high cost expenses and change of location for work related issues of the clients. Generally, stop on ART is not a common outcome in all service provider types

Introduction

ARVs are an important aspect of care in the control of the HIV/AIDS pandemic. According to the MOH HIV program data(2), by December, 2018, there were 1,258,214 patients ever

initiated on ART, 805,232 (50%) were retained alive on ART, 112,688 (9%) were known to have died, 350,381 (27%) were lost to follow-up and 6,597 (<1%) were known to have stopped ART in 750 static ART sites in Malawi(2).

There has been concerns by the general public that some clients taking antiretroviral therapy in Malawi do not take their ARVs from nearby health facilities due to poor privacy and confidentiality, stigma and discrimination and poor quality of services in particular from public health facilities(1). A study on factors influencing adherence to antiretroviral treatment among adults accessing care from private health facilities in Malawi indicated that the main reason for defaulting in antiretroviral treatment(ART) was fear of disclosing an HIV status to avert potential stigma and discrimination(1).

Other concerns have been that some private sector health facilities providing antiretroviral therapy do not follow national guidelines when providing HIV services as compared to the public sector and CHAM ART Clinics. The outcomes of all these may affect the primary antiretroviral therapy outcomes namely; Default, Stop, Transfer Out, Dead and Alive(2).

To the best of our knowledge, no known studies have been conducted to compare primary ART treatment outcomes by service provider type thus public, private and CHAM. In addition, information on variation of primary ART treatment outcomes by service provider type is not known and probably has not been published. Therefore, in this study we aim to describe differences in ART outcomes according to service provider type in Malawi.

Methods

Design

This was a mixed method study using facility level secondary data from the Malawi National ART Program in the Department of HIV in the Ministry of Health and in-depth interviews with key informants.

Study Population

The key informants that were interviewed included; Medical Officers, Clinical officers, Medical Assistants and Nurses that underwent training in the Clinical management of HIV in adults and children and were certified to be ART/PMTCT/TB providers in Malawi.

Study Setting

The study was conducted at the following ART clinics in order to collect the qualitative data for the identification of factors affecting primary antiretroviral therapy outcomes in public, private and CHAM ART Clinics: Blantyre Adventist Hospital, Masm Medi Clinic, ESCOM Clinic, Mtengoumodzi Private Hospital, Bangwe Health Centre, Ndirande Health Centre and Mlambe Mission Hospital, Lumbira Health Centre in Blantyre urban, Lirangwe Heath Centre, Mdeka Health Centre, Madziabango Health Centre and Soche Maternity Clinic in Blantyre Rural. These study areas were purposive selected to include rural and urban, high burden and low burden, privately owned and company based ART clinics.

Eligibility Criteria.

We selected health facilities based on whether rural and urban, volume of patients, the affiliation thus public, private or CHAM and the whether the facility was already providing the ART services by 1st January, 2017.

Sample Size

There were a total of 54 ART clinics eligible for inclusion in the study. In order to determine how many health facilities to be used for analysis, a sample size was calculated using 54 ART clinics as the total population. A hypothesized percentage frequency of outcome factor default in private facilities using the Ministry of Health ART Quarterly Report (45) was set at 12%+/-5. We used a confidence interval of 95% and adjusted our calculation for 10% missing information. This yielded a total sample size of 45 health facilities for analysis.

To effectively address the qualitative aspect of the study a total sample size of twelve ART sites was selected. The participants were purposively selected one from each ART site for site variation and representation. This included; ART providers that underwent training in the Clinical Management of HIV in Adults and Children, more than 2 years of experience in ART provision and willingness to consent for the participation in the study.

Data collection

The study used facility site level secondary cumulative data from the Malawi National ART Program in the Department of HIV in the Ministry of Health. Authority to use and access this data was sought from the Ministry of Health and was approved. The data for Blantyre City was separated from the national data system and organized for analysis. Qualitative data

collection was done by the researcher who was conversant with the ART program in Malawi. Face to face in-depth interviews were conducted using interview guide to key informants. The information was collected using audio tape and later transcribed.

Data Management

We defined Primary outcomes as latest status of a patient enrolled in care i.e. alive, death, default, stopped treatment and transferred out to another site. Transfer Out was defined as patient who continues ART at other sites and can be official transfer out or unofficial transfer out. Defaulter was defined as patient who has not reported to an ART site after 2 months after running out of ARVs depending on number of tins given at last visit. Died was referred as any death which occur to a patient who is taking ART regardless of the cause of death. Stop was defined as any patient last known to be alive and known not to be on ART for whatever reason while Alive was any patient retained alive in care known to be on ART.

Data analysis.

Quantitative data analysis was done in STATA version 15. T-test and Analysis of Variance (ANOVA) was used to compare the variations of primary ART outcomes across public, private and CHAM ART sites. Scheffe's Test was used to compare proportions

The qualitative data analysis was done using thematic analysis. Deductive and inductive analysis was used in the thematic analysis process. Similar concepts were grouped together forming categories. Other themes were deductively realized from the interview guides and the conceptual framework. Important issues and concepts were identified, and then the content of the data was analyzed to categorize the recurrent themes, this was the theme stage.

Ethics

The College of Medicine research and ethics committee reviewed and approved the conduct of the research. The COMREC approval number is **P.05/2-/3-51**The research involved interviewing people in order to determine factors affecting HIV treatment outcomes. Permission was sought from the Private Clinic Management, Ministry of Health-Department of HIV and AIDS and Blantyre District Health Office. All participants were asked to consent before they were interviewed.

Results

Characteristics of Clinics for quantitative data

Of the 45 clinics included in the study 23(51.1%) were public, 16(35.6%) were private and 6(13.3%) were CHAM. At the beginning of 2017, public health facilities had 61,930 cumulative clinic registrations, private 12,927 and CHAM 14,102 cumulative clinic registrations and as of 31st December 2018, public had 82,488, private 14,588 and CHAM 16,833 cumulative clinic registrations.

Characteristics of participants for qualitative interviews.

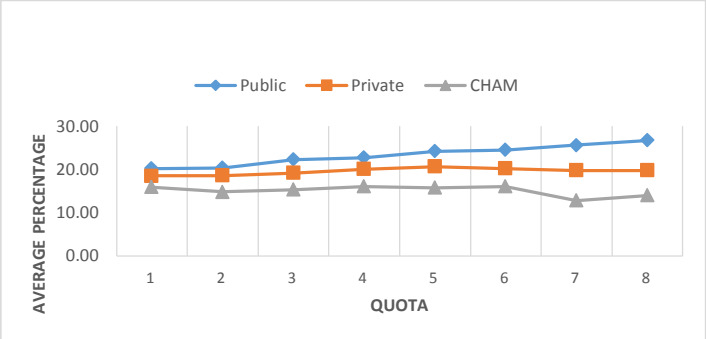
The qualitative data was collected and analysed from 6 public ART sites, 4 private ART sites and 2 CHAM ART sites. 4 out of the 12 ART clinics were from the rural setting and 8 from the urban setting. The characteristics of the participants that were interviewed to address objective three included the following; 4 Clinical officers and 8 Nurses. Out of these, 3 were males and 9 females that underwent training in the Clinical management of HIV in adults and children and were certified to be ART/PMTCT/TB providers in Malawi.

ART Default Outcomes

Total average default rate on ART across all service providers was19.3 %. While the overall average default rate across all the quarters in public health facilities was 23.3%, private 19.5% and CHAM had 15.0%.

We have found a persistently high default rate in public ART clinics compared to private ART clinics (P-value: 0.002). Comparing public sector health facilities with CHAM health facilities, the default rate is higher in public ART clinics (P-value: <0.001). While private sector ART clinics compared to CHAM health facilities. The default rate is also higher in private ART clinics (P-value: 0.016). Overtime, it is observed that there is steady increase in default rate in public ART clinics, stagnant in the private and CHAM ART clinics. However, analysing the data by quarter, significant differences have been noted in quarter 7 and 8 if you compare public versus CHAM ART clinics (P-value: 0.017) and (P-value: 0.019) respectively. Figure 1.

Figure 1. Default rates by health service provider type



Death Outcomes on ART

While the overall average across all the quotas, Public health facilities had an average mortality of 0.052%, private had an average mortality of 0.087% and CHAM had 0.062% Mortality.

There was high death rate in private ART clinics compared to public ART clinics (P-value: <0.001). Comparing private ART clinics with CHAM ART clinics, the overall death rate is higher in private sector health facilities (P-value: <0.001). However, no significant differences between public and CHAM ART clinics.

Table 1. Died on ART by health provider type.

Quota	**Public**	**Private**	**CHAM**	**P-value**
1	0.055	0.087	0.061	0.0216
2	0.053	0.086	0.061	0.0173
3	0.052	0.086	0.061	0.0098
4	0.051	0.086	0.060	0.0098
5	0.052	0.091	0.063	0.0018
6	0.051	0.089	0.063	0.0047
7	0.051	0.087	0.065	0.0075
8	0.050	0.086	0.064	0.0055
Overall	**0.052**	**0.087**	**0.062**	**< 0.001**

Stopped ART Outcome

We have found that the stop rate is lower in public ART clinics compared to CHAM (P-value: 0.001), and lower in public compared to private ART clinics (P-value: <0.001). However, in the second half of 2018 (quarter 7 and 8), there was a remarkable increase of stop outcomes in CHAM ART sites even though there are no specific difference. However, there was an overall difference.

Table 2. Stop rate of ART

Quota	**Public**	**Private**	**CHAM**	**P-value**
1	0.18	0.33	0.35	0.2784
2	0.18	0.33	0.30	0.3325
3	0.19	0.46	0.34	0.1676
4	0.17	0.43	0.34	0.1243
5	0.18	0.51	0.36	0.0577
6	0.19	0.39	0.37	0.2501
7	0.15	0.39	0.58	0.0438
8	0.19	0.41	0.73	0.0425
Overall	**0.18**	**0.40**	**0.42**	**<0.001**

Transfer out Outcome

Transfer out outcome is different in public ART clinics compared to private ART clinics (P-value: <0.001) and private ART clinics with CHAM ART clinics (P-value: <0.001). In case of quarters, there is significant difference between public and Private and private and CHAM ART Clinics.

Table 3. Percentages of Cumulative Quarterly Transfer Out Outcomes

Quota	Public	Private	CHAM	P-value
1	13.05	20.94	10.03	0.0035
2	13.24	21.58	9.94	0.0071
3	13.26	21.39	10.54	0.0057
4	12.91	21.03	11.33	0.0101
5	13.51	22.44	11.47	0.0029
6	13.61	21.56	12.22	0.0065
7	13.92	22.84	14.30	0.0048
8	14.46	22.25	14.58	0.0183
Overall	**13.50**	**21.74**	**11.80**	**<0.001**

Findings from the Qualitative Analysis

Access to the Facility

On access to the facility, 11 out of 12 respondents reported that distance to the facility contribute negatively to primary ART outcomes. 7 out of 12 respondents reported that Cost of ART and associated expenses contributing negatively to primary ART outcomes

One participant from a public facility had this to say; *"service charge at private facilities might not affect ART primary outcome since it's a choice made by the client after self-assessment and knowledge that they are going to meet the demand.*

Capacity and Availability of Human Resource

On the capacity and availability of human resource, 11 out of 12 respondents said that there were adequate staff and all of them reported that all staff were trained in the clinical management of HIV in children and adults.

Infrastructure and organization

5 out of 12 respondents indicated that location of the clinic in relation to other services contributes negatively to primary ART outcomes (defaulters).

One respondent from a public facility had this to say *"And I remember when we entered into this building that was built for ART services, but when we started ART provision here, we had a lot of defaulters and we later found out that the geographical position of this ART Clinic is not okay because it is at the open and we went back to our previous place where everything else is done inside that room apart from viral load"*

Another respondent from a CHAM facility had this to say *"We even receive patients from far areas such as Neno, and Mwanza; this might be because of the care that we provide to them;*

because you can see that donors built us this ART Clinic at this open place where everyone could see the patients, because of lack of privacy, It took us the providers to ask management to put iron sheets fence for confidentiality".

Another respondent from a public facility had this to say *"There isn't a fence and it was challenging, therefore it is possible that some client might say that; should they see me there accessing medication, therefore some people default because they don't like to be seen publicly because there is no fence."*

One respondent from a public facility had this to say "*The position of the ART clinic causes discomfort to most of the clients since it is located to the front of the main hospital, therefore a lot of clients feel shy to access ART services because they feel exposed hence an increase in defaults."*

2 out of 12 respondents attributed the client flow in relation to infrastructure contributing negatively to primary ART outcomes. 4 out of 12 respondents stated that the clinic integrates ART services with other services surprisingly, all the four respondents are from the private clinics. 8 out of 12 respondents indicated that expert clients were responsible for ART treatment adherence and follow up of patients.11 out of 12 respondents said that daily ART clinic days affected primary ART outcomes positively. All respondents indicated that ART Dispensing affected positively on patient primary ART outcomes. 8 out of 12 respondents said that unavailability of some OIs drugs affected negatively on patient primary ART outcomes.

Stigma and discrimination

Incidences related to stigma and discrimination was found in 2 out of 12 respondents , Incidences related to breech of privacy and confidentiality in 3 out of 12 respondents , Provider accessing ART at their facility they are working if they are HIV + 7 out of 12 respondents .

Other services are provided together with ART services; Nutritional assessment 11 out of 12 respondents, Cancer Screening 7 out of 12 respondents , TB screening 12 out of 12 respondents and Viral load monitoring 12 out of 12 respondents .

Reasons for Default; 9 out of 12 respondents said that distance to the facility was a reason for default, Stigma and discrimination 9 out of 12 respondents , Privacy and confidentiality 10 out of 12 respondents .

One respondent from a public facility had this to say *"The position of the ART cherub causes discomfort to most of the clients since it is located to the front of the main hospital, therefore a lot of client shy out to access ART services because they feel exposed hence an increase in defaults."*

Another respondent from a public facility had this to say *"Clients default because of gender based violence because of failure to disclose and their spouse realizes that they are on ART treatment."*

Reasons for Transfer out; Change of location 12 out of 12 respondents , not conducive environment 1 out of 12 respondents .

One respondent from a private facility had this to say *"Some Patients transferred-out so that they could access free services even though there are some other challenges at those places."*

Another respondent from a private facility had this to say *"Work related issues also contribute to default of clients because client leave without obtaining a transfer after they have been transferred to another working place and they start accessing treatment at the facility where they have been transferred to."*

Reasons for Stopping ART; Religious Belief 7 out of 12 respondents , to get married and avoid disclosing their status to the spouse 2 out of 12 respondents , Stigma and discrimination 9/12 , Feeling improved and Health 2 out of 12 respondents (17%), Side effects 1 out of 12 respondents. One respondent from a private facility had this to say *"Some clients stop treatment due to religious beliefs after being told that they have been healed after being prayed for. However, some of the clients are able to restart ART treatment after experiencing some changes in their bodies."*

Reasons for Death on ART

Late presentation of illness in all respondents. One respondent from a public facility had this to say *"Most of the deaths that occur at ART are due to opportunistic infections and since QECH is far; and you are able to refer them, and when some of them consider their financial capability, they just give up and go home; and that is the number one reason for having a lot of ART death outcomes.* Another respondent from a private facility had this to say *"Clients die mostly when their immunity decreases after they had stopped taking medication and some patients also die when opportunistic infections attacks them aggressively because of lack of adherence."*

Discussion

We have found that primary antiretroviral therapy outcomes are different among Public, Private and CHAM ART clinics with more defaulters seen in Public ART clinics compared to the rest.

Overall, there is persistently high default rate in public ART clinics compared to private ART clinics. Comparing public sector health facilities with CHAM health facilities, the default rate is higher in public ART clinics. While private sector ART clinics compared to CHAM health facilities, the default rate is also higher in private ART clinics. This may be attributed lack of privacy and confidentiality, stigma and discrimination and long distance to the health facility which result in high cost expenses. The results of the qualitative analysis found that reasons for defaulting were lack of privacy and confidentiality, stigma and discrimination. 75% of the respondents attributed defaulting to long distance to the health facility. However, public and CHAM have similar settings and the high default rate in public can also be greatly attributed to lack of privacy and confidentiality due to the location of the ART clinic in relation to other services at the health facility. The majority of those who expressed concern about the negative impact of location of the ART clinic in relation to other services were from the public ART clinics. “Tracing” studies that evaluate outcomes among lost patients in the community provide insight into retention in care by documenting patient movement across clinic sites(52). In many instances, patients who are lost to follow-up continue to receive care at other, more local facilities(52). 8 out of 12 respondents (67%) indicated that expert clients were responsible for ART treatment adherence and follow up of patients. All these who responded were from public and CHAM ART sites. It is believed that ART expert clients play

a major role in defaulter tracing. This is supported by a recent study commissioned by IMPACT revealed that salaried service providers believe that Expert Clients are contributing to improved quality of HIV services and have increased the uptake of HIV testing and treatment (26). However, adversely we see more defaulters in the public ART clinics.

The quantitative analysis shows that high death rate in Private ART clinics compared to public ART clinics. Comparing private ART clinics with CHAM ART clinics, the overall death rate is also higher in private sector health facilities with no significant differences between public and CHAM ART clinics. This may be due to the fact that clients tend to go private facility when they get sick in anticipation of accessing quality services. In identifying factors contributing to death on ART outcome, the qualitative analysis of this study revealed that the reasons why patients die on ART is the late presentation of illness to the clinic in of all respondents across all service providers. Some of these are those in denial, stopped ART treatment for various reasons and possibly those that are failing on treatment. This probably can be attributed to poor clinical monitoring of clients. The predictor of HIV disease progression is Viral Load which was not assessed as a service in this study in order to compare private, public and CHAM. These results are supported by a study in India by Shet A. et al(42) which aimed at understanding patient characteristics and treatment outcomes from different HIV health care settings in Bangalore, India. It was found that more participants reported $\geq$ 95% adherence among public and public-private groups compared to private participants (public 97%; private 88%; public-private 93%)(42). Treatment interruptions were lowest among public participants (1%, 10% and 5% respectively). (42).

In this quantitative analysis, it was found that patients who stopped ART was lower in public ART clinics compared to CHAM and Private ART clinics. However, the reasons for stopping in public, private and CHAM were the same according to the qualitative analysis. The reasons ranged from Religious Belief in 7out of 12 respondents(58%), to get married and avoid disclosing their status to the spouse 2out of 12 respondents(17%), Stigma and discrimination 9out of 12 respondents(75%), Feeling improved and Health 2out of 12 respondents(17%), Side effects 1out of 12 respondents(8%,)75% respondents indicated that the reasons was to avoid disclosing their HIV status to other people for fear of stigma and discrimination and 42% of the respondents said was religious beliefs that they are healed.

These findings are supported by the a study conducted in Malawi titled Barriers and facilitators to the uptake of ART in Option B+ in HIV Care in Lilongwe which reviled that fear of disclosure to their partners(35). This was common to women. Another study done by Mwale(36) also stipulated that social related factors that influenced patient retention in care were stigma and non-disclosure of HIV status, faith healing, use of herbal remedies and alcohol use(36). However, this study did not bring issues of herbal remedies and alcohol abuse. Other reasons given were; to get married and avoid disclosing their status to the spouse (17% of the respondents) and Feeling improved and health in 8% of the respondents.

The quantitative analysis has clearly demonstrated that the private ART clinics have more transfer outs than public and CHAM. The assumption though is that continued access to ART services in the private ART Clinics is hampered by cost(9) which is directly related to the ART or other costs incurred at a private facility. It could also be that the quality of HIV services are not satisfactory to the patients.

Secondly, the clients go to private to start ART services only and just to get transferred to continue the service in other service provider types(9). The study results from the qualitative analysis on identification of factors affecting primary antiretroviral therapy outcomes in public, private and Christian Health Association of Malawi ART Clinics indicates that all patients who transfer out to access ART services in another facility is mainly due to change of location. 100% of the respondents indicated that the reason for transfer out is changing place of residence. This could be permanent or temporal. A study titled "What happens to patients on antiretroviral therapy who transfer out to another facility?"(31)showed that one fifth of patients transferred out from a central hospital institution over a 30-month period as new ART sites were set up in the country and started to deliver therapy closer to patients' homes.

Overall, Alive outcome is different in public ART clinics compared to private ART clinics. Comparing public ART clinics with CHAM ART clinics, Alive outcome is different. While private sector ART clinics compared to CHAM ART clinics, Alive outcome is also different. Throughout the quarters except quarter 4, there is significant difference between private and CHAM ART Clinics having more patients retained in care in CHAM compared to Private ART Clinics. This is not surprising to see alive outcome (retention to care) lowest in private followed by public and finally CHAM ART clinics. Alive outcome is not only affected by the number of people dead, but is also affected by all other outcomes i.e. default, stop and transfer out.

Retention on lifelong antiretroviral therapy (ART) is essential in sustaining treatment success while preventing HIV drug resistance (HIVDR)(53).There is a critical need to develop and implement strategies to improve retention, thereby maximizing the benefits of ART(54).

Conclusion

Overall the findings indicate that Primary Antiretroviral Therapy Outcomes in Public, Private and CHAM ART Clinics are different. The Ministry of Health should reconsider the location of the ART clinics in relation to other services in order to reduce the default rate of clients on ART as some locations promote stigma and discrimination and lack of privacy and confidentiality.

Recommendations

1. There is need to learn from CHAM ART Clinics for having more patients retained in care compared to Private and Public ART Clinics and therefore an assessment to closely look at factors facilitating the retention of clients in the CHAM facilities is needed.
2. The Ministry of Health should continue to scale up the provision of ART services to address the challenge of distance which negatively affect the primary ART outcomes
3. The Ministry of Health should consider segmentation of private ART clinics to have a non-paying private sector clinics so that cost should not be a barrier to access ART services in some private facilities.
4. The Ministry of Health should consider providing integrated health care services that include the provision of ART services to prevent stigma and discrimination which has

been one of the most important reason for defaulting ART treatment in the public sector

5. The Ministry of Health should continue to scale up the provision of ART services to address the challenge of distance which negatively affect the primary ART outcomes
6. The Ministry of Health should consider segmentation of private ART clinics to have a non-paying private sector clinics so that cost should not be a barrier to access ART services in some private facilities.
7. The Ministry of Health should consider providing integrated health care services that include the provision of ART services to prevent stigma and discrimination which has been one of the most important reason for defaulting ART treatment in the public sector

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