

**FACTORS ASSOCIATED WITH RETENTION OF MOTHER-BABY PAIRS IN THE
ELIMINATION OF MOTHER TO CHILD TRANSMISSION OF HIV PROGRAM IN
KABERAMAIDO DISTRICT: A Retrospective Cohort Study**

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DECLARATION

This is to declare that this research dissertation on *'Factors associated with retention of mother -baby pairs in the elimination of mother to child transmission of HIV (eMTCT) Program in Kaberamaido District* 'is my work and has not yet been presented to any academic institution for an award other than the one for which it is now being submitted for.

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APPROVAL

This is to certify that this research dissertation titled '*factors associated with retention of mother -baby pairs in the eMTCT Program in Kaberamaido District*' has been prepared under our supervision and is now ready for presentation to Higher Degree Council of Busitema University.

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DEDICATION

This research dissertation is dedicated to my late father Mr. Ogwal Charles, late Mum Mrs. Katherine Ogwal and the entire family for their love, support, prayer, patience and understanding throughout this long and very demanding study period.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Anti-Retroviral Therapy
CAO	Chief Administrative Officer
CAT	Category
CD4	Clusters of Differentiation 4
CDC	Centre for Disease Control
CI	Confident Interval
DHIS2	District Health Information System2
DHO	District Health Officer
DNA	Deoxyribonucleic acid
EID	Early Infant Diagnosis
eMTCT	Elimination of Mother to Child transmission of HIV infection
HC	Health Centre
HCT	HIV counselling and Testing
HEIs	HIV Exposed Infants
HIV	Human Immunodeficiency Virus
HTS	HIV testing services
ICRW	International Centre for Research on Women
LTFU	Lost to follow-up
NVP	Niverapine
MBP	Mother-Baby Pair
MNCAH	Maternal, Neonatal, Child and Adolescent Health
MoH	Ministry of Health
MRRH-REC	Mbale Regional Referral Hospital-Research and Ethics Committee
MTCT	Mother to Child Transmission of HIV infection
OPD	Out Patient Department

OR	Odd Ratio
PCR	Polymerized Chain Reaction
PITC	Physician/Provider Initiated Testing and Counselling
PMTCT	Prevention of Mother to Child Transmission of HIV infection
PNC	Post-Natal Care
P-Value	Predicative-Value
Rx	Treatment
TASO	The AIDS Support Organization
UAC	Uganda AIDS Commission
UBOS	Uganda Bureau of Statistics
UNAIDS	Joint United Nations Program on HIV/ AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children Emergency Fund
VCT	Voluntary Counselling and Testing
VHTs	Village Health Teams
WHO	World Health Organization

OPERATIONAL DEFINITIONS

Mother-baby pairs: This is an HIV positive mother enrolled into the eMTCT program together with her HIV exposed infant.

HIV exposed infant: This is an infant born to an HIV sero-positive mother but whose (infant) HIV status is not yet known.

Retention: This is the ability of an HIV program to keep a mother-baby pair alive and active in the eMTCT program from delivery until discharge at 18 months.

Loss to follow up (LTFU): This is when a mother-baby pair has not been active in care 30 days after their last refill date. LTFU is also considered if any member of the pair (mother or baby) gets lost.

eMTCT Cascade: These are six essential and sequential steps an HIV positive mother and her exposed infant are expected to go through as part of the eMTCT services, these include: at least one antenatal care (ANC) visit, an HIV test performed, the HIV test result received, initiation of maternal ART prophylaxis, initiation of infant ART prophylaxis and full early infant diagnosis (EID) tests for exposed infant.

ABSTRACT

Background: One of the major challenges affecting the eMTCT program globally, regionally, and in Uganda is the high loss to follow up rates of HIV positive mother-baby pairs from HIV care and treatment programs. The loss to follow up rate in Uganda is estimated to range from 30-45%, making the Uganda eMTCT program fall short of the UNAIDS 2030 retention target of 95%.

Objective: The objective of this study was to determine the level of at two levels of the eMTCT cascade (at 12 and 18 months) and determine the factors associated with retention of mother-baby pairs at those stages. It is hoped this information will inform the design and implementation of better strategies to improve retention of HIV positive mother and their HIV exposed infants in the eMTCT program in Kaberamaido district.

Methods: This was a retrospective cohort study. The study involved 368 mother-baby pairs who were enrolled into the eMTCT program in Kaberamaido district from 1st January 2013 to 31st December 2018. of mother-baby pairs in the eMTCT program was assessed at two levels of the eMTCT cascade (at 12 and 18 months) and the factors associated with retention at those levels were determined. Mother-baby pairs were considered to be retained at each of the two levels if they had clinic appointment within the last 30 days or have future appointment date. Data on sociodemographic characteristics, mothers' ART treatment history, ANC, birth history and postnatal follow up were extracted from EID register and mothers' ART register and entered into MS Excel and then exported to Stata statistical software package version 14.0 for cleaning, management and analysis. Descriptive statistics such as mean, frequencies and proportions were computed at univariate level. At the bivariate level, logistic regression was performed to assess the level of association between the primary outcome (loss to follow up of mother-baby pair) and each independent variable at two of the six steps of the eMTCT cascade (2nd PCR test and 18 months' cascade completion). Variables with a $P < 0.2$ at bivariate level were entered into the final multivariable analysis model along

with other variables based on biological/clinical plausibility and potential confounders to determine the factors independently associated with retention of mother-baby pairs at 12 and 18 months in the eMTCT program.

Results: Of the 368 mothers enrolled into the study, the average age was 29.7years (SD=6.6). Nearly 2/3 of the mothers were married/cohabiting, (n=232, 63.0%), more than half of mother-baby pairs were receiving eMTCT services from health centre IIIs (n=191, 51.9%) and (n=188, 51.1%) of the mothers were enrolled into ART care through OPD. Of the 368 enrolled mother-baby pairs, (n=349, 94.8%) were still active in the eMTCT program at 12 months while 87.8% (n=323) were still active at 18months. The mothers' viral load suppression was the only factor significantly associated with 12-month retention of mother-baby pairs. Mothers who had suppressed viral load during pregnancy or breastfeeding had higher odds for 12-month retention compared to mothers who had non-suppressed viral load (p=0.027). Mothers who were initiated during the Post-Natal period had lower odds of cascade completion compared to those who initiated ART before pregnancy (p<0.0001).

Conclusion: There was high (94.8%?) level of retention of mother-baby pairs in the eMTCT program in Kaberamaido at 12 months, but it was suboptimal at 18months. Maternal viral load suppression(97%retention) and ART initiation during the post-natal period (72.2% retention) were significantly associated with retention of mother-baby pairs at 12 and 18 months respectively.

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.0 Introduction and background

Mother to child transmission of HIV (MTCT) still remains a major source of human immunodeficiency virus (HIV) infections among children globally, accounting for more than 90% of HIV infections among children (MoH, 2014; UNAIDS, 2017). HIV infection in children occur commonly during pregnancy, delivery or through breastfeeding. This is also referred to as 'vertical transmission', which is the main route of HIV infection among children aged 0-14 years.(UNAIDS, 2018b). Globally current MTCT rates are less than 2% in the developed countries and 5.3% in Africa(UNAIDS, 2020b; WHO, 2001). Uganda national reports show HIV vertical transmission rates at 2.9% and 3.6% respectively in Kaberamaido. These are above the 0% set by the World Health Organization(WHO) and national targets (MoH, 2015; UNAIDS, 2014). The uptake remains low despite the rolling out of eMTCT program across the country since 2012(MoH, 2014, 2015).

Although testing in Antenatal Care (ANC) is almost universal in Uganda, retention along the elimination of Mother to Child Transmission(eMTCT) cascade currently only 56.3% are tested for final EID test at 18 months(UNAIDS, 2020a), 31% have 2nd Polymerase Chain Reaction(PCR) and 44%1st PCR test, indicating that 13% of HIV Exposed Infants (HEIs) dropout between 1st PCR and 2nd PCR tests before the final rapid test is done at 18months(Uganda AIDS Progress report, 2018).

Since Uganda adopted the global strategy to prevent vertical transmission of HIV introduced by WHO and UNAIDS in 2000 (UNAIDS, 2016), there has been significant efforts to scale up the coverage. Also HIV counselling and testing, treatment of HIV positive mothers, early infant diagnosis, initiation of treatment and follow up of mother baby pairs(UNAIDS, 2018a) has increased. All national, regional referral hospitals, district hospitals, health center IVs and health center IIIs have scaled up access and retention of mothers in the eMTCT services. Entry point to the eMTCT services for pregnant mothers is ANC where they receive HTS as a component of a comprehensive package at ANC(MoH, 2018). By June 2016, over 80% of facilities were conducting birth

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