COMPARISON OF LEVEL AND PREDICTORS OF ADHERENCE TO ART OPTION B+ BETWEEN HIV INFECTED PREGNANT AND LACTATING WOMEN AT MNAZI MMOJA HOSPITAL DAR ES SALAM TANZANIA

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COMPARISON OF LEVEL AND PREDICTORS OF ADHERENCE TO ART OPTION B+ BETWEEN HIV INFECTED PREGNANT AND LACTATING WOMEN AT MNAZI MMOJA HOSPITAL DAR ES SALAM TANZANIA

By

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A Dissertation Submitted in (Partial) Fulfillment of the Requirement for the Degree of Master of Medicine in Obstetrics and Gynaecology of the Muhimbili University of Health and Allied Sciences

Muhimbili University of Health and Allied Sciences
October, 2017

CERTIFICATION

The undersigned certifies that he has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled: **''Comparison of Level and predictors of adherence to ART option B+ between HIV infected pregnant and lactating women at Mnazi Mmoja Hospital'',** in (partial) fulfillment of the requirements for the degree of master of medicine in Obstetrics and Gynaecology of the Muhimbili University of Health and Allied Sciences**.**

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Date

DECLARATION AND COPYRIGHT

I, **Dr. Emmanuel Owden Mwalumuli**, declare that this **dissertation** is my own original work, and that it has not been presented for a similar degree and will not be presented to any other university for a similar or any other degree award.

Signature ……..... **Date** …….....

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Lastly, I would like to thank the Almighty God for giving me good health and ability to do the study.

DEDICATION

This work is dedicated to my beloved, wife and my lovely daughter’s .You are the reason behind my hardworking. Special thanks to my parents for being my pillar of strength and role model.

ABSTRACT

Background: Adherence to medication is a crucial component in the prevention of mother to child transmission of HIV. The prevention of mother to child transmission (PMTCT) program is an intervention that aims towards reduction of vertical transmission of HIV. It is obvious that without this intervention many babies would die within the first two years of life as evidenced by the fact that mother-child transmission account for 18% of new HIV infections and almost 99,000 HIV positive women deliver exposed infants annually in Tanzania. In line with the objectives of PMTCT to eliminate mother-to-child transmission through improvement of reproductive and child health (RCH) services the Ministry of Health, Community Development, Gender, Elderly and Children adopted option B plus PMTCT program since 2013.

Aim: This study aimed to compare level and predictors of adherence to ART between HIV/AIDS infected pregnant and lactating women currently on Option B + regime.

Methodology: This was a comparative cross-sectional study involving 338 participants of which 169 were pregnant and 169 were lactating women on Option B + regime attending PMTCT services at Mnazi Mmoja Hospital Dar es salaam. Data on adherence level were collected from patients by self-reporting method whereby a questionnaire which was adapted and modified from the tool to measure ART adherence in the resource constrained settings of South Africa, which contain the questions of Information- motivation and behavior skills (IMB) model was used. This IMB model postulates that health related information, motivation and behavior skills are important determinants of whether or not a health behavior is performed.

The questionnaire was used to collect socio-demographic information, measures of drugs adherence, medical history and Obstetric history. Important variables were marital status, HIV disclosure status, economic status (measured by employment status), and distance from health facility, education level, gestational age and gravity. Data were analyzed using the Statistical Package for Social Sciences (SPSS) computer software, version 20. Data were presented by

using descriptive summary statistics like proportions as well as logistic regression for determining association between dependent and explanatory variables.

Results were considered of statistical significance when the p-value <0.05.

Results: The overall proportion of good adherence to ART option B+ in this study was 58.9%, pregnant women were found to have good adherence (66.6%) than lactating mothers (51.0%). Controlling for the effect of other factors, the odds of adhering to ART Option B+ were 7 times higher among women who received good partner support as compared to those with poor partner support (AOR=7.2, 95% CI =1.01-14.22). Similarly, women with good knowledge on PMTCT were 2.5 times likely to have good adherence than those with poor knowledge (AOR 2.54(1.29-5.01).

Disclosure status also has shown to influence adherence (AOR=1.07 95% CI =1.01 – 4.22) and participants who knew HIV status of their male partners were (COR=2.17, 95% CI=1.40-3.36) more likely to be adherent compared to those who did not know their male partner HIV status. When confounding factors were considered, knowing partner HIV status had no significant difference in adherence as compared to their counterpart (AOR=1.28, 95% CI=0.68-2.43). Comparatively, only three factors were found to influence adherence to option B+ in pregnant group of which being married, having good partner support and good knowledge on PMTCT significantly influenced adherence, in contrast to lactating women group in which more factors were observed such that being married, having good partner support, disclosing HIV status and knowing spouse HIV status and short duration after delivery significantly influenced adherence status.

Conclusions : The overall proportion of good adherence to PMTCT option B+ in this study was 58.9%, pregnant women were found to have high level of good adherence (66.6%) than lactating mothers (51.0%). The main predictors influencing adherence were good male partner support, marital status, and good knowledge on PMTCT and, disclosure status.

Recommendations

- ✓ Further studies multicenter with large sample size should be conducted as it will also help to find out the associations of multiple factors with adherence, together with the evaluation the components of counseling in relation with adherence.
- ✓ Counseling should be intensive and comprehensive including all the components as recommended by ministry of health, including importance of disclosing own HIV status, knowing partner HIV status and adhering to ART.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral
CBC	Complete blood Count
CD4+	Cluster of Differentiation 4 plus
CDCP	Center of Diseases Control program
eMTCT	elimination Mother To Child Transmission
HAART	Highly Active Antiretroviral Therapy
HIV	Human Immunodeficiency Virus
MoHCDGEC	Ministry of Health Community Development Elderly and Children
NA	Not Applicable
PLHIV	Persons living with HIV
PMTCT	Prevention of mother to child transmission
PMTCTG	Prevention of mother to child transmission guideline
RCH	Reproductive and Child Health
WHO	World Health Organization

DEFINITION OF TERMS

Prevention of Mother to child transmission of HIV (PMTCT)-refers to the prevention of transmission of HIV infection from HIV infected mother to the infants, this infection can occur through pregnancy, labour, delivery and breastfeeding

LEVEL-Is the position /rank of women as compared to others related to adherence to option B+. These were good or poor level

OPTION B +- an approach to all pregnant women and lactating women living with HIV to be initiated life- long ART triple therapy ART(TLE) regardless of CD4+ count or WHO clinical stage for prevention of mother to child transmission and improving the health of the mother

ADHERENCE TO ART - for this study was defined as a patient's ability to take medications at prescribed times and frequencies, and in the right amount.

HAART: Highly active antiretroviral therapy i.e. 2NRTI (Nucleoside reverse transcriptase inhibitor) +1NNRTI (Non-nucleoside reverse transcriptase inhibitor) or 1PI (Protease inhibitor)

1.0 INTRODUCTION

HIV AIDS still remains the biggest public health concern and the most destructive health epidemic that the world has ever witnessed. In 2016, an estimated 36.7 million people were living with HIV (including 1.8 million children), with a global HIV prevalence of 0.8% among adults[1].Despite challenges, new global efforts has resulted to an increase in the number of people receiving HIV treatment in recent years, particularly in resource poor –countries. A major mile stone was achieved in 2016 where, for the first time, it was found that more than half of people living with HIV (53%) now have access to life-saving treatment. It has been reported that if this level of scale up continues, it is estimated that the world will meets its global target of 30 million people on treatment [1]

Significant progress has been made in the prevention of mother to child transmission of HIV (PMTCT).In 2016, 76% of all pregnant women living with HIV accessed treatment to prevent HIV transmission to their babies; this is up from 47% in 2010 but small decline by 1% from previous year.[2]

Mother to child transmission of HIV can occur through pregnancy, labour, delivery and breastfeeding with the overall risk being 20%-45% [3].This mode of transmission has remained the leading source of HIV infection in children, in 2016 of 55,000 people were newly infected with HIV, and approximately 99,000 HIV positive women deliver HIV exposed infants annually ,however with optimal adherence to ART during pregnancy and lactating period these infants they remain free from HIV infection[4].

Prevention of mother to child transmission (PMTCT) program is a vital solution towards reduction of HIV vertical transmission. In Tanzania mother-to –child transmission account for 18% and Elimination of mother to child transmission, improvement of care for the infected parents or children through introduction and scaling up of comprehensive PMTCT services within all centers providing RCH services are the key vision of the project. Good progress has been made in scaling up quality of PMTCT services.

About 93 percent of reproductive and child health facilities nationwide have integrated PMTCT services, up from 78 percent in 2009[5]

The use of antiretroviral drugs in resource limited settings for PMTCT perinatal transmission has also resulted in a marked decrease from over 570000 in 2003 to as low as 220,000 children in 2014(34). The first Tanzanian PMTCT guidelines were developed in 2004. In the year 2007, the Tanzania Ministry of Health revised PMTCT guideline and moved from single dose nevirapine (sdNVP) to combination prophylaxis.

In Tanzania Option B + PMTCT program was first adopted in September 2013. Increased coverage of Antiretroviral (ARVs), access to care and improvement of children survival among HIV infected pregnant women or children are the three main objectives of Option B + PMTCT program. In Option B + PMTCT program inclusion criteria are; HIV positive pregnant or breastfeeding women regardless of CD4+ count or WHO clinical stage should be initiated life-long ART. Also women who are on other ART regimen and become pregnant should be switched to tenofovir + lamivudine + efavirenz combination.[4] Improving PMTCT services are of paramount importance for Tanzania to achieve virtual elimination of mother to child transmission of HIV. These improvements should go hand to hand with addressing important factors which influence adherence to Antiretroviral drugs among the pregnant or breastfeeding mothers.

Several methods have been employed to measure adherence but no gold standard has been established and each of these methods has its respective strength and weakness. The available known methods being self –report, Pill counts, prescriptions refills, medications event monitoring system, biological markers and assays[6, 7] . In this study self-report method was chosen to be a method to assess the level of adherence since this method is simple, affordable and noninvasive method however recall bias might be its shortcoming[7].

Adherence to antiretroviral during pregnancy and after delivery is central to a successful PMTCT program by ensuring optimal viral suppression, However barriers to adherence exist and differ among populations, It has been reported that in order to achieve maximum degree of viral load suppression, a person on ART needs to take at least 95% of prescribed doses on

time[8],Poor adherence to ART drugs during pregnancy and lactating period can lead to suboptimal viral suppression, development of viral resistance hence higher risk of mother –to-child transmission.

Some studies has reported higher level of adherence during pregnancy than lactating period while others reported the vice versa, In a study done by Rodriguez et al, adherence of at least 95% measured by pill counts in two groups, was significantly higher among pregnant women(43.1%) than during lactating period(1.7%),when the self-reported method was applied to asses adherence in the two groups still women who were pregnant demonstrated higher level of adherence(83.3%) than in lactating period (72.2%) and being out of domicile without ART drugs was the alleged reason for missing doses in both groups, 33.3% pregnant women and 31.8% lactating women[9]

In a recent study, less than half of pregnant woman who were tested for HIV (regardless of the outcome of the test) stayed in care up to 6 months postpartum[10].A study based in South Africa asked pregnant mothers about possible barriers to retention after delivery, and then asked participants who returned to care postpartum what possible barriers other women may have experienced with respect to returning to care. These barriers included the perception that the mother cares more about the baby's health than her own, negative treatment by staff at the clinic, lack of financial support, and denial or lack of disclosure of mothers HIV status[11],others factors which reported to be affecting adherence were young age, fear of HIV disclosure and lack of partner support while the factors which showed to influence adherence were past successful PMTCT experiences and social support from partners[12]

Option B + being a lifelong regime for taking ART, the issue of adherence must be well addressed in Tanzania and in other countries which started practicing this regimen. In a study done in Tanzania by Ngarina et al on women's preferences regarding infant or maternal Antiretroviral prophylaxis for Prevention of Mother To Child Transmission of HIV during pregnancy and their view on Option B+, some women had negative opinions towards option B + since they thought they will lose motivation after knowing that they had protected their children, fear of drug side effects , and most of them were uncertain on the issue of adherence since they took it as a challenge taking medication every day for their life time[13]

1.1 Literature Review

Monitoring and adherence support for PMTCT is very crucial, without this optimal adherence levels will likely increase the likelihood of multiple drug resistance and compromise the safety and effectiveness of the scale –up of PMTCT program (37).

A systematic review of 51 studies which was conducted to compare level of adherence during pregnancy and lactating period found that pregnant women had high level of adherence of 72% than women in postpartum period 57%[14] and some of the factors which showed to affect level of adherence during postpartum were, physical, economic and emotional stress ,this findings is in line with other study done in USA to evaluate the association between childcare burden and adherence to highly active antiretroviral therapy (HAART) which pointed out that women with childcare burden reported to have lower level of adherence as compared to the one with no or less childcare burden [15]

In another cohort study done in south Africa to the women beginning lifelong HAART for their own health , during pregnancy and lactating period demonstrated lower level of adherence during postpartum period, whereby there was an increased risk of non-adherence during postpartum than during pregnant and before pregnant period, however ,the overall, the proportion of both pregnant and lactating women with adequate adherence was higher than what has been seen in other settings, with 89% for non-pregnant and pregnant women, and 85% for postpartum women ,and the factors which was highlighted in this study to affect adherence during postpartum were lifestyle changes, stressors associated with having a newborn , lack of motivation for treatments as well as postpartum depression.[16]

Contrary to the studies mentioned above, the study done in Malawi reported that women initiating ART in pregnancy were more likely to be early defaulters than women initiating ART during breastfeeding and these findings agrees with another recent study also done in Malawi in which women initiating ART during pregnancy had higher default rates at 6 months than those initiating during breastfeeding, and the reasons for early defaulters among women in Option B+ in these studies has been associated with the timing of HIV diagnosis and ART initiation, whereby diagnosis of HIV during routine antenatal screening can be accompanied by varying degrees of shock and denial and may lead to difficulty accepting immediate

initiation of lifelong treatment, in particular among the mostly asymptomatic women at ANC clinics [17].Thus, encouraging optimum adherence to ART is still an important goal of treatment that has often proven elusive across chronic health conditions. For HIV women who are pregnant or who have given birth, the consequences on non-adherence include potential damage to their own health and increased potential for mother to child transmission. Additionally another study done in USA which examined ART use and adherence revealed that the level of adherence was higher during pregnancy 61% as compared to postpartum period with adherence level of 44%.Factors associated with non-adherence during lactating period were health related symptoms, lack of motivation and forgetfulness while during pregnancy factors were advanced HIV disease status, health related symptoms, alcohol and tobacco use.[18]

Some studies has reported higher level of adherence during pregnancy than lactating period while others reported vice versa, In a study done by Rodriguez et al, adherence of at least 95% measured by pill counts in two groups, was significantly higher among pregnant women(43.1%) than during lactating period(17.7%),when the self-reported method was applied to asses adherence in the two groups still women who were pregnant demonstrated higher level of adherence(83.3%) than in lactating period (72.2%) and being out of domicile without ART drugs was the alleged reason for missing doses in both groups, 33.3% pregnant women and 31.8% lactating women[9]

A study conducted on adherence of Option B + among women attending RCH in northern Ethiopia found out that, proper counseling on the side effects of ARV drugs significantly associated with better adherence to Option B+ PMTCT. The level of knowledge brought by experience after several visits to HIV/AIDS counseling clinics has been credited to influence adherence, also social demographic factors have been found to be among factors contributing to level of adherence to PMTCT (Option B+). In the same study it was found that place of residence was among the factors influencing adherence whereby those residing in urban areas were found to be more adherent 82.5% of the enrolled compared to 17.5% of those residing in rural areas.[19].

Counseling on adherence has been reported as a major influence of HIV infected women on drug adherence on the study conducted in Botswana whereby for those who had high proportions of ART adherence during pregnancy and perinatal had received counseling on adherence from the experienced health workers[20]. In the same study education level was not found to be a contributory factor whereby those who had no formal education carried a high percentage of being more adherent as compared to those with formal education. According to Paul and colleagues each additional year of experience increase the likelihood of reporting perfect adherence by 10.6 %[21].

Antiretroviral side effects have been condemned by report of Cauldbeck and his colleague being an influencing factor toward adherence among women on ART Option B+. In that report, women experiencing milder side effects such as skin rash, fatigue, headache and fever were more likely to adhere to Option B+ PMTCT drugs than those experiencing more severe side effects such as metabolic effects, central nervous system toxicity, severe hepatic necrosis and renal insufficiency[22].The study done by Ochigbo and his collogue (2013) reported the rate of non-adherence of 16% and the most reported reason for this was the pregnant related illness such nausea which prevented them from achieving optimal adherence, another reasons being medication side effects, inadequate medication counseling, negative attitude of health workers, lost pills and Pilli fatigue. They also reported the effects of gestation age on adherence of medications in which most of them had less adherence as they approached delivery[23].

Like in other HIV/AIDS program whereby stigma has been a drawback toward good adherence, in Option B+ it has been observed that, there is statistically significant association of HIV status disclosure with adherence to ART Option B+. For instance, in Nigeria 88.3% of women who had disclosed their status to their partner had good adherence, but also stigma was revealed in the same study whereby 21% % of women reported that they were afraid of being identified by other people that they are taking ART drugs[24] .Stigma was also explained by other study conducted in Ukraine which reported that HIV infected women who live with extended family had poor adherence with the proportion of missing drugs of 46% comparing to those who had partner or leave alone who had low proportions of missing ART drug of

29%[25]. Moreover knowledge on PMTCT and HIV disclosure status to their partners are still among of the strong factors for adherence in ART whereby women with previous knowledge on PMTC where more confident about their HIV status hence less chance of stigma perceived but also those who disclose their status to their partner had good adherence to ART and their infant had higher Nevirapine adherence(36)

Drug adherence is of paramount importance since it helps in protecting the baby from acquiring HIV-infection. The maternal health is also improved by preventing an increase of viral load. Lack of motivation after delivery, poverty, stigma and lack of programs that empower women are highly associated with poor adherence to ART [13],

In another study done Level of adherence to ART during pregnancy was found to be more than 95% in which disclosure of status to partners was found to be contributory factor for adherence to ART option B+, this evidence itself in two studies conducted in Lagos Nigeria and Ghana by 86.5% and 85.5% respectively were those who disclosed their HIV status to their partners and were the one more adherent to the therapy [24] ,HIV disclosure status among of the predictors of good adherence to ART, In Tanzania HIV discloser status has been identified as an important factor in reducing vertical and sexual HIV transmission hence it is recommended that health workers particularly counselors should give much influence on HIV sero-status disclosure, so far there is tremendously increase in sero-status disclosure among pregnant women which goes parallel with good adherence to ART among them[26]. A study done in Malawi revealed that there is possibility that women on Option B+ have been less well prepared for ART adherence, women who started ART before and received counseling had good adherence and retention to care comparing to those who started ART on the day of diagnosis without receiving intensive counseling. The same study reported that women who start ART immediately do not have the chance to disclose their HIV status to their spouses or relatives and prior HIV disclosure may improve ART adherence [27]

During the time of breastfeeding many women declared that the only reason for them to take and adhere to medications is to protect their babies once the babies are tested negative or they have stopped breastfeeding the motivation of taking medication is lost believing that the reason for them to take medication was to protect the unborn baby, this tells us that during breastfeeding the drug adherence is very low comparing to pregnancy state [13], This is also supported by a other studies in metal analysis which publicized that level of adherence was poor during lactation phase than pregnant phase where physical, emotional, and economic stress and demands of caring for new baby might have made adherence difficulty[28],Adherence during lactation period is still a big problem comparing during pregnancy as evidenced by another study which reported that few proportions of women admitted that they missed taking their ART during pregnancy as compared to lactation period in which the proportion of missing ART was a bit high and increasing as from 24 weeks up to 6 months post-delivery[29].

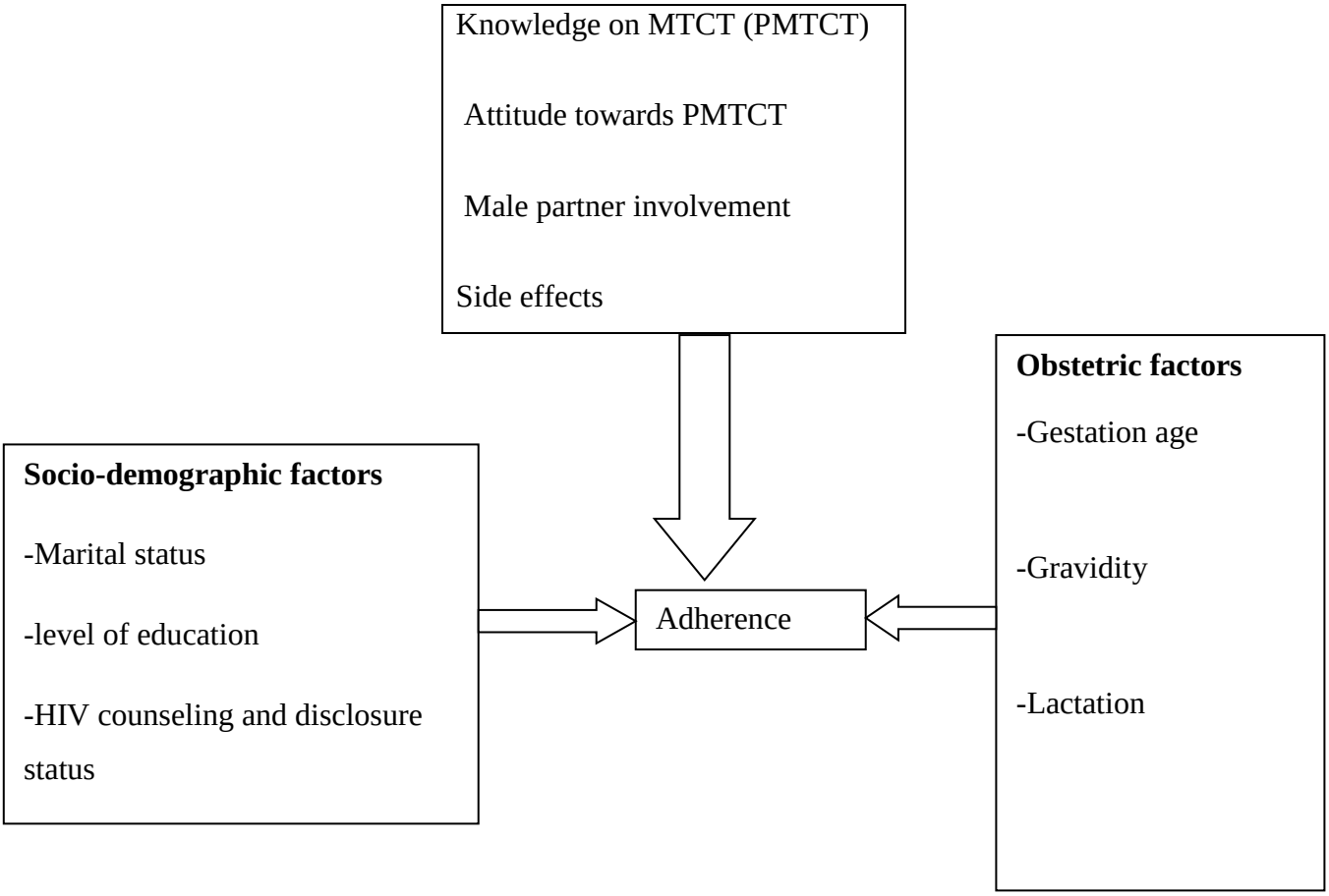
Age of the mother, gravidity and gestation age has been found to be among the factors contributing to adherence to Option B+, this evidences itself from a study done in Dare es salaam Tanzania whereby the younger the age of pregnant women the higher the chance of declining the regimen also primigravida (33.3%) were having higher chances of declining pre-delivery prophylaxis as compared to multigravida (28.32%) also those who were initiated early before 24.5 gestation age had poor adherence as compared to those who booked after 24.5 gestational age. From this study, pregnant women less or equal to 23 years of age (61.9%) had poor adherent as compared to those older than 23 years (17.1%)[30],In other study age of the mother and marital status was explained as one the factors influencing adherence where by women with age below 25 years had poor adherence comparing to those with advanced age of more than 25 years whereby the proportion 52% of missing dose of ART was observed for those with 25 years and below comparing to 23 %of those with above 25 years of age the but the same study explained marital status as one the factor influencing adherence where by those living with partners had good adherence with less proportion of missing doses of 29% comparing to those who are not married with the high proportion of missing doses of 46% [25]

Another factor reported in different studies is the level of education of the patient where by in one of the study conducted in Nigeria reported that patients with formal education were found four times more likely to be adherent than those without formal education, the same study reported that the level of adherence was quiet high among patients who disclosed their HIV status to their partners than those who did not.[5],

It's obvious that higher level of the patient has an impact in good communication with the service provider and hence good understanding on counseling concerning drug adherence however in a study done in India there were no significant association of the level of education with level of adherence, but in the same study ART side effects was seen to have a negative effects on drug adherence by 50% also distance from the health facilities brought an impact of low level of adherence where by some of the patients who missed taking their medications were staying more than 50 km away from the health facility[22]

Male or partner involvement in PMTCT services is reported in various studies as a factor which helps to fight against stigma to HIV infected women hence increasing participations in PMTCT services which include attendance to PMTCT services and adherence to ART drugs[31]

1.2 Conceptual Framework



Explanation of conceptual frame work

Adherence is a very crucial component in PMTCT Program since it has shown to reduce the rate of mother to child transmission, hence it has to be emphasized to our clients during first day of initiation of medication.

This study was assessing the level of adherence among pregnant and lactating mothers and the factors associated with adherence, few factors has been pointed out in the illustration above which are socio-demographic factors, side effects, Male partner involvement, knowledge and attitude towards PMTCT and Obstetrics factors where all of them could have negative or positive effect on adherence level.

Some of the socioeconomic factors like level of education, economic status could play a role in patient's attitude toward PMTCT whereby a client with high level of education is most likely to have good attitude toward PMTCT services which will result in to good adherence to the treatment. Moreover, HIV counseling and disclosure status could influence patient commitment toward medication in which those who are well counseled are most likely to understand the importance of taking treatment and such understanding is expected to result into good adherence

Also, some of the obstetrics factors like lactation, parity and gravidity could influence adherence to the Antiretroviral drugs and this could be explained by the level of maternal experience in taking their treatment as high parity or gravidity are most exposed to PMTCT services and highly motivated with their free HIV babies which is a result of their good adherence to the treatment during their previous pregnancies. In addition to that, the level of adherence could differs with gestation age in which adherence level increases whenever the gestational age advanced as its low at the beginning of pregnancy, this could be due to pregnancy associated symptoms like nausea and vomiting which might interferes with daily drug taking.

1.3 Problem Statement

In order to maximize the benefit of starting ART, pregnant women should be kept on ART as soon as they are diagnosed to be HIV positive as this has shown to reduce mother to child transmission if ART introduced much earlier [32].

It is well known that higher level of adherence is desirable for maximum prevention of mother-child transmission. A pregnant woman actively taking ART throughout the transmission risk period can reduce the HIV infection to her child to less than 5%. However, in 2015, only 86% of pregnant women living with HIV had access to treatment [4].

Since nearly fifth of new HIV infections are due to MTCT and Tanzania being among the country with HIV burden, MoHCDGEC adopted Option B + PMTCT program in 2013 as one of the strategy to the double the effort for elimination mother to child transmission and substantially reducing AIDS-related maternal deaths[33].

Most of the studies conducted on antiretroviral treatment adherence focuses on regular patients with few concentrating on pregnant and lactating women on their adherence particularly to PMTCT. With the fact that Option B + is for life, there are few studies which have been conducted in Tanzania to compare level of adherence and its predictors between pregnant and lactating mothers on Option B+ in the PMTCT program. Therefore, this study aimed to add knowledge regarding proportion of adherence and its predictors among pregnant and lactating women on ART Option B+.

1.4 Rationale of the study

Success on PMTCT depend on much on treatment adherence hence mitigation of the factors that hinder adherence is of paramount importance, it has been reported that good adherence helps in reducing maternal viral load by 81% hence help to reduce child transmission.

It is time to generate information concerning level and predictors of adherence on Option B+ PMTCT program. The informations obtained are useful at PMTCT clinics during revision of routine practice. The informations also act as a repository of literature to other researcher communities regionally and worldwide.

1.5 Research Questions

1. What is the prevalence of adherence to ART for the newly adopted regime that is Option B + in pregnant and lactating women attending PMTCT clinic at Mnazi Mmoja hospital from October 2016 to February 2017?
2. Were social economic demographic variables, Age, level of education, marital status, counseling on HIV, disclosure status, and marital status affect adherence to Option B+ in pregnant and lactating women attending PMTCT clinic at Mnazi Mmoja hospital from October 2016 to February 2017?
3. Were Obstetrics characteristics (gestation age, breastfeeding and gravidity) affect adherence to Option B + in pregnant and lactating women attending PMTCT clinic at Mnazi Mmoja hospital from October 2016 to February 2017?

1.6 Objectives of the study

1.6.1 Broad Objective

To Compare level and predictors of adherence to ART between pregnant and lactating HIV infected women on Option B +.

1.6.2 Specific Objectives

i. To determine and compare proportion of pregnant and lactating women on ART Option B + attaining good adherence in Mnazi Mmoja hospital from October 2016 to February 2017.
ii. To determine and compare association between socio-demographic characteristics namely (marital and economic status, HIV counseling & disclosure status, Education level, knowledge towards PMTCT, male partner support, stigma, distance from health facility) and adherence to ART on Option B + among pregnant and lactating women attending PMTCT clinic at Mnazi Mmoja hospital from October 2016 to February 2017.
iii. To determine and compare the association between obstetrics characteristics (gestation age, gravidity, and breastfeeding) and adherence to ART on Option B + among pregnant and lactating women attending PMTCT clinic at Mnazi Mmoja hospital from October 2016 to February 2017.

2.0 METHODOLOGY

2.1 Study design

Comparative cross-sectional study which involved 338 women out them 169 were pregnant and 169 were lactating women who attended PMTCT clinic at Mnazi Mmoja hospital from October 2016 to February 2017.

2.2 Study area

This study was conducted at Mnazi Mmoja Hospital Dar es salaam, which is one of the public hospitals in Ilala district. It's a newly upgraded hospital from the level of health center, offering obstetrics services with bed capacity of 34 beds,8 neonatal beds,2 delivery beds,12 post natal beds,6 post operations beds and 6 observation beds. There was an estimate of 12-15 numbers of deliveries per day.

The hospital provided ANC clinic services, having 4 ANC rooms with 493-600 clients' attendance per month in which new visit and revisit were included. At Mnazi Mmoja PMTCT Option B + started since 2013, the services were provided from Monday to Friday with the daily attendance of 10-15 HIV pregnant women and 4-6 lactating mothers. During the time of the study, the hospital was providing care to 2,160 PLWHIV.

All women attending ANC services whose sero-status were unknown or had negative test results more than three months prior to the visit were offered another HIV test. Once they were diagnosed being HIV infected they were referred to HIV clinic for HIV care and treatment.

At the clinic counseling was done to all HIV infected women and CD4+ count was done together with other baseline investigations, then women were initiated lifelong ART regardless of CD4 count and WHO clinical staging (Option B +) and subsequently followed up. Then women were scheduled for clinical visits, drug refill and laboratory monitoring and evaluation.

Every time a patient was seen by clinician, a detailed health history, pregnancy status and adherence status were assessed and filled in a follow-up form. Staffs providing these services were Medical doctors, assistant Medical Officers and registered nurses with the experience of at least 2 years in HIV care and treatment services.

2.3 Study population

All pregnant and lactating women attending PMTCT clinic at Mnazi Mmoja Hospital with the following Inclusion and exclusion criteria

2.3.1 Inclusion Criteria

- ✓ Those who freely gave consent and signed and agreed to participate
- ✓ HIV infected pregnant women who came for second visit and more
- ✓ HIV infected lactating mothers who came for second visit and more

2.3.2 Exclusions criteria

- ✓ Critically ill pregnant and lactating women
- ✓ Drugs abusers

2.4 Sample size calculation

Using the proportion of 72% and 57% for adequate adherence on ART during pregnancy and lactating periods respectively as reported by Nachenga and colleagues[14] the sample size for each group was be 169 as calculated using a formula for sample size comparing two proportions. The formula is: $N= (Z_{\beta}+Z\alpha/_{2})^{2} \times (P_{1} (1-P_{1}) +P_{2} (1-P_{2}))/ (P_{1}-P_{2})^{2}$

Whereby:

N=sample size in each group /assumes equal sized group

Z_{β}=Desired power of the study-0.80

$Z_{\alpha/2}$=Desired level of statistical significance-1.96

P1=Prevalence of adherence among pregnant women (72%)

P2= Prevalence of adherence among lactating mothers (57 %)

By using the above formula, the minimum sample size for each group is 169

Hence making a total of 338 sample size.

2.5 Sampling technique

A total of 338 participants agreed to participate in the study**,** convenient sampling technique was used for recruitment of study participants. Patients visiting PMTCT clinic on their scheduled visits were informed about the study. Those patients who agreed to participate in the study were provided with consent forms for signing. Those fulfilling inclusion criteria were recruited into the study.

2.6 Data Collection

Social-demographic variables namely marital & economic status, HIV counseling and disclosure status, male partner support, distance from health facility, education level as well as gestation age, gravidity, and lactation status were important variables with regard to this study. Data were collected by using questionnaire which was adopted and modified from the tool to measure ART adherence in resource constrained settings developed and validated in South Africa, which contain the questions of Information- motivation and behavior skills (IMB) model, This IMB model postulates that health related information, motivation and behavior skills are important determinants of whether or not a health behavior is performed.[7]

The questions were in English and translated to Swahili language then back into English Language to ensure the consistency of the questions. These questions were pretested on to at least 7 HIV positive pregnant women before the actual data collection to ensure the

appropriateness of the content with regard to the questions, language and organization. Data was collected by three research assistants who are working at the PMTCT clinic, daily from Monday to Friday. The principal investigator role was to collect data and asses the questionnaires for completeness every day, these data collectors were trained on the data collection tools and interview technique. After obtaining the consent from the client then interview was conducted in a place where the women could feel free and comfortable to express her feelings and ideas.

Demographic information

Age, marital status and occupation status, HIV counseling and disclosure status, distance from the health facility were important demographic variables with regard to this study.

Measures of adherence

The proportion of adherence were assessed by the Self Reporting Method

The proportion of adherence were measured using four adherence measurements questions adapted from the experience in South Africa, which were designed to measure adherence in the resources constrained settings. The tool comprises four questions (1) Do you sometimes find it difficult to remember to take your medication? (2) When you feel better do you sometimes take a break from your medication? (3) Many patients have troubles in taking their ARV doses as prescribed; did you miss any ARV doses in the last 3 days? (4) Sometimes if you felt worse when you took the medicine, did you stop taking it? A woman was considered to have good adherence if she responded, NO, to all four of the questions. However, if she responded YES to at least one question, she was considered to have poor adherence.

The knowledge of the women on option B + PMTCT was measured from the total correct answers to six knowledge questions, with a minimum score of 0 and maximum of 6. The knowledge was considered high and low if they score were 4-6 and 0-3 of the knowledge questions, respectively.

Regarding the assessment on male partner involvement on adherence to ART Option B+, 9 questions were used to assess, with minimum score of 0 and maximum of 9, involvement were

considered good for those who had a score 7and above, moderate for those who had score 4-6 and low for those who had score 3 and below to the questions on male partner involvement

Medical history

This section involved documentation of medical condition other than those on exclusion criteria section and obstetric history (parity, gravidity and gestational age)

2.7 Data management

Numbers were used as identity in order to maintain confidentiality of study participants. Collected data were stored in secured file resistant case accessible only to investigator. Raw data in physical storage were transferred into electronic form for cleansing and data analysis. Accessibility to all storage formats were only under custody of investigators while ensuring all ethical issues have been taken into consideration.

2.8 Data analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) computer software, version 20. Univariate analysis using mean, mode, and median as measure of central tendency and range, variance and standard deviation measuring dispersion were employed for quantitative variables such as gestation age, maternal age, gravidity, parity, distance from health facility, and duration of time ART. Proportion(s) were used for categorical data such as level of adherence to ART, marital and HIV disclosure status, side effects, and level of education. Histograms, bar charts, contingency tables and pie charts were also utilized during data summarization accordingly. Chi-square was employed for testing statistical significance for frequency distribution of categorical data for instance distance from health facility, gestation age, marital status, HIV disclosure status, level of education, and economic status versus level of adherence**.** Binary and multiple logistic regressions were used during analysis of odds ratio and influence of different categorical and numerical variables on level of adherence. Results were of statistical significance when the p-value <0.05.

2.9 Ethical clearance

The study commenced after obtaining ethical clearance from the senate research and publication committee of the Muhimbili University of Health and Allied Sciences. After consulting the Ilala District Medical officer in-charge, permission to conduct the study at the hospitals was sought from medical officer-in-charge of the hospital. Each study participant signed freely obtained informed consent form (Appendix II) before proceeding with data collection. For confidentiality purposes, each participant was assigned identity numbers instead of their names for data collection, entry and analysis.

2.10 Ethical Issues

After the interview, some women were identified to have poor adherent to medication. Therefore, counseling was done to each particular client identified, and were reported to the routine service provider for further interrogation and support. Concomitantly, those with good adherence were encouraged to do so**.**

3.0 RESULTS

3.1 Sample description

A total of 338 participants were enrolled and duration of the study was from October 2016 to February 2017 at Mnazi Mmoja Hospital PMTCT clinic, of which, all participants had received PMTC care at least once from different clinics. Half (50%) of the participants were pregnant women and another half (50%) were lactating mothers.

More than half (53.8%) of participants were more than 30 years of age of which this group comparatively carried higher proportion (59.4%) in lactating women compared to 48.2% in pregnant women. In total, nearly two third (63%) of the participants were married, however, majority were lactating women with proportion of 72.4% compared to 53.6% in pregnant women. Out of them all, more than half (55.9%) had primary education of which the two comparable groups had nearly the same proportions of participants with primary education (56.5% and 55.4% for lactating and pregnant women respectively). More than one third of all participants (41.1%) were self-employed of which lactating women had higher proportion (45.9%) of self-employed participants compared to 36.3% from pregnant group. Out of all lactating mothers, majority (57.1%) were between 6 months to 1 year post-delivery while majorities (54.2%) of pregnant women were on their second trimester of pregnancy. **Table 1** below explains percentage distribution of socio-demographic and obstetric characteristics of participants.

Table 1: Social demographic and obstetrics characteristics

Characteristic	All, n (%)	Pregnant, n (%)	Lactating, n(%)	p-value
Total	**338 (100)**	**169 (50)**	**169(50)**	
Age in years				0.024
<18	11 (3.3)	9(5.4)	2(1.2)	
19-30	145 (42.9)	78(46.4)	67(39.4)	
>30	182 (53.8)	81(48.2)	101(59.4)	
Marital status				0.002
Single	94 (27.8)	62 (36.9)	32(18.8)	
Married	213 (63)	90(53.6)	123(72.4)	
Divorced	26 (7.7)	13(7.7)	13(7.6)	
Widow	5 (1.5)	3(1.8)	2(1.2)	
Education level				0.045
None	4(1.2)	2(1.2)	2(1.2)	
Primary	189(55.9)	93(55.4)	96(56.5)	
Secondary	115(34)	51(30.4)	64(37.6)	
Tertiary	30(8.9)	22(13.1)	8(4.7)	
Employment status				0.035
Government	16(4.7)	11(6.5)	5(2.9)	
Private	50(14.8)	21(12.5)	29(17.1)	
Self employed	139(41.1)	61(36.3)	78(45.9)	
Housewife	131(38.8)	75(44.6)	56(32.9)	
Students	2(6)	0	2(0.6)	
Trimester				
First	25(7.4)	25(14.9)	NA	
Second	91(26.9)	91(54.2)	NA	
Third	53(15)	53(31.5)	NA	
Parity				0.001
0	62(18.3)	62(36.9)	0	
1	86(25.4)	45(26.8)	41(24.1)	
2-4	183(54.1)	61936.3)	122(71.8)	
>5	7(2.1)	0(0)	7(4.1)	
Duration post delivery				0.001
0-6 weeks	16(4.7)	NA	16(9.4)	
7weeks-6months	56(16.6)	NA	56(32.9)	
7months-1year	97(28.7)	NA	97(57.1)	
Partner support				0.001
Good	165(48.8)	70(41.7)	95(55.9)	
Moderate	70(20.7)	49(29.2)	21(12.4)	
Poor	103(30.5)	49(29.2)	54(31.8)	
Partner Occupation				0.008
Government	54(16)	27(16.1)	27(16.1)	
Private employee	125(37.0)	50(29.8)	75(44.1)	
Self employed	127(37.6)	68(40.5)	59(34.7)	
Not employed	23(13.7)	9(5.3)	32(9.5)	

3.2 Proportion of women with good adherence to ART Option B +

Overall level of adherence to PMTCT option B plus were good in more than half of participants (58.9%), Pregnant women being more adherent (66.6%) than lactating mothers whose proportion was 51.0% when each group was analyzed separately. **Figure 1,** and **Table 2**

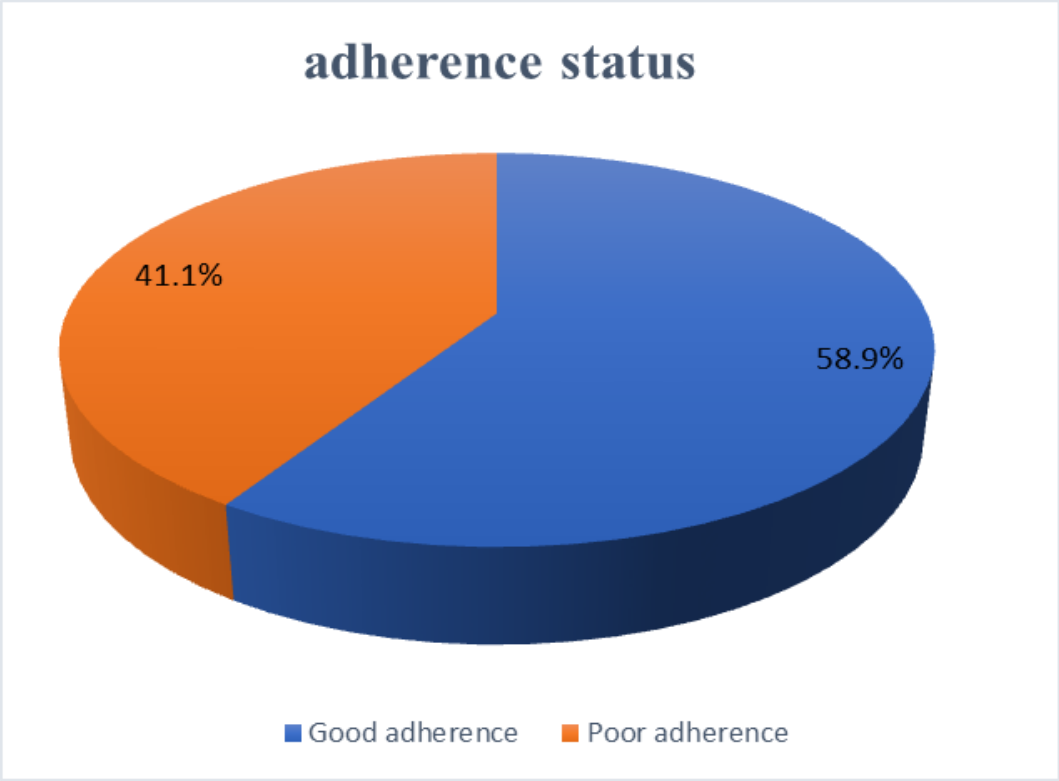


Figure 1: A pie chart showing overall level of adherence status

In overall analysis, women aged between 19 to 29 years were more adherent (64.8%) than other age groups. On the other hand, house wives, married women, secondary education holders and those who gained good male partner support were more adherent (66.2%, 66.7%, 63.5% and 62.4% respectively) than other groups in their respective categories. Women who disclosed their HIV status, women who knew HIV status of their male partner, those who were on ART within 3 years and those who had good PMTCT knowledge were more adherent (63.2%, 67.0%, 60.5% and 63.5%) than other groups in their respective categories. Surprisingly, women who received counseling on ART were less adherent (58.4%) than those who were not counseled whose proportion was 77.8%. **Table 2**

Comparatively, women aged less than 19 years were more adherent (77.8%) than other age groups in pregnant women as compared to women aged between 19 to 29 years who were more adherent (56.7%) than other age groups in lactating women group. Private employees were more adherent (77.3%) in pregnant group as compared to government employees who were more adherent (60.0%) in lactating group. Similarly, those who were married, secondary education holders, those who gained good male partner support, women who disclosed their HIV status, those who knew their spouse HIV status, those who were on ART for more than 6 years and those who had good PMTCT knowledge were more adherent to option B+ than other groups in their respective categories in both pregnant and lactating women group. **Table 3** and **Table 4**

Table 2: Association between socio-demographic characteristics and adherence status to ART Option B+ among overall participants

Variables	Good adherence n (%)	Poor adherence n (%)	P-Value
Age (years)			
<19	7(63.6)	4(36.4)	
19-29	94(64.8)	51(35.2)	
>30	98(53.8)	84(46.2)	0.14
Occupation			
Self employed	73 (52.5)	66 (47.5)	
Govern. Employed	8 (50.0)	8 (50)	
Private employed	31 (62.0)	19(38.0)	
House Wife	86 (66.2)	44 (33.4)	
Student	1(50.0)	1(50.0)	0.45
Trimester			
First	18 (72.0)	7 (28.0)	0.83
Second	59 (64.8)	32 (35.2)	
Third	36 (67.9)	17 (32.1)	
Marital status			
Single	47(50.0)	47(50.0)	
Married	142(**66.7**)	71(33.3)	**<0.001**
Divorced &Widow	10(32.3)	21(67.7)	
Education			
None &Primary	110(57.0)	83(43.0)	0.62
Secondary	73(63.5)	42(34.5)	
Tertiary	16(53.3)	14(46.7)	
Partner support			
Poor	28(27.2)	75(72.8)	
Moderate	38(54.3)	32(45.7)	**<0.001**
Good	103(**62.4**)	62(37.6)	
Counseled on ART			
Yes	192(58.4)	137(41.6)	0.22
No	7(77.8)	2(22.2)	
Disclosure status			
Yes	139**(63.2)**	81(36.8)	**0.005**
No	60(50.9)	58(49.1)	

Spouse HIV status			
Positive	120(**67.0**)	59(30.0)	**0.001**
Negative/unknown	79(49.7)	80(50.3)	
Duration on ART			
Within 3 years	155 (60.5)	101 (39.5)	
4-6 years	27 (50.9)	26 (49.1)	
>6years	17 (58.6)	12 (41.4)	0.56
PMTCT knowledge			
Good	16(**63.5**)	96(36.5)	
Poor	32 (42.7)	43 (57.3)	**0.003**
Post delivery			
Within 6 weeks	12(80.0)	3 (20.0)	
>7 weeks-6 months	31 (54.4)	26 (45.6)	
>7months-1 year	43 (44.3)	54 (55.7)	0.40
Participants			
Pregnant	112(**66.7**)	56(33.3)	
Lactating	87(51.2)	83(48.8)	**0.001**

Table 3: Association between socio-demographic characteristics and adherence status to ART Option B+ among pregnant women

Variables	Good adherence n (%)	Poor adherence n (%)	P-Value
Age (years)			
<19	7(77.8)	2(22.2)	
19-29	57(73.1)	21(26.9)	
>30	49(59.8)	33(40.2)	0.16
Occupation			
Self employed	40 (65.6)	21(34.4)	
Govern. Employed	6 (54.5)	5(45.5)	
Private employed	17 (77.3)	5(22.7)	
House Wife	50(66.7)	25 (33.3)	
Student	0(00.0)	0(00.0)	0.60
Trimester			
First	18 (72.0)	7 (29.2)	
Second	59 (64.8)	32 (35.2)	
Third	36 (67.9)	17 (32.1)	0.83
Marital status			
Single	35(56.5)	27(43.5)	
Married	73(**80.2**)	18(19.8)	
Divorced &Widow	5(31.3)	11(68.7)	**<0.001**
Education			
None &Primary	62(65.3)	33(34.7)	
Secondary	38(73.1)	14(26.9)	
Tertiary	13(59.1)	9(40.9)	0.14
Partner support			
Poor	17(34.7)	32(65.3)	
Moderate	36(73.5)	13(26.5)	
Good	60(**84.5**)	11(15.5)	**<0.001**
Counseled on ART			
Yes	108(66.3)	55(33.7)	
No	5(83.3)	1(16.7)	0.38
Disclosure status			
Yes	74**(71.2)**	30(28.8)	
No	39(60.0)	26(40.0)	0.13
Spouse HIV status			
Positive	57(**73.1**)	21(26.9)	
Negative/unknown	56(61.5)	35(38.5)	0.11
Duration on ART			
Within 3 years	89 (68.5)	41 (31.5)	
4-6 years	19 (59.4)	13 (40.6)	
>6years	5 (71.4)	2 (28.6)	0.60
PMTCT knowledge			
Good	105(**70.5**)	44(29.5)	
Poor	8(40.0)	12 (60.0)	**0.007**

Table 4: Association between socio-demographic characteristics and adherence status to ART Option B+ among lactating women

Variables	Good adherence n (%)	Poor adherence n (%)	P-Value
Age (years)			
<19	0(0.0)	2(100.0)	
19-29	38(56.7)	29(43.3)	
>30	48(48.0)	52(52.0)	0.19
Occupation			
Self employed	34 (43.6)	44 (56.4)	
Govern. Employed	3 (60.0)	2 (40.0)	
Private employed	15 (53.6)	13(46.4)	
House Wife	33 (58.9)	23 (41.1)	
Student	1(50.0)	1(50.0)	0.50
Marital status			
Single	10(31.2)	22(68.8)	
Married	70(**57.4**)	52(42.6)	
Divorced &Widow	6(40.0)	9(60.0)	**0.01**
Education			
None &Primary	49(50.0)	49(50.0)	
Secondary	33(52.4)	30(47.6)	
Tertiary	4(50.0)	4(50.0)	0.55
Partner support			
Poor	13(24.1)	41(75.9)	
Moderate	10(47.6)	11(52.4)	
Good	63(**67.0**)	31(33.0)	**<0.001**
Counseled on ART			
Yes	84(50.6)	82(49.4)	
No	2(66.7)	1(33.3)	0.58
Disclosure status			
Yes	67**(57.8)**	49(42.2)	
No	19(35.8)	34(64.2)	**0.008**
Spouse HIV status			
Positive	63(**62.4**)	38(37.6)	
Negative/unknown	23(33.8)	45(66.2)	**<0.001**
Duration on ART			
Within 3 years	66 (52.4)	60 (47.6)	
4-6 years	8 (38.1)	13 (61.9)	
>6years	12 (54.5)	10 (45.5)	0.45
PMTCT knowledge			
Good	62(**54.4**)	52(45.6)	
Poor	24 (43.6)	31 (56.4)	0.19
Post delivery			
Within 6 weeks	12(80.0)	3 (20.0)	
>7 weeks-6 months	31 (54.4)	26 (45.6)	
>7months-1 year	43 (44.3)	54 (55.7)	**0.03**

3.3 Association between socio-demographic and Obstetric characteristics with adherence status

In overall, adherence status was significantly found to be influenced by male partner support, PMTCT knowledge, whether respondent was pregnant or lactating, whether male partner HIV status was known or not and whether respondent was married or otherwise. Other covariates like age, occupation, education level, gravidity, gestation age, and duration of ART use showed no significance association with adherence status.

Women who had good knowledge on PMTCT Option B + were (COR=2.18, 95% CI =1.30 – 3.66. AOR=2.54, 95% CI =1.29 – 5.01) more likely to have good adherence compared to those with poor knowledge. Those with moderate and good partner support were (COR=4.73, 95% CI =2.47 – 9.04) more likely to have good adherence on ART Option B+ than women with poor partner support.

When confounders were adjusted, women with moderate partner support alone were (AOR=5.01, 95% CI =2.03 – 12.36), and those with good partner support were (AOR=7.2, 95% CI =1.01-14.22). more likely to have good adherence compared to women with poor partner support. In conjunction with partner support, married women were (COR=2.08, 95% CI =1.27 – 3.41) more likely to have good adherence to PMTCT Option B + than single women.

When confounders were put into consideration married women had no significant difference to influence adherence AOR 0.94, 95% CI= (0.45 - 1.96).

Women who disclosed their HIV status were (COR=1.98, 95% CI= 1.27 – 3.09 and AOR=1.07 95% CI =1.01 – 4.22) more likely to have good adherence compared to those who had not disclosed their HIV status. Likewise, participants who knew HIV status of their male partners were (COR=2.17, 95% CI=1.40-3.36) more likely to be adherent compared to those who did not know their male partner HIV status. When other confounding factors were considered, these women had no significant difference in adherence as compared to their counterpart (AOR=1.28, 95% CI=0.68-2.43).

Finally, being pregnant women showed to be associated with good adherence to ART Option B +, as pregnant women were (COR=2.10, 95% CI =1.35 - 3.25. AOR=2.94, 95% CI=1.47 – 5.88) less likely to have good adherence status than pregnant women. **Table 5** shows unadjusted and adjusted odds ratios of various covariates on adherence to PMTCT option B plus.

Table 5: Bivariate and Multivariate analysis for predictors of adherence among overall participants

Variables	Adherence status		COR (95% CI)	AOR (95% CI)
	Good: n (%)	Poor: n(%)		
Marital status				
Single	47(50.0)	47(50.0)	1	1
Married	142(66.7)	71(33.3)	**2.08(1.27-3.41)**	0.94(0.45 - 1.96)
Divorced & widow	10(32.3)	21(67.7)	0.42(0.17-1.06)	0.63(0.20-2.01)
Partner support				
Poor	28(27.2)	75(72.8)	1	1
Moderate	38(54.3)	32(45.7)	**4.73(2.47-9.04)**	**5.01(2.03-12.36)**
Good	103(**62.4**)	62(37.6)	**7.46(4.2-12.96)**	**7.2(1.01-14.22)**
HIV disclosure status				
Yes	139**(63.2)**	81(36.8)	**1.98(1.27-3.09)**	**1.07(1.01-4.22)**
No	60(50.9)	58(49.1)	1	1
Spouse HIV status known				
Yes	120(**67.0**)	59(30.0)	**2.17(1.40-3.36)**	**1.28(0.68-2.43)**
No	79(49.7)	80(50.3)	1	1
PMTCT knowledge				
Good	167(**63.5**)	96(36.5)	**2.18(1.30-3.66)**	**2.54(1.29-5.01)**
Poor	32 (42.7)	43 (57.3)	1	1
Participants				
Pregnant	112(66.7)	56(33.3)	**2.10(1.35-3.25)**	**2.94(1.47-5.88)**
Lactating	87(51.2)	83(48.8)	1	1

COR: Crude Odds ratio, AOR: Adjusted odds ratio, CI: Confidence Interval

Comparatively, only marital status, male partner support and PMTCT knowledge were significantly found to influence adherence to option B+ in pregnant women group. Married women were (AOR=2.44, 95% CI=1.21-9.54) more likely to have good adherence to option B+ as compared to those who were single or divorced, likewise those with good male partner support were (AOR =9.64, 95% CI= 3.92 – 23.73) more likely to have good adherence to option B+ as compared to those had poor male partner support. Women who had good PMTCT knowledge were (AOR =3.17, 95% CI=1.90 – 9.27) more likely to be adherent to option B+ as compared to those who had poor PMTCT knowledge.

In contrast to lactating group, more factors were found to influence adherence status which is marital status, male partner support, and disclosure of HIV status, knowing spouse HIV status and duration post-delivery. Of which, married women were (AOR=2.90, 95% CI= 1.07 – 9.23) more likely to be adherent than those who were single or divorced, likewise women with good male partner support were (AOR=6.09, 95% CI=1.99 – 18.65) more likely to have good adherence to option B+ as compared to those with poor male partner support. Moreover, women who disclosed their HIV status, knew their spouse HIV status and those who were within their 6 weeks of delivery were [(AOR=1.67, 95% CI=0.54 – 5.14), (AOR=1.99, 95% CI=0.74 – 5.36) and (AOR=4.88, 95% CI=1.16 – 20.58) more likely to have good adherence to option B+ as compared to their counterparts in respective groups. **Table 6**

Table 6: Bivariate and multivariate subgroup analysis for predictors of adherence among pregnant and lactating women

Marital status	Variable	Adherence Status, n (%)		COR (95% CI)	AOR (95% CI)
		Good	Poor		
Pregnant women	**Marital status**				
	Single	10(31.2)	22(68.8)	1.06(0.66-5.53)	1.01(0.93-4.81)
	Married	70(**57.4**)	52(42.6)	2.75(1.98-8.67)	2.44(1.21-9.54)
	Divorced &Widow	6(40.0)	9(60.0)	1	1
	Partner support				
	Poor	17(34.7)	32(65.3)	1	1
	Moderate	36(73.5)	13(26.5)	5.21(2.20-12.38)	4.89(1.97-12.13)
	Good	60(**84.5**)	11(15.5)	10.27(4.30-24.54)	9.64(3.92-23.73))
	PMTCT knowledge				
	Good	105(**70.5**)	44(29.5)	3.58(1.37-9.36)	3.17(1.90-9.27)
	Poor	8(40.0)	12 (60.0)	1	1
Lactating women	**Marital status**				
	Single	10(31.2)	22(68.8)	1.02(0.25-4.13)	0.98(0.34-4.67)
	Married	70(**57.4**)	52(42.6)	3.03(1.88-10.40)	2.90(1.07-9.23)
	Divorced &Widow	6(40.0)	9(60.0)	1	1
	Partner support				
	Poor	13(24.1)	41(75.9)	1	1
	Moderate	10(47.6)	11(52.4)	2.87(0.99-8.27)	2.58(0.78-8.49)
	Good	63(**67.0**)	31(33.0)	6.41(3.00-13.67)	6.09(1.99-18.65)
	Disclosure status				
	Yes	67**(57.8)**	49(42.2)	2.45(1.25-4.79)	1.67(0.54-5.14)
	No	19(35.8)	34(64.2)	1	1
	Spouse HIV status				
	Positive	63(**62.4**)	38(37.6)	3.24(1.70-6.18)	1.99(0.74-5.36)
	Negative/unknown	23(33.8)	45(66.2)	1	1
	Post delivery				
	Within 6 weeks	12(80.0)	3 (20.0)	5.02(1.33-18.94)	4.88(1.16-20.58)
	>7weeks-6months	31 (54.4)	26 (45.6)	1.50(0.78-2.89)	1.47(0.69-3.1)
	>7months-1 year	43 (44.3)	54 (55.7)	1	1

COR: Crude Odds ratio, AOR: Adjusted odds ratio, CI: Confidence Interval

4.0 DISCUSSION

Antiretroviral therapy adherence level, of more than or equal to 95% optimizes outcomes and minimizes viral resistance. The overall proportion of good adherence on ART option B+ in this study was found to be 58.9%.This is nearly the same, with study done in upper west region in Ghana 62.2%[34]. However, these findings are of lower percentage of adherence as compared to other studies done in developing countries of which the adherence level was 81.1% in Ethiopia [19], and 87.0% in East Ethiopia [35] and 91.0% in study reported in Malawi[36],the difference of the level of adherence observed could be due to different study population ,cultural difference and difference methodological approach used.

Suboptimal level of adherence found in this study may be attributed to stigma, general sense of hopelessness, daily life circumstances and traditional gender norms that limits women's autonomy to access and gain health resources available [37]. Also general sense of wellbeing and being free from HIVI/AIDS related symptoms could make women reluctant adhering to medication[34].On top of that, side effects of the ART they are enhanced during pregnancy and puerperium period[34].

When level of adherence was analyzed between pregnant women and lactating mothers ,pregnant women were found to have good adherence (66.6%) than lactating mothers (51.0%). These study findings are similar as the study done by Nachenga and colleagues whereby the level of adherence were 72% and 57% during pregnancy and lactating period respectively[28],and that study done in Ghana also revealed pregnant (98%) to be more adherent to ART than lactating(86%).

The discrepancy observed is because pregnant women are more motivated to adhere to ART therapy so as to deliver HIV free babies as opposed to lactating mothers who had delivered already and some of babies had not been saved from vertical HIV infection, however, pregnant women were found to be more worried on ART safety and its side effects than lactating women [37 38]. A study done in Ukraine showed that lactating mother were less adherent because

they felt having no indications of strictly using ART postnatal[38].It has been pointed out in different studies that lactating mothers are less retained in postnatal ART program and generally have poor ART clinic attendance than pregnant women. This is eventually linked to low level of adherence in lactating mothers[39]. However, pregnant women have shown to be more adherent than lactating women because of their good ANC attendance from which they get subsequent counseling on PMTCT in contrast to lactating women who were overwhelmed with child demands in caring[40].

The main predictors affecting adherence for women investigated in this study were, male partner support, marital status, HIV disclosure status, good PMTC knowledge and knowing spouse HIV status, of all the predictors, male partner support was found to be the most significant influencing factor. This is in contrast with other studies of which counseling on PMTCT and HIV disclosure were found to be the most significant influencing factors [19,20,] however male partner support was also found to influence adherence . This difference might suggest the importance of gender norms that men (husbands) carry over women (wives).

The finding of Male partner support, being the most influencing factor observed in our study, was in consistent with the study report from Ghana. Whereby, participants who had family or partner support were two times more likely to adhere than the respondent on the other side. However, living with extended family was found to have negative influence towards ART adherence. The similarities of social cultural factors in these two countries can explain the influence of male partner support observed in these studies, [34,38] . In conjunction with partner support, married women were two times more likely to have good adherence to ART option B + than single women. When other covariates were put into consideration, marital status had no significant association with adherence status. However, majority of married women had good partner support.

Like other studies, disclosing status and knowing spouse's HIV status significantly influenced good adherence as 63.2% and 66.5% of women who disclosed their own HIV status and knew their spouse HIV status respectively had good adherence. This was also observed in the study

in Morogoro (40.8%) of participants who disclosed to their partner had good adherence to ART [26] although the study done in Morogoro had low percentage of disclosure status compared to our study. In consistent with other study reports from Nigeria, southern Ethiopia and East Ethiopia, the majority of participants 97.3%, 77.2% and 81.1% respectively who disclosed their HIV status had good adherence to ART as compared to those who did not disclose [24,19,35]. Similarly, one in ten women did not take ART in front of someone who was unaware of her HIV status[38]. The high proportional on ART disclosure observed in Nigeria and East Ethiopia reflect the outcome of high level of ART adherence (80.6%) and (87%) respectively, similarly the low percentage of women who disclosed the HIV status in our study explains to the level of adherence observed.

Generally, HIV disclosure is important in declining the transmission of HIV infection in HIV negative male sexual partners (discordant couple), which is one of the additional benefits of Option B+ over options A and B. This finding implies that stakeholders should also take male partners into focus to optimize the benefits of Option B+ PMTCT care and support.

Counseling on PMTCT made women disclose their HIV status and improves their knowledge on PMTCT [19,20], but in our study counseling alone was not associated with good PMTCT adherence status neither did influence women to disclosure their HIV status or influence their knowledge on PMTCT.

In this study, participants with good knowledge on PMTCT were two times more likely to have good adherence than those with poor education. This was also revealed in other studies from low, middle and high income countries[28].Another study done in Nigeria, revealed that good knowledge on PMTCT brought by experience after several visits to HIV/AIDS counseling clinics, has been credited to influence adherence [19]. A study done in Kenya reported that, each additional year of experience, impact knowledge on PMTCT through the subsequent counseling and education offered at the clinic, therefore these increases likelihood of reporting perfect adherence by 10.6 % [21]

In this study, only male partner support, marital status and PMTCT knowledge were found to influence adherence to option B+ in pregnant women subgroup analysis, in contrast to more factors which were observed to influence adherence in lactating group sub analysis, which were male partner support, marital status , HIV disclosure status, knowing spouse HIV status and duration post-delivery in which those with good male partner support, being married, having good PMTCT knowledge, disclosing HIV status and knowing spouse HIV status were associated with good adherence to option B+. The finding in our study is a bit different from another study done in Ukraine in which disclosing of HIV status, being married and old age influenced adherence to ART in pregnant women, in contrast to only two factors which were observed to influence adherence in lactating group which were being married and disclosing own HIV status[18].

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The overall proportion of good adherence to ART to PMTCT in Option B+ program in this study was 58.9%, pregnant women were found to have high level of good adherence (66.6%) than lactating mothers (51.0%). The main predictor influencing adherence was good male partner support, marital status, good knowledge on PMTCT, disclosure status.

5.2 Recommendations

Further studies multicenter with large sample size should be conducted as it will also help to find out the associations of multiple factors with adherence, together with the evaluation the components of counseling in relation with adherence.

Counseling should be intensive and comprehensive including all the components as recommended by ministry of health, including importance of disclosing own HIV status, knowing partner HIV status and adhering to ART

Deploying more effort s to enhance male partner involvement into PMTCT program may yield more significant outcome, as this was shown to be most fruitful area to invest in improving women adherence to PMTCT Option B+

5.3 Limitations

This study involved self-reported method for acquiring information about adherence status hence welcoming recall bias

- ✓ Generalizations of the results from this study in to the community might be limited because it was one facility based study and selection bias was likely to occur.

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APPENDICES

Appendix I: Questionnaires

Pregnant..... **Lactating.....**

Part 1.	**Demographic and social economic characteristics**		
SN	**QUESTIONS**	**RESPONSE**	**SKIP TO QN**
1	Age in years		
2	Marital status	Single Married Divorced Widow	
3	OBSTRETIC HISTORY	When is the last day of your normal menstrual period?……..**USE ANC CARD** Document gestation age……. Document the gravidity……. Document parity…… How many days post partum.....	
4	Education of respondent	1.Unable to read and write 2. Able to read and write 3. primary education 4. secondary education **5. College or University level**	

5	Educational status of your husband?	1.Unable to read and write 2. Able to read and write 3. Primary education 4. Secondary education 5**. College or University level**	
6	Occupation of the respondent	1.Student 2. Private business 3. Government employee 4. Nongovernment employee 5. House wife 6. Daily laborer	
7	Occupation of husband	1.Student 2. Private business 3. Government employee 4. Nongovernment employee 6. Daily laborer	
8	Date started ART?	**…/…./….**	
9	How many times have you attended the antenatal clinic up to now?	**…… DON'T KNOW……..**	
10	Did you miss any of your ARV medication in the last three days If yes, reasons why you may have missed taking any medications within the past three days**.**	Response NO …. Yes ….. 1.Forgetfulness 2. Feeling of good health 3. To avoid side effect 4. Religious influence 5. Avoid to be known as HIV positive 6. Being busy doing other things 7.Too many pills	

		9.Felt hopelessness **8.Other……**	
11	Do you have any previous PMTCT experience?	Yes…. No….	
12	Did your health care provider tell you how to take the medications?	Yes…. No….	
13	Did the health care provider counsel you the common side effects of ARV drugs? If yes what type of side effects did the provider counseled you?		
14	Have you disclosed your HIV status to your sexual partner?	Yes…. No….	
15	If yes to qn 18 when did you disclose your HIV positive status to your sexual partner?	1.Before starting PMTCT drug 2.After initiating PMTCT drug	
16	If you haven't disclose to your spouse or sexual partner(s) did you intend to disclose?	Yes…. No…..	
17	If yes to QN 17, when did you plan to disclose?	1. Today….. 2. After one month…. 3. Within a month…. 4. I will never tell forever….	
18	After knowing that your HIV positive to whom you can disclose your HIV status?	1. No one… 4.friends/relatives…. 2. Partner….. 5. Parents…… 3. Brother and sister 6.others…	
19	Do you know the HIV status of your spouse / partner	Yes No	

Knowledge on MTCT (PMTCT)

NO.	Questions	Response		
	Knowledge on MTCT(PMTCT)	True	False	Not sure
20	Condom use during sex with an HIV infected partner can prevent HIV transmission			
21	Seropositive women can transmit HIV to their babies during pregnancy			
22	HIV-positive women can reduce the risk of HIV transmission to their babies if they take PMTCT drugs			
23	Omitting to take some of the PMTCT drugs has no effect on the effectiveness of PMTCT care and support			
24	Adhering to ARV drugs can reduce the risk of opportunistic infections			
25	The support of male partner during PMTCT care does not have any effect on mothers adhering to PMTCT drugs.			

26. Male Partner Involvement	**YES**	**NO**
Do you get support from your partner?		
What type of support -Attending ANC		
Knows ANC appointment		
Discusses ANC interventions		
Support ANC visits financially		
Knows dose of PMTC drugs		
Knows frequency of PMTCT drugs Bringing PMTCT drug from health center		
Sought permission to use a condom currently		

27. PART B: ADHERENCE STATUS

1. SELF REPORT METHOD

1.1 Do you sometime find it difficult to remember to take your medication? Yes…No….

1.2 When you feel better, do you sometime take a break from your medication? Yes…No…

1.3 Many patients have troubles in taking their ARV doses as prescribed; did you miss any ARV doses in the last 3 days? Yes… No…

1.4 Sometimes if you feel worse when you take the medicine, do you stop taking it? Yes No..

(A women was considered to have good adherence if she responded' No' to all the four of the questions. However, if she responded 'Yes to at least one question, she was considered to have poor adherence)

Appendix II: Maswali/Dodoso

Namba ya kliniki….. Mjamzito …. Ananyonyesha……..

Sehemu 1.	**Hali ya mshiriki katika utafiti**		
namba	**Maswali**	Majibu	Nenda swali ..
1	Umri katika miaka		
2	Hali ya uzazi	Mara ya mwisho ni lini kuona siku zako za hedhi??……. Umri wa mimba……. Mimba ya ngapi?..... Umejifungua mara ngapi?....	
3	Hali ya ndoa	Sijaolea Nimeolewa Nimeachika Mjane	
4	Elimu ya muhusika(mteja)	1.Hawezi kusoma na kuandika 2. Anaweza kusoma na kuandika 3. Elimu ya msingi 4. Elimu ya secondari **5. Elimu ya chuo**	

5	Elimu ya mume?	1.Hawezi kusoma na kuandika 2. Anaweza kusoma na kuandika 3. Elimu ya msingi 4. Elimu ya secondary **5. Elimu ya chuo**	
6	Kazi ya Muhusika(Mteja)	1.Mwanafunzi 2. Mfanya biashara 3. Muajiriwa wa serikali 4. Muajiriwa wa shirika lisilo la serikali 5. Mama wa nyumbani 6. Mfanya kazi za vibarua	
7	Kazi ya mume	1.Mwanafunzi 2. Mfanya biashara 3. Muajiriwa wa serikali 4. Muajiriwa wa shirika lisilo la serikali 5. Mama wa nyumbani 6. Mfanya kazi za vibarua	
8	Tarehe uliyo anza dawa?	**…/…./….**	
9	Ni mara ngapi umehudhuria kliniki hadi sasa?	**…… ,SIJUI**	
10	**Je**,katika siku tatu zilizo pita kuna siku hukuweza kunywa dawa zako za kuongeka kinga? **Kama jibu ndio**,sababu ni nini	Jibu Ndio Hapana 1.Nilisahau 2. Niliona naendela vizuri ,nimepona	

	iliyokufanya ushindwe kunywa dawa katika siku tatu zilizopita?	3. Niliogopa madhara ya dawa 4. Dini yangu hairuhusu 5. Naogopa kufahamika kama muathirika wa ukimwi 6. Nilikuwa na shughuli nyingi 7.Dawa nyingi 9.Nilikosa tumaini **8.Mengineyo……**	
11	Je hapo awali ulikwisha elimishwa kuhusu kuzuia maambuki kutoka kwa mama kwenda kwa mtoto?	Ndio Hapana	
12	Je mtoa huduma wa afya amekuelekeza jinsi ya kunywa dawa?	Ndio…… Hapana…….	
13	Je mtoa huduma ya afya alikupa nasaha kuhusu madhara yaliyo mengi ya dawa hizi za kuongeza kinga na kuzuia maambuki kwenda kwa mtoto?Kama ndio ni madhara gani mtoa huduma alitoa nasaha ?	Ndio…… Hapana……..	
14	Ushamwambia mwenza wako kuhusu hali yako ya UIKMWI	Ndio…. Hapana…	
15	Kama ndio (swali no.15),Ni lini ulimwambia mwenza wako?	Kabla ya kuanza dawa…. Baada ya kuanza dawa…	
16	Kama hujamwambia mwenza wako hadi sasa,Je una mpango wa kumuambia?	Ndio Hapana	

17	Kama ndio(swali 17),lini umepanga kumwambia mwenza wako?	1. leo… 2. Baada ya mwezi… 3. Ndani ya mwezi… 4. sitamwambia kamwe…	
18	Baada ya kujua umeadhirika na Ukimwi,Je ni nani ungeweza kumwambia majibu yako/hali yako?	1.Hakuna mtu… 2.mpenzi/mume… 3.kaka na dada… 4.rafiki/ndugu…. 5wazazi……6.wengineo……	
19	Je unajua hali ya kiafya (ukimwi) ya Mume/rafiki yako	1.ndio(anamaambukizi)…. 2.Hapana au hana maambukizi….	

Elimu kuhusu maambuki toka kwa mama kwenda kwa mtoto (MTCT) (PMTCT)

	Maswali	Jibu		
	Elimu kuhusu maambuki toka kwa mama kwenda kwa mtoto(MTCT) (PMTCT)	Ndio	hapna	Sina uhakika
20	Matumizi ya kondomu yanaweza kuzuia maambukizi ya UKIMWI wakati wa tendo la ndoa na mweza aliye adhirika?			
21	Mama mmjamzito aliye adhirika na UKIMWI anaweza muadhiri mtoto kwa virusi ya UKIMWI kabla ya kujifungua?			
22	Mama mwenye UKIMWI anaweza punguza maambuki ya virusi kwenda kwa mtoto endapo atakunywa dawa za kuzuia maambukizi toka kwa mama kwenda kwa mtoto?			
23	Kuacha kunywa badhi ya dawa za kuzuia maambuki kwenda kwa mtoto haina madhara katika ufanisi wa kuzuia maambukizi kwenda kwa mtoto?			
24	Kunywa dawa ipasavyo inasaidia kupunguza magonjwa nyemerezi			
25	Msaada wa mwenza katika jitihada za kuzuia maambuki ya mama kwenda kwa mtoto haumsaidii mama kunywa dawa ipasavyo?.			

26. Kumuhusisha mwenza wa kiume

Ni msaada gani unapata? (MASWALI)	**NDIO**	**HAPANA**
Je unapata msaada kutoka kwa mwenza wako?		
Anahudhuria kliniki pamoja na wewe		
Anajua ratiba yako ya marudio ya kliniki		
Anaongelea kuhusu huduma na mipango ya kliniki.		
Anajua rariba yako ya marudio ya kliniki		
Anatoa msaada wa kifedha kwa ajiri ya mahudhurio ya kliniki		
Anajua ni jinsi gani inatakiwa unywe dawa zako		
Anajua ni mara ngapi kwa siku inatakiwa unywe dawa zako		
-Anakuletea dawa toka kituo cha Afya		
-Anaomba ruhusa kutumia kinga ya mpira siku hizi		

27. B: HALI YA UNYWAJI WA DAWA

1. **MASWALI**

1.1 Kuna muda unapata shida kukumbuka kumeza dawa?

1.2 Unapokuwa unajikia vizuri,kuna muda unaacha kutumia dawa?

1.3 Wagonjwa wengi hupata shida kunywa dawa zao kama ilivo elekezwa,Je kuna siku hujanywa dawa ndani ya siku hizi tatu?

1.4Kuna muda unapo jisikia vibaya wakati unakunywa dawa,unaacha ktumia dawa?

(Mwanamke(muhusika) atahesabika kama anakunywa dawa kwa kuzingatia endapo atajibu **HAPANA** kwa maswali yote ma nne,Hata hivyo kama yeye atajibu **NDIO** kwa angalau swali moja atahesabika kama hazingatii dawa ipasavyo)

Appendix I1I: Consent Form

Introduction

My name is Emmanuel Mwalumuli student of MUHAS pursuing Masters Degree in Obstetrics and Gynaecology. As a requirement for the achievement of this program I am required to conduct a study on adherence and predictors of adherence to option B plus among pregnant women attending PMTCT clinic at Mnazi Mmoja Hospital Town Council.

I kindly request you to participate in my research, as one of the participants your opinions are very important to this study. I assure you that all answers given will remain confidential and will only be used for the purpose of this study.

Thanking you in advance for your cooperation

Dr. Emmanuel Mwalumuli Signature----------

Study participants

The study will involve pregnant and lactating mothers who are HIV positive on Option B + regime, that attend the PMTCT clinic, your participation in the study will be voluntary, your free to decide either to participate on this study or not. If you are willing to be participating on the study then, I will request you to answer questions related to the study. It will take 25minutes for you to complete questioner.

Confidentiality

All information which will be collected from you will remain confidential and the information obtain will be for study purpose only. Codes will be used and not names.

No information might identify you as participant at the time the results of study are published.

Benefits: No financial benefits to you but you will benefit from recommendations that will be made concerning the level of adherence and its associated factors.

Compensation

No any kind of compensation will be provided by participant

Risk

There are no risks anticipated in this study

Rights to Withdraw and Alternatives

Participation for this study is voluntary. You have the right to refuse to participate or withdraw from the study even if you have already given your consent. Refusal to participate or withdraw from the study will not involve penalty or loss of any benefits to which you are otherwise entitled. Your withdrawal from the study will not in any circumstances interferes with the health care service provided to you.

Who to Contact

If you ever have questions about this study, you should contact the principal investigator **Emmanuel Owden Mwalumuli through the mobile number 0767149784/ you may use the P.O. BOX 65000, Dar es Salaam.** If you ever have any questions concerning your rights as a participant, you may contact my supervisors for this research who are Dr,Furaha August(0754304250) and Dr.Sabria Rashid (0713210880) or Director of Research and Publications Committee Professor Said Aboud MUHAS, P.O. Box 65001, Dar es Salaam. Tel: 2150302-6.

Signature:

Have you understood what it means to participate in this study? YES ____NO ____

Do you agree to participate?

Participant agrees …… Participant does NOT agree ……..

I, _____ have read the contents in this form. I agree to participate in this study.

Signature of participant ……

Signature of the researcher ……Date……

Appendix IV: Swahili Version

Fomy Ya Idhini

Habari,

Jina langu ni Emmanuel Mwalumuli mwanafunzi wa chuo cha sayansi na tiba Muhimbili,Nasoma shahada ya uzamili wa magonjwa ya uzazi na wanawake.Kama hitaji la mafunzo yaha natakiwa kufanaya utafiti kuhusu uzingatiaji na mambo ambaya yanaweza kumfanya mtu azingatie ama asizingatie katika unywaji wa dawa za kuzuia maambukizi toka twa mama kwenda kwenda kwa mtoto miongoni mwa wanawake wajawazito na akina mama wanao nyoyesha anayeuzulia kliniki Mnazi mmoja hospitali

Nina kuomba uweze kushiriki katika utafiti huu,kama mshiriki wa utafiti huu maoni yako ni ya msingi sana katika kusghuli ya utafiti huu

Nina kuhakikishia kuwa majibu utakayo toa yatatunzwa kwa usiri na yatatumika kwa manufaa ya utafiti huu tu.

Ahsante

Dr.Emmanuel Mwalumuli Sahihi.....

Jinsi ya kushiriki

Ukikubali kushiriki katika utafiti huu, utaulizwa maswali juu ya hali yako ya afya na hali ya unywaji wako wa dawa na vitu amabavyo vinakufanaya uweze au ushindwe kunywa dawa kwa ufanisi. Ningependa kuongea na wewe kwa muda wa takribani dakika 25.

Endapo utaridhia kushiriki katika utafiti huu utakuwa ni mmoja kati ya wagonjwa watakaoshiriki katika utafiti huu.

Usiri

Taarifa zote utakazotoa kwenye utafiti huu zitatunzwa kwa usiriwa hali ya juu sana. Taarifa zitakazokusanywa zitaingizwa kwenye kompyuta, zikiwa katika namba ya siri. Jina lako halitahitajika katika utafiti huu hii inaonyesha jinsi gani taarifa zako zitakavyotunzwa kwa usiri. Taarifa zote tutakazopata zitatumika kwa ajili ya utafiti huu tu.

Haki ya kujitoa kwenye utafiti

Ushiriki wako katika utafiti huu ni hiari,kama hautaridhia/ kuamua kusitisha mahojiano. katika utafiti huu wakati tafiti inaendelea hakuna, adhabu yoyote itakayotolewa,utaendelea kupata huduma ya matibabu kama kawaida.

Faida na athari

Hakuna athari yoyote au faida ya moja kwa moja kwako katika kushiriki kwenye utafiti huu, ila itachukua muda wako tu. Ni matumaini yangu kuwa utafiti huu utakuwa ni wenye manufaa kwako na kwa wagonjwa wote wa VVU na jamii kwa ujumla kwani taarifa zitakazokusanywa zitasaidia kutambua hali ya unywaji wa dawa na mambo yanaopelekea mtu aweze au ashindwe kunywa dawa kwa ufanisi

Nani wa kuwasiliana nae

Endapo una swali linalohusiana na utafiti huu, tafadhali usisite kuuliza. Iwapo una swali au ungependa kupata maelezo zaidi baada ya kukamilisha mahojiano, unaweza kuwasiliana na mimi Emmanuel Owden Mwalumuli kupitia namba 0767149784 au wasimamizi wangu wa utafiti huu Dr.Furaha August(0754304250) na Dr.Sabria Rashid(0713210880) au kwa Prof. Said Aboud Mkurugenzi wa Utafiti na Machapisho ya Chuo.

Una maswali?

Umeelewa yote juu ya utafiti huu? NDIYO_____/HAPANA_____

Je unakubali kushiriki kwenye utafiti (weka alama ya vema)

Ndiyo……. Hapana……

Mimi……, nimeelezwa / nimesoma maelezo haya , nimeyaelewa

Nimekubali kushiriki kwenye utafiti huu

Sahii ya mshiriki……

Sahii ya mtafiti……

Tarehe…….