KNOWLEDGE, ATTITUDE AND PRACTICE OF SAFE INFANT FEEDING OPTIONS AMONG HIV INFECTED MOTHERS ATTENDING PREVENTION OF MOTHER TO CHILD TRANSIMISSION OF HIV CLINIC AT MBEYA REFERRAL HOSPITAL

Delfina Mkenda, MD

MMed (Obstetrics and Gynecology) Dissertation
Muhimbili University of Health and Allied Sciences
October 2013

KNOWLEDGE, ATTITUDE AND PRACTICE OF SAFE INFANT FEEDING OPTIONS AMONG HIV INFECTED MOTHERS ATTENDING PREVENTION OF MOTHER TO CHILD TRANSIMISSION OF HIV CLINIC AT MBEYA REFERRAL HOSPITAL

By

Delfina Mkenda

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

Muhimbili University of Health and Allied Sciences

October 2013

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Muhimbili University of Health and Allied Sciences a dissertation entitled ***Knowledge, Attitude and Practice of safe infant feeding options among HIV infected mothers attending Prevention of Mother to Child Transmission of HIV clinic at Mbeya Referral Hospital.,*** in (partial) fulfillment of the requirements for the degree of Masters of Medicine in Obstetrics and Gynecology of the Muhimbili University of Health and Allied Sciences.

……..

Prof. Hans N.Mgaya

(Supervisor)

……..

Date

DECLARATION

AND

COPYRIGHT

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

Signature…….. Date……..

ACKNOWLEDGEMENTS

First and foremost I thank the almighty God for keeping me healthy and guiding me throughout this academic journey.

I would like to express my sincere gratitude and special thanks to my supervisor Prof. Hans N. Mgaya for his supervision, constructive criticisms, patience and encouragement during the preparation of the study proposal till the end of report writing. He always found the time for repeatedly reading my work and making valuable suggestions despite having a very tight schedule.

I am also grateful and indebted to Dr. Kilewo and all other consultants and specialists in the department for their tireless support and guidance.

My sincere appreciation goes to all staff working at RCH clinic at Mbeya Referral Hospital and especially those working at CTC clinic for their support during the time of data collection. Also I thank all mothers involved in this study for their participation and making this work possible.

I would like to extend my deepest thanks to my parents, my young brothers and sister for their encouragement, understanding and acceptance of my absence during the period of preparation of this dissertation.

Lastly but not least is to my colleagues, MMed class 2010/2013 for their constant support throughout this academic journey.

DEDICATION

This work is dedicated to my lovely parents Mr. and Mrs. Damian Mkenda, my sister Grace and my brothers Cyprian, Godfrey, Richard and Fredrick.

ABSTRACT

BACKGROUND

Mother-to-child transmission of HIV is the most significant route and largest source of HIV infection in children below the age of 15 years. Prevention of mother to child transmission of HIV (PMTCT) is the package of interventions aiming at preventing mother-to-child transmission of HIV (MTCT). One of its interventions is provision of counseling on safe infant feeding in the era of HIV infection. With specific interventions in breastfeeding population the risk of MTCT can be as low as 5% or even less and to less than 2% in non breastfeeding population . [1]

OBJECTIVES -This study describes the level of Knowledge, Attitude and Practice of safe infant feeding options among HIV infected mothers attending Prevention of Mother to Child Transmission of HIV clinic at Mbeya Referral Hospital.

METHODOLOGY-This was a descriptive cross sectional study which was conducted at a PMTCT of HIV clinic at Mbeya Referral Hospital. Participants were recruited consecutively until the estimated sample size was achieved. Data was collected by using a structured questionnaire. The data obtained was entered into EPI-INFO and then analyzed using the Statistical Package for Social Science (SPSS) version 16.Knowledge on PMTCT and safe infant feeding was assessed by using the blooms cut off points and those with a score of 75-100% were regarded as having good knowledge. Univariate analysis for frequency computation was done to determine proportions.

RESULTS -The results showed that the participants who had good knowledge on MTCT were 57.2%, good knowledge on PMTCT 68.3% and good knowledge on safe infant feeding were 49.6%. Overall 105 (51.2%) of the respondents were positive while100 (48.8%) were negative about safe feeding options recommended to HIV infected mothers.

Regarding the infant feeding practices among the study participants 113(55.1)% practiced exclusive breast feeding 4(2.9%) exclusive replacement feeding and 86(41.9%) % practiced mixed feeding.

CONCLUSION -The results of this study indicated that nearly all women knew that HIV can be transmitted from an infected mother to her child. With regard to the level of knowledge, about two thirds of the mothers had good to satisfactory knowledge on MTCT, PMTCT, and safe infant feeding options. Despite the high level of knowledge seen regarding the safe infant feeding options only half of the study participants were practicing exclusive feeding in the first six months of life.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

AFASS…….Acceptable, Feasible, Affordable, Sustainable and Safe

AIDS…… Acquired Immunodeficiency Syndrome

ARV……Antiretroviral

BIPAI…….. … Baylor International Pediatric AIDS Initiative

CTC……..Care and Treatment Centre

EBF…… Exclusive Breastfeeding

ERF……..Exclusive Replacement Feeding

HIV……..Human Immunodeficiency Virus

KAP……..Knowledge, Attitude and Practice

MOHSW……..Ministry of Health and Social Welfare

MRH…….. ..Mbeya Referral Hospital

MTCT…….. Mother to Child Transmission

PMTCT……..... Prevention of Mother to Child Transmission

RCH……...Reproductive and Child Health

TDHS……Tanzania Demographic Health Survey

TFNC……Tanzania Food and Nutrition Centre

UNAIDS……..United Nations Joint Program on HIV /AIDS

UNGASS……. United Nations General Assembly Special Session

WHO……..World Health Organization

DEFINITION OF TERMS

Exclusive replacement feeding- Means complete avoidance of breast milk and feeding the infant with formula milk /other breast milk substitutes from birth with other foods introduced from six months of age.

Mixed feeding – Means feeding the infant simultaneously with breast milk/ formula milk and other foods and liquids.

Exclusive Breastfeeding- Means an infant receives only breast milk and no water, glucose, tea, porridge, rice, or other liquids or foods with the exception of medicinal drops or syrups in the first six months of life.

Complementary feeding- Any food, whether manufactured or locally prepared, that is added to a child's diet when the child reaches 6 months of age.

INTRODUCTION

By the end of 2010, about 34 million people were living with HIV worldwide. Women contributed 50% of the infection globally, and 59 % of infections in people living with HIV in Sub-Saharan Africa as women are more affected in this region. Besides, there were 2.7 million new HIV infections in 2010 worldwide and Sub-Saharan Africa accounted for 70% of new HIV infections. Among those new infections about 390,000 occurred in children in which majority of them 90% was due to Mother to Child transmission. [2]

In 2009, an estimated 100,000 people were newly infected with HIV in Tanzania that is around 275 new infections every day [3]. A fifth of all new HIV infections in Tanzania were due to MTCT meaning that thousands of babies are infected through their mothers every year[4]. With this high incidence of new infection in children, proper interventions are then needed to help protect these babies from being infected during the peripartum and the postpartum period.

Mother to child transmission (MTCT) of HIV means the transmission of HIV infection from an infected mother to her child. This is the major mode of acquisition of HIV in children worldwide. Children are at risk of HIV acquisition while in utero, during labour and delivery, and postnatally through breastfeeding.[5]

Prevention of mother to child transmission (PMTCT) is the global intervention aimed at preventing MTCT of HIV. For the PMTCT services to be effective, it requires a threefold strategy that consists of Preventing HIV infection among prospective parents, avoiding unwanted pregnancies among HIV infected women and preventing transmission from HIV infected mothers to their babies during pregnancy, labor, delivery and breastfeeding[6].The third strategy can be achieved through effective voluntary counseling and testing, the use of antiretroviral drugs, safer delivery practices and the implementation of safer infant feeding practices. All of them aim at saving babies from acquiring the infection from their infected mothers during pregnancy, labor and delivery and post delivery.

Without intervention, the overall risk of MTCT is approximately 20% to 45% in breastfeeding women for 2 years[7] Among HIV positive women who do not breastfeed in the absence of preventive interventions the rate of MTCT is about 15-25% [8].With specific interventions in non-breastfeeding populations, the risk of MTCT can be reduced to less than 2% in high income countries, and this is contributed to by routine testing, access to antiretroviral (ARV) therapy, elective cesarean section delivery and safe use of breast milk substitutes[9]

To address Mother to Child Transmission of HIV the Tanzania Ministry of Health (MOHSW) launched a pilot program in 2000 on the prevention of MTCT of HIV with the aim of spreading it out to all RCH services. Five PMTCT sites were first established including four referral hospitals and one regional hospital and Mbeya referral Hospital was selected as one of the pilot sites. By 2008 about 78% of health facilities providing RCH services were providing PMTCT services. [10]

One of the components of the PMTCT of HIV programme is the modification of infant feeding practices during the postnatal period to reduce the risk of transmitting HIV through breast milk. This advocates exclusive replacement feeding or exclusive breast-feeding and avoidance of mixed feeding. Mixed feeding has been found to transmit the virus more frequently than exclusive feeding. [11]

World Health Organization (WHO) advises that HIV infected mothers should be offered non directive counseling on various infant feeding options that are affordable, feasible, safe, sustainable and effective in their local context. After deciding on the feeding option, they should be assisted to implement it successfully[12]. It is recommended that women should breastfeed exclusively for the first six months of life and then introduce complementary foods while continuing to breastfeed up to twelve months and this is according to the Tanzania national Guidelines on infant feeding for women living with HIV.

At twelve months if the child is HIV negative or of unknown HIV status, breastfeeding should stop gradually over one month if a safe and nutritionally adequate diet without breast milk can be provided to the baby.

If the child is known to be HIV positive its recommended that mothers should continue to breastfeed up to two years and above as per recommendations for the general population. [4]

Mothers who don't want to breast feed may choose to replacement feed their babies exclusively for the first six months of life when it is AFASS to reduce the risk of transmitting HIV to their infants. The danger of using breast milk substitutes in developing countries must be considered, along with the specific circumstances of the woman and her family.[4]

Theoretical models

The theoretical models used in this study are; The AIDS Risk Reduction Model (ARRM) and the Health Belief Model (HBM). The HBM hold that health behaviour is a function of individual's socio-demographic characteristics, knowledge and attitudes. Regarding this model a person must hold certain beliefs in order to be able to change behaviour. This means that promoting action to change a particular behaviour includes changing in person believes. The HBM also base on the premise that the likelihood of engaging in preventive health behaviour is influenced by certain beliefs about a given condition. The model asserts that the individual will take preventive health action when they feel susceptible to a certain condition and they feel that contracting the disease has serious consequences compared to the perceived benefits accruing from the same behavior.[13]

The AIDS Risk Reduction Model specifically for AIDS Prevention was also used. It describes the process individual go through while changing behavior regarding HIV risk. The model identifies three stages involved in reducing risk for HIV transmission. In the first stage knowledge about HIV transmission and perceived susceptibility to HIV /AIDS influence how women perceive AIDS. The commitment to change is shaped by perception to self –efficacy and social norms. [14]

LITERATURE REVIEW

KNOWLEDGE ON MTCT, PMTCT AND SAFE INFANT FEEDING OPTIONS

A study assessing women awareness of MTCT and the preventive measures was done among women attending antenatal clinic in India. It was found that nearly three fourth (70%) of women demonstrated a good knowledge on Mother to Child Transmission routes. However less than 10% (7%) of the women knew of any intervention to prevent MTCT. [15]

A study done in South Africa to determine the association between the infant feeding patterns and rate of HIV transmission showed that MTCT of HIV varied with the pattern of infant feeding. The rate of transmission by pattern of infant feeding was found to be low in exclusively breastfed (19.4%) than mixed fed infants (26.1%) during 3 months of follow up.[16]

Several studies have been done in Ghana on assessment of knowledge on MTCT and PMTCT; Addo studied 334 pregnant women to assess their knowledge on MTCT of HIV. He found that only half of them (51.8%) were aware that HIV transmission could occur from an infected mother to the baby.[17] Nyuzaghl's did another study in 2008 on pregnant women attending antenatal clinic and found that about 80% of the respondents knew that a pregnant woman infected with HIV could transmit the virus to her baby. Regarding the period of transmission, 79% could mention that the transmission can occur during pregnancy. Forty two percent of Nyuzaghl's respondents knew about the existence of a special drug that could be used to prevent MTCT of HIV[18]

A study was done in Jima Ethiopia on assessment of Knowledge, Attitude and Practice on Voluntary Counseling and Testing in Pregnant and lactating mothers. Among the mothers, studied less than half (38.8%) had sufficient knowledge about MTCT of HIV during pregnancy, labor and breastfeeding. Nearly forty two percent 41.8% had sufficient knowledge about PMTCT, and 30.5% had sufficient knowledge about safe infant feeding options recommended to HIV positive women. Mixed feeding was practiced by more than three

fourth of the lactating mothers(81%), exclusive breastfeeding by less than quarter(13.4%) and exclusive replacement feeding by less than 1%(0.4%) of the mothers. [19]

A study done in Nigeria in 2006 on awareness and knowledge of MTC transmission of HIV in HIV positive women attending pediatric HIV clinic revealed that 91% of women were aware of mother to child transmission of HIV, about 41% Mentioning transplacental route as the most common route of MTCT and about half (53%) knew breast feeding as one of the routes of HIV transmission. [20]

In Kilimanjaro region in 2008 a study was done to assess the mother's knowledge on HIV transmission after implementation of routine counseling and testing. Nearly all (99.8%) knew that HIV could be transmitted from MTC trough breastfeeding, and nearly three quarters (71.6%) knew that it's possible to reduce the risk during breastfeeding period. Half of them knew that exclusive breastfeeding could play a major role.[21]

ATTITUDE ON SAFE INFANT FEEDING OPTIONS

There was very limited literature on attitude towards safe infant feeding among HIV infected mothers. In South Africa ,a study was done on assessment of knowledge ,Attitude, and Practices of women regarding the prevention of mother to child transimission (PMTCT).It showed that more than two third (77.8%)of the study participants agreed that breastfeeding and formula feeding is nutritionally complete for the baby in the first six months of life [22]

A cross sectional survey was conducted among 513 mothers of children aged six months to one year attending infant welfare clinics in Ibadan, Nigeria.It was found that only 145 (28.3%) mother's breast fed their infants exclusively for six months. Expression of breast milk was not favoured by the majority of the mothers (68%) most of whom felt that the milk would get contaminated. Less than 1 % practiced wet nursing. Majority of the women 436 (85%) were aware that HIV could be transmitted through breast milk. The attitude towards replacement feeding for HIV positive women was found to be negative in 96.8% of respondents [23] showing that majority of women preferred breastfeeding than replacement feeding.

PRACTICE OF SAFE INFANT FEEDING OPTIONS

In India, a study was done on assessment of infant feeding practice of HIV positive women post delivery after ensuring that they receive proper prenatal counseling sessions emphasizing on the risks and benefits of safe feeding options and the dangers of mixed feeding. The women were then interviewed 2wks after delivery. It was found that among those who chose EBF more than half (57%) were still practicing exclusive breast feeding to their babies. About 89% of those who chose ERF were still practicing exclusive replacement feeding.[24] This indicates that more women could practice exclusive replacement feeding with formula than breast milk, and this may support the fact that with exclusive replacement feeding the risk of transmission is much lower than with exclusive breastfeeding.

A qualitative study was done in South Africa about infant feeding decision making and practice. The study was done on 27 women where by 11 chose exclusive breastfeeding and 16 choose exclusive replacement feeding which was given for free. At the end of 3 months of follow up only 18% of those who choose to breastfeed adhered to exclusive feeding while 88% in the formula fed adhered to exclusive feeding. Several reasons were given by those who failed to adhere to exclusive breastfeeding like fear that this would disclose their status to other people, avoidance of stigma, pressure from other family members. In the formula fed infants the main reason for failure to adhere to exclusive feeding was the lack of supply[25]

In Abidjan, Cote d'ivoire a study was done on 95 mothers post delivery to assess the infant feeding practice at 6wks post delivery, and it was found that 36(45.6%) infants were being exclusively breastfed; 2 (2.5%) were receiving mixed feeding, and 41 (52.5%) were exclusively replacement fed. A total of16 mothers switched from breastfeeding to artificial feeding during the first 6 weeks of their babies lives without a period of mixed feeding[26]

In 2003, Ruternberg did a study in Zambia on infant feeding practices among mothers who receive newly introduced PMTCT services at Chipata clinic. Women were interviewed at 1week, 3weeks, and six months postpartum. The study showed that at 1wk 56% exclusively breastfeed, at 3weeks 40% exclusively breastfed while at 6months very few were still

exclusively breastfeeding[27]This implied that there was a greater possibility of introducing other foods or fluids to breast milk as the child age increased.

Several studies done in resource limited countries have shown mismatch between recommendations made during the antenatal period on PMTCT and the real practice. A study done in Kenya comparing feeding patterns of infants born to HIV infected mothers at 1 and 6 weeks postnatally showed that mixed feeding was common and significantly increased by 6 weeks (31%) as compared to the 1st postpartum week (21%)[28].

Another study was done in Zambia on HIV infected mothers who had all received counseling on safe feeding found that, all mothers breast-fed but only 35% were still exclusively breast feeding at 4 months[29].

Few studies have been done in Tanzania regarding the safe infant feeding options for HIV infected mothers. In 2008, a study was done in Dares salaam on infant feeding practices among HIV positive women with children aged 6-12 months, it was found that about 80.1% of women exclusively breastfed for 2 months, less than half 34.2% at 4 months and at 6 months only 13.3% were still exclusively breastfeeding[30]

A study was done in Kilimanjaro Christian Medical College (KCMC) to assess the relevance and applicability of the infant feeding options in HIV positive women basing on social and cultural context. Twenty women in the late pregnancy were followed up to 6months post delivery. It was found that about 55% of the infants were given water in early infancy. Sixty two percent (62%) of the breastfed infants were given supplements in the form of porridge and cow milk from the third or the fourth month of life while they were still being breastfed. All women who chose exclusive breast feeding, contrary to their intentions, ended up practicing mixed feeding, giving water in early infancy, supplementing milk and porridge later or both. [31]

PROBLEM STATEMENT

More than 200,000 of the 500,000 new HIV infections that occur worldwide each year in children are the result of transmission of the virus through the mother's breast milk[32] It is estimated that 200,000 children under 15 years of age are living with HIV in Tanzania and that 90% of them may have acquired the infection through MTCT[33] Without intervention, 5% to 20% of infants breastfed by their HIV-positive mothers become infected with HIV and with interventions like the practice of EBF the risk can be reduced to 5 % or even lower [4]

In Tanzania, an estimated 100,000 people were newly infected with HIV in 2009 that is around 275 new infections every day[33] A fifth of all HIV new infections in Tanzania are due to mother-to-child transmission meaning that thousands of babies are infected through their mothers every year.[4] Poor infant-feeding practices contribute to about a third of HIV transmissions in Tanzania. Based on a vertical MTCT rate of 40%, 72,000 Tanzanian babies are estimated to be infected annually through their mothers, approximately one third of them through breastfeeding. [34]

Exclusive breastfeeding in the first six months is not widely practiced in Tanzania. In 2010 a study which was done in Dar es salaam showed that less than quarter (13.3%) of women were practicing exclusive breastfeeding at the end of six months.[30] Given that exclusive breast-feeding is uncommon in most areas of the world including Tanzania efforts must be made to understand the extent of mixed feeding by HIV positive mothers (as mixed feeding increases the risk of HIV transmission)so that proper interventions can be done to avert the problem.

Mbeya is among the regions with the highest prevalence of HIV in Tanzania. It ranks second where by 9% of people in the reproductive age are living with HIV. Women contribute a higher proportion (11%) than males (6.7%) [35]. It was also one among the five pilot sites for initiation of PMTCT in Tanzania. That is why it was singled out as the study area.

RATIONALE

In Tanzania PMTCT coverage has increased and an increasing number of HIV-infected women have gained access to antiretroviral treatment or prophylaxis effectively reducing transmission during pregnancy and birth. For example in 2009, 84% of the women who tested positive for HIV received ARV prophylaxis in Tanzania[36]. The use of ARVs during pregnancy has shown to cut down the risk of MTCT from 20% to 10% [37] ; what remained to be important to make breastfeeding safe.

Practice of safe infant feeding options among the HIV infected mothers is not well studied in Tanzania and particularly in the present study area. Therefore, this study was conducted to identify the knowledge, attitude and practice of safe infant feeding options among the HIV infected mothers attending CTC clinic at Mbeya Referral Hospital.

The information generated will help in planning for more focused interventions to promote safe infant feeding hence preventing MTCT of HIV through breastfeeding in the study setting, and the country at large as knowledge attitude and practice is the key to prevention of MTCT of HIV.

RESEARCH QUESTION

What is the level of Knowledge, Attitude and Practice of safe infant feeding options among HIV infected mothers attending Prevention of Mother to Child Transmission of HIV clinic at Mbeya Referral Hospital?

OBJECTIVES

Broad objective

To assess Knowledge, Attitude and Practice of safe infant feeding options among HIV infected mothers attending Prevention of Mother to Child Transmission of HIV clinic at Mbeya Referral Hospital.

Specific objectives

1. To determine the proportion of women who know about the timing of HIV transmission from mother to child among HIV infected mothers.

2. To determine the level of knowledge about prevention of mother to child transmission of HIV among HIV infected mothers.

3. To determine the level of knowledge on safe infant feeding options as a mode of prevention of MTCT of HIV among HIV infected mothers.

4. To assess the attitudes towards safe infant feeding options among HIV infected mothers.

5. To determine infant feeding practices among of HIV infected mothers.

METHODOLOGY

Study design

This was a descriptive cross sectional study which was conducted between August and September 2012

Study area

The study was done at Mbeya Referral Hospital CTC clinic for PMTCT. Mbeya Referral Hospital is a tertiary hospital located in Mbeya urban, and it provides medical services to about two million residents of Mbeya region. PMTCT Program in Mbeya began in 2000 at RCH clinic which is located at the Maternity hospital called Meta which is part of Mbeya Referral Hospital. The PMTCT program was then expanded to all of Mbeya municipality.

In MRH, there are three CTC clinics one for PMTCT services located in Maternity hospital called Meta. The other two are; one for the general public and one for pediatric patients (BIPAI). The CTC for PMTCT is under Reproductive and Child Health Clinic (RCH) where women are provided with routine HIV testing and Counseling during antenatal care, ARV prophylaxis and treatment as per the 2011 national guidelines for both pregnant and post delivery women. The regimen which was used at the PMTCT clinic is OPTION A whereby pregnant women who test positive during antenatal visits and are not eligible for treatment were provided with ARV prophylaxis Zidovudine (AZT) 300mg twice a day from 14 weeks of gestation or any time thereafter. Those fulfilling the criteria for treatment either by clinical staging or by CD4 count were initiated on triple therapy Zidovudine(AZT) 300 mg BD + Lamivudine(3TC) 150 mg BD + Nevirapine (NVP) 200 mg twice a day immediately after being diagnosed and they continue to use the ARVs for life. After being initiated on ARV prophylaxis or treatment the mothers came for follow up every month and their CD4 count is rechecked after every six months. They also offer counseling on safe infant feeding options and antenatal follow up. The clinic also provides postnatal care and all infants attending pediatric CTC are referred to this RCH clinic for vaccination.

At the clinic, there is a special nurse from the pediatric CTC “BIPAI” who together with the other health care providers who work at the RCH clinic provides health education on various

aspects including the practice of safe infant feeding to all women who came for both antenatal and postnatal care.

During the antenatal period when a pregnant woman is diagnosed to be HIV positive through the routine counseling and testing or during /after delivery she is referred to the CTC for PMTCT which are housed in the same RCH clinic for care and treatment/prophylaxis. Those attending CTC in the general public if they become pregnant they are referred for care and treatment at the CTC for PMTCT.

The CTC clinic for PMTCT works in evening hours from 13; 00-18; 00hrs five days per week and about 40-50 clients are attended per day. On average ten to twelve women with children, less than six months are attended per day. This necessitated the investigator to include all the mothers with children aged six months or less who visited the clinic every day and fulfilled the inclusion criteria so as to achieve the required sample size. There are four consultation rooms where doctors attend the clients on each visit and replenish medications. There are other three rooms; two rooms for counseling and testing and another one room where the clients files are kept for retrieval in each visit.

Study population

The study population consisted of all post delivery mother's attending CTC clinic for PMTCT during the study period.

Study sample

They were mothers who were attending CTC clinic for PMTCT for follow-up care and treatment after delivery during the study period. They had children of less or equal to 6 months of age and consented to participate in the study.

Exclusion criteria

Mothers who couldn't communicate properly.

Those clients who were mentally unsound.

SAMPLE SIZE ESTIMATION

Sample size will be obtained by the formula

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

WHERE

n = minimum sample size

Z = confidence level at 95% (standard value of 1.96)

p = proportion of HIV positive women who practice exclusive breastfeeding up to six month post delivery in Dar es Salam (13.3%) (Sera et al 2008)

E = margin of error on P.

With the above proportion the sample size becomes 185. 10% of the non-respondent were added to the sample size calculated above, and hence sample size taken was 206.

Sampling

Participants were recruited consecutively until the estimated sample size was achieved. All HIV positive mothers with children aged six months/less who attend the CTC for PMTCT during the time of data collection were consecutively included in the study until the required sample size was reached.

Pilot study

A pilot study was conducted at MNH. About 20 mothers who were HIV positive and having children less/equal to six months of age attending CTC clinic were interviewed by the principal investigator to test the appropriateness of the research tool. Necessary amendments were incorporated accordingly.

Training of Research assistants

Two research assistants who were nurse midwives and counselors underwent one day training course which was conducted by the principal investigator where they were trained on the aim of the study and data collection techniques.

Data collection

Data collection was done by the principal investigator and the two research assistants by using a structured Swahili version questionnaire. The mothers were identified by CTC clinic register nurse who was oriented about the purpose of the study and explained it to the mothers before asking for their participation. The mothers were then invited for an interview after completion of other services. The mothers were approached by the principal investigator/research assistants after they had been attended by the health care provider. The investigator explained about the aim of the study and methodology and then the mothers were asked for consent to participate. Only those who consented were enrolled into the study and were required to sign a consent form before the interview. The interviews took about 30minutes and clients were given an opportunity to ask questions after the interview and answers /clarifications were given accordingly.

Research instrument.

The questionnaire was prepared in English and was translated into Swahili and then back into English to check for consistency. The pretested Swahili version questionnaire was used for data collection. The questionnaire had five parts which include information on sociodemographic characteristics, knowledge on timing of HIV transmission from MTC, knowledge on preventive measures (PMTCT), Knowledge on safe infant feeding options, attitude and practice of safe infant feeding options.

Part one

Included client's Socio-demographic characteristics and obstetric history-There were eight questions that enquired about age, occupation, marital status, educational level, attendance to the antenatal clinic, counseling on safe feeding options and information given during counseling.

Part two

Knowledge on MTCT; a set of two questions on when can MTCT occur and if an infected mother can transmit the infection to her child.

Knowledge on PMTCT-There were four questions which enquired on whether the mothers knew of the possibility of preventing HIV transmission to their children, preventive measures and timing of ARV prophylaxis.

Part three

Knowledge on safe infant feeding options- There were 8 questions which assessed the client's knowledge on safe infant feeding options.

Part four

Attitude towards safe infant feeding options. There were 8 questions on Likert's scale. The questions were designed to assess the recommended safe feeding options (EBF and ERF) on items regarding a variety of issues related to infant-feeding, such as health benefits, cost and nutritional importance of breast milk.

Part five. Practice

Questions on World Health Organization (WHO) assessment tool for research on safe infant-feeding practices for PMTCT were adopted in assessment of feeding practice which relies on the infant feeding history during a recall period. Thirteen questions were adopted. The recall periods for this study were the last week before the current visit to the clinic and since birth recall.

Determinants of knowledge, attitude and practice.
Knowledge on MTCT

A Question with three responses on when can MTCT occur; during pregnancy, delivery, and breastfeeding was asked to assess the knowledge of respondents about mother to child transmission of HIV. Those who gave correct answers to all were considered to have good

knowledge on MTCT, those who gave two correct answers were considered to have satisfactory knowledge and those who gave one correct answer were regarded as having poor knowledge on MTCT.

Knowledge on PMTCT

Knowledge was assessed by using point scales. The knowledge on PMTCT was assessed using 9 points scale. There were 4 questions; three with one correct answer and one with multiple responses (6 correct responses) which gave a total of 9 correct responses. Each correct response was given a score of 1 and a wrong response a score of 0. Total points to be scored were 9. Points were awarded as follows; Can MTCT be prevented (1 point), methods of prevention of MTCT; ARVs to the mother, Elective cesarean section, avoidance of breastfeeding, exclusive breastfeeding for the first six months, Exclusive formula feeding for first six months and ARV to the baby, (6 points) Are there medications to reduce MTCT (1 point), and when to initiate ARV prophylaxis to prevent MTCT (1 point.)

On assessment, Modified Bloom's cut off points was used where a score of 75%-100% of correct response was regarded as good knowledge, 50%-74% satisfactory knowledge and a score less than 50% was regarded as poor knowledge on PMTCT.

Then, the scores with their respective knowledge levels were as followed;

(1) 7-9 points Good knowledge

(11) 5-6 points Satisfactory knowledge

(111)0-4 points Poor knowledge

Knowledge on safe feeding options

The knowledge was assessed by point scale and 15 point scale was used. Eight questions were asked to assess participant's knowledge on safe infant feeding options which included the recommended options and whether transmission can occur post delivery. Bloom's cutoff

points were used. A correct response was assigned a score of 1 and 0 for a wrong response or don't know

Therefore, the scores were as follows

i) 12 – 15 points = good knowledge

ii) 8- 11 points = moderate knowledge

iii) 0-7 points=poor knowledge

Assessment of attitude

Attitude was assessed by using Likert's scale. Eight questions were used which had positive and negative responses. The responses ranged from strongly agree, agree, neither agree no disagree, disagree and strongly disagree. The scoring system used was as follows; Strongly agree scored 5, Agree 4, neither agree nor disagree3, disagree2 and strongly disagree 1

For each respondent the responses were summed up and a total score was obtained. The mean score was then calculated. Those scoring above the mean and the mean score were regarded as having a positive attitude and scores below the mean meant negative attitude towards safe infant feeding options. The highest score was 40, and the lowest score was 8.

Practice assessment

Assessment of feeding practices of safe infant feeding option depends on whether a specific item (fluid/food) has ever been consumed and when it was consumed during the recall period. The recall period which was used in this study was the since birth recall and past 24 hours recall.

Data analysis

Variables included were; Independent variables -age, marital status, level of education, occupation and Dependent variables - knowledge on MTCT,PMTCT and safe infant feeding, attitude and practices.

Data collected was coded, entered into EPI-INFO and after double checking was analyzed using the Statistical Package for Social Science (SPSS) version 16 in accordance to specific objectives. Univariate analysis was done for frequency computation.

Ethical clearance

Ethical clearance was sought from MUHAS ethical committee and permission to conduct the study at MRH from the hospital director.

Ethical consideration

Thorough information about the study was given to every mother before they consented for the study. The mother had a right to participate or decline from participating without being required to give an explanation. Privacy and confidentiality was assured at all times by conducting the one to one interview in rooms made available for the study. Participants had the right to withdraw from the study at any time even after consenting to participate. Also, they were assured that there would be no risks associated with participating in the study and participants name would not appear in the questionnaire.

For those who were found to have poor knowledge on mother to child transmission or any of its preventive measures together with poor knowledge on safe infant feeding options they were provided with proper information.

RESULTS

A total of 780 women attended CTC for PMTCT during the study period of one month. About 10-12 women with children less/equal to six months of age were attended per day. Two hundred and nine (209) mothers fulfilled the inclusion criteria and were included in the study. Only, 205 were included in data analysis. Four questionnaires had significant missing information hence excluded in data analysis.

TABLE 1; Social demographic characteristics of participants (n=205)

VARIABLE	NUMBER	PERCENT (%)
AGE(Years)		
≤20	10	5.0
21-30	115	**56.0**
31-40	76	37.0
≥41	4	2.0
MEAN AGE=29.5		
SD=5.26		
OCCUPATION		
House wife	41	20.0
Petty trader	90	**43.9**
Student	41	20.0
Employed	29	14.1
Peasant	4	2.0
MARITAL STATUS		
Single	36	17.6
Married	111	**54.1**
Divorced	8	3.9
Cohabiting	41	20.0
Widowed	9	4.4
PARITY		
1	34	16.6
2-4	150	**73.2**
>=5	21	10.2

The mean age of the study participants was 29.5(SD =5.6) years with their ages ranging from 17-42 years. Majority of the mothers 111(54.1%) were married, more than half 126(61.5%) had completed primary school education and only 12(5.9%) had never gone to school. Regarding occupation status most of the women 90 (44%) were petty traders and 150 (73.2%) of the mothers were Para 2-4)

TABLE 2: Knowledge of Mother to Child Transmission of HIV.

Question	Yes (n ;%)	NO (n ;%)	Don't know (n ;%)
If a woman is infected with HIV can she transmit the infection to her baby?(N=205)	196(95.6)	4(2.0)	5(2.4)
If Yes, When does Mother To Child Transmission occur?(N=196)			
Pregnancy	122(59.5)	40(19.5)	34(16.6)
Vaginal delivery	182(88.8)	8(3.9)	6(2.9)
Breastfeeding	188(91.7)	3(1.5)	5(2.4)

Majority of the respondents196 (95.6%) knew that a HIV infected woman can transmit the HIV infection to her child. About the timing of HIV transmission, more than three quarters of the respondents knew that HIV could be transmitted from MTC during breastfeeding and delivery but a much smaller number 122(59.5%) knew that the transmission could occur during pregnancy. Regarding total knowledge, more than half of the study participants (57.2%) had good knowledge on MTCT. Less than 10% showed poor knowledge on MTCT 12(6.1%).

TABLE 3; Distribution of respondents by level of knowledge on prevention of mother to child transmission

Question	YES N (%)	NO N (%)	DON'T KNOW N (%)
Can MTCT be prevented (N=196**)**	190 (96.9)	3(1.5)	3 (1.5)
If Yes, What are the methods of prevention; (N=190)			
Use of ARV by the mother	166(87.4)	8(4.2)	16(8.4)
Elective cesarean section	60 (31.6)	66(34.7)	64(33.7)
EBF for the first six months of life	184(96.8)	3(1.6)	3(1.6)
ERF for the first six months of life	165(86.8)	16(8.4)	9(4.7)
Avoidance of breastfeeding	175(92.1)	9(4.7)	6(3.2)
Giving the baby ARV	166(87.4)	13(6.8)	11(5.8)
Are there medications to prevent MTCT(N=196**)**	190(97.0)	3(1.5)	3(1.5)

If Yes, when should a HIV positive woman start ARVs to prevent MTCT (N=190)

	NUMBER	(%)
First trimester	15	7.9
Second trimester	12	6.3
Third trimester	124	65.3
Don't know	39	20.5

More than three fourth of the study participants knew that MTCT of HIV could be prevented and that there were medications to prevent MTCT. Regarding the methods of prevention of MTCT Elective cesarean section was the least mentioned 60(31.6%) while the other factors were well known by the majority of the study participants. On when to start ARV for prophylaxis less than a quarter of the mother's mentioned the second trimester while more than half mentioning the third trimester. Majority of the study participants had good 140(68.3%) and satisfactory 43(21%) knowledge on PMTCT and a very smaller proportion 12(6%) had poor knowledge on PMTCT.

TABLE 4; **Distribution of respondents by level of knowledge on safe infant feeding**

QUESTION	YES N (%)	NO N (%)	DON'T KNOWN (%)
Can MTCT occur during Breastfeeding? (N=196**)**	192(98)	4(2)	0(0)
If yes, **What are the recommended safe infant feeding options are you aware of?(N=192)**			
Animal milk	167(87.0)	19(9.9)	6(3.1)
Commercial infant formula	170(88.5)	16(8.3)	6(3.1)
Exclusive Breastfeeding	189(98.4)	3(1.6)	0(0.0)
Wet nursing	12(6.3)	127(66.1)	53(27.6)
Heat treated breast milk	25(13.1)	112(58.3)	55(28.6)
Factors which increase risk of MTCT during BF(N=192)			
Mixed feeding	183(95.3)	4(2.0)	5(2.6)
Oral lesion in babies mouth	187(97.4)	2(1.0)	3(1.6)
Maternal CD4 level	85(44.3)	53(27.6)	54(28.1)
Cracked nipples	184(95.8)	2(1.0)	6(3.1)
Does Breast Milk prevent childhood illnesses (N=205)	159(77.6)	22(10.7)	24(11.7)
Does exclusive formula feeding to baby in first 6 months prevent MTCT(N=205)	170(82.9)	21(10.2)	14(6.8)
*Does the introduction other foods after 6 months increase the risk of MTCT(N=205)	37(18)	143(69.8)	25(12.2)
*Does mixed feeding reduce the chance of the baby to cry because of hunger (N=205)	47(22.9)	151(73.7)	7(3.4)
Is EBF in first 6 months nutritionally complete for the baby (N=205)	170(82.9)	32(15.6)	391.5)

*****In calculating the total knowledge by the use of the Blooms cut off point scale the "No" response was given a score of 1 because it was the correct response and "Yes" a score of zero (wrong response)

Nearly all women knew that MTCT can occur during breastfeeding. The most commonly mentioned method of infant feeding recommended for HIV positive women was exclusive breastfeeding while heat treated breast milk 25(13.1%) and wet nursing12(6.3%) was mentioned by less than a quarter of the participants. On the other hand , factors that increase the risk of transmission during breastfeeding oral lesion in the baby's mouth 187(97.4%) was mentioned by the majority of women while the maternal CD4 level was known by less than half of participants as one of the risk factors. The respondents level of knowledge on safe infant feedings showed that nearly half 102(49.6%) of the respondents had good knowledge regarding safe infant feeding options.

TABLE 5.**Study participants responses on attitude questions**

VARIABLE	**Strongly disagree %**	**Disagree %**	**Neither agree nor disagree%**	**Agree %**	**Strongly agree %**
Breast milk is the ideal food for babies	2.0	1.0	0.0	13.1	83.9
Breast milk is easily digested than formula milk	1.0	1.5	5.9	6.8	84.9
* Formula milk is as healthy for an infant as breast milk.	6.3	9.8	2.4	2.5	60
Formula feeding is more expensive than breast milk.	2.4	3.4	0.0	8.8	85.4
*The benefits of breast milk last only as long as the baby is breast fed.	22.9	26.8	4.4	17.6	28.3
Breastfed babies are healthier than formula fed babies	6.3	9.8	2.4	21.5	60
Do mothers who formula feed miss one of the great joys of motherhood	3.9	8.8	1.0	13.2	83.9
*Formula feeding is the best choice if the mother plans to go out for work	42.4	33.7	1.0	13.2	9.8

*Variables were reverse scored to calculate the total infant feeding score.

Three quarters of the study participants agreed/strongly agreed with the benefits of breast milk. Less than half of the study participants knew that the benefits of breast milk persisted even after finishing breastfeeding. Less than quarter of the study participants agreed that formula is the best choice for those who plan to go to work. Regarding total score on attitude more than half of the study participants showed a positive attitude towards safe infant feeding and less than half had negative attitude .

TABLE 6.Infant feeding practice of the study participants

QUESTION	YES No (%)	NO No (%)
Have you ever breastfed your child (N=205)	197(96.1)	8(3.9)
If No, Then what have you been feeding your child on, (N=8**)**		
Animal milk	2(25%)	6(75%)
Infant formula	6(75%)	2(25%)
Did your infant receive any thing to drink or eat before first put to the breast?(N=197)	182(92.4)	15(7.6)
Since birth, have you given your child any foods/fluids other than breast milk? (N=197)	84(42.6)	113(57.4)
Since birth, have you given your child any foods/fluids other than formula milk/animal milk(N=8)	2(25)	6(75)
Why did you provide these foods ; (N=84)		
Infant perceived unwell	11(13.1)	73(86.9)
Mother unwell	15(17.9)	69(82.1)
Infant and mother unwell	0	84(100)
Advised by husband	6(7.1)	78(92.9)
It is a norm of the society	3(3.6)	81(96.4)
Others		
Baby was crying too much	14 (16.7)	70(83.3)
Baby was hungry	18(21.4)	66(78.6)
Advised by health care worker	6 (7)	78(93.0)
Advised by mother	3(3.5)	83(96.5)
*Other reasons	43(54.5)	

*Other reasons-given by caretaker when mother was away, advised by my mother, baby was thirsty

By using the since birth recall it was found out that more than half 113(55.1%) of the mothers practiced Exclusive Breast Feeding, and very few 6 (2.9%) practiced Exclusive replacement feeding and 86(41.9%) Used mixed feeding. Among those mothers who practiced mixed feeding, the commonest reasons mentioned were baby perceived to be hungry18(21.4%)while mother perceived unwell, baby was crying too much ,infant perceived unwell, advised by husband ,given by care taker when mother was away being mentioned by a much lower proportion**.**

DISCUSSION

This study revealed the knowledge, attitude and practice of the safe infant feeding options among HIV positive women with children less than/equal to six months of age as well as their knowledge on MTCT and PMTCT.

KNOWLEDGE ON MTCT

In this study nearly all women (96%) were aware that a HIV infected woman can transmit the infection to her child. This finding was consistent with the results of the study done in Ethiopia whereby 89.8% and in South Africa which 95% of the mothers were aware that an infected mother can transmit the infection to her child [38, 39] These are encouraging results because according to the Health Belief Model the higher the perception a mother have about the risk of MTCT the greater the chance that they will engage in behaviors to control HIV transmission from mother to child by practicing safe infant feeding.

Although there was a very high proportion of mothers who were aware of the possibility of an infected mother transmitting the infection to her child, only 60% of them knew that the transmission could occur during pregnancy. More than three quarters knew that transmission could occur during breastfeeding and vaginal delivery. This finding was similar to the one in a study done in Moshi where 61.5% of women studied knew that the transmission can occur during pregnancy, 97.2% during vaginal delivery and 91.7% during breastfeeding[21] This calls for a need for more emphasis during the counseling sessions on the possibility of transmission during pregnancy so that women can also take seriously the use of ARVs for treatment /prophylaxis during pregnancy as a means of preventing HIV transmission from mother to child.

Much lower rates were found in a study which was done in Mbeya and two other pilot regions of Tanzania implementing PMTCT in 2003. In those studies, the transmission during pregnancy and delivery was mentioned by less than half of the women while 57% mentioned during breastfeeding[40].This could be explained by the fact that at that time, there were very few PMTCT centers providing the services as it was just three years since PMTCT services

were piloted in Tanzania. Currently there has been an increase in the number of centers providing PMTCT services which increases access to information.

There has also been more sensitization done via the public media. It may also be due to improvement in the quality of counseling provided during the antenatal and postnatal period regarding MTCT

KNOWLEDGE ON PMTCT

Ninety six percent (96%) of women reported that MTCT is preventable,a finding similar to the one in a study done in South Africa where by 92.9% reported MTCT to be preventable[22].Likewise, majority of the women (68.3%) had good knowledge about PMTCT of HIV. The findings are similar to a study done in Uganda in which 71.6% of women had good knowledge on prevention of the transmission from mother to child.[21] Higher knowledge on PMTCT in this study may be a reflection of the effect of the intense counseling provided both during pregnancy and in the postnatal period and the maturation of the PMTCT program.

Regarding the methods of prevention of MTCT, about three quarters of the mothers mentioned EBF, ERF, no breastfeeding and ARV to baby. Only a few (19.3%) mentioned elective caesarian section. This finding is in agreement with the findings of the study done in Kenya which showed that only 10.4% and a study done in Ethiopia where by 11% of women knew that elective cesarean section could reduce the risk of MTCT. [39].The lower rate could be due to the fact that among the strategies to reduce MTCT Elective cesarean section is less emphasized as it was found not to be feasible in developing countries with poor financial and human resources. The other reason is that, this is not discussed much during antenatal clinic as it is not a policy in the Tanzania guidelines

The use of ARVs during pregnancy for PMTCT was known by over three quarters of respondents (81%) contrary to the findings in a study done in Ethiopia in which only 58.4% of women knew the protective effect of ARVs[41] It was also found in this study that more than half of the women (60.5%) erroneously mentioned the third trimester as the appropriate

time for ARV prophylaxis, and only 5.9% mentioning the second trimester. There is thus a need of updating the counsellors as well as the women's knowledge on the current guidelines on the appropriate time for the initiation of ARV to HIV positive women during pregnancy which should be as early as fourteen weeks of pregnancy(second trimester).

KNOWLEDGE ON SAFE INFANT FEEDING OPTIONS

Regarding knowledge on the safe infant feeding options recommended to HIV positive women nearly half (49.6%) of the mothers had good knowledge. The level of knowledge in this study despite being higher than that found in a study which was done in Jima Ethiopia where 30.5% of women had good knowledge on safe infant feeding options it is still far from adequate. [19]It is therefore, important to strengthen the counseling being provided during the antenatal and postnatal period regarding the safe infant feeding options.

As regards to the individual feeding options as recommended by WHO/National guideline on PMTCT, most women knew EBF, Commercial formula and Animal milk. Wet nursing and heat treated breast milk were mentioned by less than one quarter. These findings concur with the findings of a study done in Zimbabwe where majority mentioned EBF and less than quarter reported wet nursing as one among the options of safe feeding [42]

On the factors which increase the risk of MTCT during breastfeeding majority knew that mixed feeding, lesions in the baby's mouth, and cracks in the mother's nipple increased the risk but less than half of the participants knew that low level of CD4 count could also increase the risk of MTCT during breastfeeding. This finding shows that HIV positive women need to be well informed that postnatal transmission of HIV is highly correlated with immune suppression in the mother. Studies have shown that women with CD4 count less than 200 cells/ul are five times more likely to transmit the infection to their babies during breastfeeding [43]

ATTITUDE ON SAFE INFANT FEEDING OPTIONS

More than half of the respondents showed a positive attitude towards safe infant feeding recommended to HIV positive women while the remaining showed a negative attitude. On examining the responses of the study participants, nearly all agreed that breast milk is the ideal food for the baby similar to the findings in the study done in South Africa where three quarter's agreed that breast milk is the ideal food for the baby[22] Regarding nutritional value, health benefits and cost of breast milk the majority agreed on nutrition benefit of breast milk and that breast milk is cheaper than formula milk. More than half of the study participants didn't know that the benefits of breast milk persisted beyond the period of breastfeeding. This finding shows that there is a need of educating women not only about exclusive breastfeeding but also on the benefits of breast milk.

In this study, nearly all mothers initiate breastfeeding and less than quarter give something to the baby (prelacteal feeding) before initiating breastfeeding. This finding is similar to findings of the study done in Dar es salaam where by more than three quarters of the mothers initiate breastfeeding[30]. This finding shows that breastfeeding is still the preferred method of feeding for the HIV infected mothers but prelacteal feeds which increase the risk of MTCT during breastfeeding is still practiced by some of the mothers.

PRACTICE OF SAFE INFANT FEEDING

Regarding infant feeding practices used based on since birth mother's recall more than half (55.1%) of the mothers practiced exclusive breast feeding, less than a quarter 6(2.9%) practiced exclusive replacement feeding and 86(41.9%) Used mixed feeding. The findings are consistent with the results of the study which was done in Ghana where more than half (62%) of women practiced exclusive breastfeeding in the first six months of life. [44] These finding show that there is still a significant number of mothers who are practicing the discouraged mixed feeding which has been found to increase the risk of MTCT. This may reduce the achievements/efforts of other PMTCT program strategies to reduce the risk of MTCT. Therefore, more sensitization via the various media campaigns, support to the mothers on the

chosen feeding option and counseling during the postnatal clinic on the importance of EBF is needed so as to try to improve the low rate of EBF.

CONCLUSION

The results of this study indicate that nearly all women knew that HIV can be transmitted from an infected mother to her child and the modes of transmission. Mothers who knew about timing of transmission to be during delivery and breastfeeding formed the majority. But much less knew the possibility of transmission to occur during pregnancy. Regarding knowledge on transmission majority had good to satisfactory knowledge on MTCT, PMTCT, and knowledge on safe infant feeding options. Although the knowledge seems to be high the attitude and the practice of the safe infant feeding option was found to be average among the study participants.

RECOMMENDATIONS

Strong and focused interventions are needed to promote exclusive breastfeeding for the first six months of life with continued breastfeeding thereafter for one year as recommended in the current guideline among HIV positive mothers so as to reduce the risk of transmission during breastfeeding through the practice of mixed feeding.

The mothers need to be updated with the current information regarding the changes in the PMTCT guideline like the appropriate time for the initiation of ARV'S which has changed from 28 weeks to 14 weeks and the duration of breastfeeding which has extended to one year.

There is also great need to create awareness of safe infant feeding practices and behavioral change among mothers and other family members who may also play role in infant feeding practices. This is because people tend to adopt healthier behaviors when they believe the new behavior will decrease their chances of developing a disease.

REFERENCES

1. WHO, *Rapid advice on PMTCT.* 2010.
2. UNAIDS, *World AIDS Day Report* 2011.
3. UNAIDS, *Report on the global AIDS epidemic Geneva: UNAIDS*. 2010.
4. MoHSW, *National Guidelines for the Prevention of Mother-To-Child HIV/AIDS Transmission(PMTCT)Tanzania,.* 2011.
5. Douglas, G., & King, B.,, *. A review of possible routes and cellular mechanisms of infection. Maternal-fetal transmission of human immunodeficiency virus.* Clinical Infectious Diseases ,, 1992. **691**(283): p. 1175 – 1182.
6. UNAIDS/WHO, *AIDS Epidemic update December 2005.* 2005.
7. De Cock, K., Fowler M., Mercier E., et al *Prevention of mother-to-child HIV transmission in resource-poor countries: translating research into policy and practice.* Journal of American Medical Association. , 2000. **283**(9): p. 1175-1182. .
8. Thorne and Newell, M.L., *Prevention of mother-to-child transmission of HIVinfection.* Curr Opin Infect Dis 2004. **17**(3): p. 247-52.
9. Newell, M., *Current issues in the prevention of mother-to-child transmission of HIV-1 infection.* Trop Med Hyg 2006. **100**(1): p. 1–5.
10. MoHSW, *National Guidelines for Prevention of Mother-to Child Transmission of HIV (PMTCT), Tanzania*. 2010: Dar Es Salaam.
11. Filteau, S., *Infant-feeding strategies to prevent post-natal HIV transmission.* Trop Med Hyg 2003. **97**(1): p. 25–9.
12. WHO, *Guideline on HIV and infant feeding,Geneva.* 2010.
13. Rosenstock, I., HIn M., Becker et al, *Historical origins of the Health Belief Model.The Health Belief Model and personal health behavior* 1974: p. 1 – 8.
14. Catania, J., Gibson, D., Chitwood et al, *Methodological problems in AIDS behavior Research. Influences on Measurement error and participation bias in studies of sexual behavior.* Psychology Bulletin, 1999. **108**: p. 339-362.
15. Shrotri, S., Sutar A., Joshi S., et al. , *Awareness of HIV/AIDS and household environment of pregnant women in Pune India.* Int. J.STD AIDS 2003. **14**(12): p. 835-9.
16. Coutsoudis, A., Pillay, K., Spooner, E., et al *Influence of infant feeding patterns on early mother-to-child transmission of HIV-1* . Lancet 1999. **354**(9177): p. 471-6
17. Addo, V.N., *Pregnant women's knowledge and attitude to HIV testing at Komfo A nokye teaching hospital Kumasi* Ghana Medical Journal, 2005. **39**(2).
18. Nyuzaghl, J., Ohene, Odoi-Agyarko K., *Acceptability of Routine Offer of HIV Testing (Opt-Out Approach) among Pregnant Women in the Wa Municipality*

Ghana Med J., 2011. **45**(1): p. 10–15.

19. Chernet, H., *Assessment of knowledge, attitude & practice among mothers about VCT and feeding of infants born to HIV positive women in Jimma town, Ethiopia*, in *Department of Community Health*. 2005., Addis Ababa University: Adis Ababa.
20. Adeleke , S., Mukhtar, M, Gwarzd.,G., *Awareness and knowledge of Mother To Child Transmission of HIV among mothers attending pediatric HIV clinic, Kano, Nigeria.* Annals of African medicine, 2009. **8**(4): p. 210-214.

21. Falnes, E., TylleskerT.,Manuela M., , *Mothers knowledge and utilization of Prevention of mother to Child services.* Journal of International AIDS society, 2010. **13**: p. 36.
22. Petrie, K., *Knowledge , attitudes and practices of women regarding the prevention of mother-to-child transmission (PMTCT) programme at the Vanguard Community Health Centre, Western Cape.* SAJCN, 2007. **20**(2).
23. Brown, B., Oladokun R., Osinusi K., , *Situation analysis of the existing infant feeding pattern at the commencement of the prevention of mother to child transmission (PMTCT) of HIV programme in Ibadan, Niger.* Journal of Clin Pract, 2009. **12**(4): p. 4.
24. Suryavanshi N., J.S., Erande A., et al, *Infant feeding practices of HIV positive mothers in India.* . J Nutr, 2003. **133**(5): p. 1326-31.
25. Tanya, D., Mickey C,, *A Longitudinal Qualitative Study of Infant-Feeding Decision Making and Practices among HIV-Positive Women in South Africa.* J Nutrition, 2006. **136**(9): p. 2421-2426.
26. Msellati, G., Gepke H., Fanta K., et al *Operational issues inpreventing mother to child transmission of HIV-1 in Abidjan, Cote d'Ivoire,.* WHO, 2001(79): p. 641-647.
27. Ruternberg, N., *Infant Feeding and Counselling Within Kenyan and Zambian PMTCT Services: How Well Does It Promote Good Feeding Practices?.* . 2003.
28. Kiarie, J., Richardson B., Mbori-Ngacha D., et al *Infantfeeding practices of women in a perinatal HIV – 1 prevention study in Nairobi,Kenya.* JAcquir Immune Defic syndrome, 2004. **35**(1): p. 75-81.
29. Omari, A., Luo C., Kankasa C., et al *Infant-feeding practices of mothers of known HIV status in Lusaka, Zambia.* Health policy plan, 2003. **18**(2): p. 156-62.
30. Young, S., Kiersten A., Israel-Ballard et al , , *Infant feeding practices among HIV-positive women in Dar es Salaam, Tanzania.* Public Health Nutrition, 2010. **13**(12): p. 2027–2033.
31. Leshabari, S., Blystad A., Moland K. et al *The difficult choice:Infant feeding decisions among HIV-positive mothers in northern Tanzania.* SAHARA Journal 2007. **4**(2): p. 544-55.
32. WHO, U.a., *AIDS epidemic update: special report on HIV/AIDS:GENEVA*. 2006.
33. UNAIDS, *Report on Global AIDS Epidemic.* 2010.
34. TACAIDS, *Joint Biennial HIV and AIDS SECTOR REVIEW,Dar es Salaam,Tanzania*. 2008.
35. TACAIDS, *Tanzania HIV/AIDS and Malaria Indicator Survey (THMIS)*. 2013.
36. UNGASS, R., *Tanzania mainland and Zanzibar*. 2010.
37. Guay L. , M.P., Fleming T., etal, *Intrapartum and neonatal single-dose nevirapine compared with zidovudine for prevention of mother-to-child transmission of HIV-1* Lancet, 1999. **354**(9181): p. 795-802.
38. Bissek, A., Irène E., Franscisca M., et al. , *Knowledge of Pregnant Women on Mother-to-Child Transmission of HIV in Yaoundé.* Open aids Journal, 2011(5): p. 25–28.
39. Jebessa, S., Telahum T.,, *Knowledge and attitude towards Mother to Child transimission of HIV and its prevention among postnatal mothers in Tikur Anbessa and Zewaditu Memorial hospital inAdis ababa.* Ethiopian Journal Health Development 2005. **19**(3).
40. TFNC), T.F.a.N., *Infant feeding practice in the context of HIV Aids*. 2005.
41. Malaju, M.T., *Determinant factors of pregnant mothers' knowledge on mother to child transmission of HIV and its prevention in Gondar town, North West Ethiopia.* BMC Pregnancy and Childbirth 2012. **12**(73).
42. Mahaka, H., and Chakombera E.,, *Knowledge, attitudes and practices on infant feeding options among HIV positive mothers.* Cent Afr J Med, 2008. **54**(9-12): p. 51-3.

43. Iliff, P., Piwoz E., Tavengwa N., et al . *Early exclusive breastfeeding reduces the risk of postnatal HIV-1 transmission and increases HIV-free survival.* AIDS, 2005. **19**(7): p. 699-708.
44. Laar, S., and Govender V., *Factors influencing the choices of infant feeding of HIV- positive mothers in Southern Ghana: The role of counsellors, mothers, families and socio-economic status.* Journal of AIDS and HIV Research 2011. **3**(7): p. 129-137.

APPENDIX 1

CONSENT FORM

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF SAFE INFANT FEEDING OPTIONS AMONG HIV INFECTED MOTHERS ATTENDING PREVENTION OF MOTHER TO CHILD TRANSIMISSION CLINIC AT MBEYA REFERRAL HOSPITAL

Introduction

My name is Dr Delfina Mkenda. I am a researcher from Muhimbili University of Health and Allied Sciences. I am conducting a study on Knowledge, Attitude and Practice of safe infant feeding options among HIV infected mothers attending PMTCT clinic at Mbeya Referral hospital. The aim of the study was to generate information necessary for the planning of appropriate strategies (interventions) to prevent mother to child transmission of HIV and promote appropriate infant feeding practice in Mbeya and even the country at large.

How to participate in this study

You are asked to participate in this study because you are one among many women who have already delivered and have a child who is less/equal to 6 months of age. If you are willing to participate in this study, you will be interviewed for about 30 minutes. The interview will be conducted only once. I do not expect to cause you any discomfort.

Confidentiality

Everything will remain confidential and will be used only for research purposes. The research team will compile a report that will contain information about all other mothers with a problem like yours, without mentioning names.

Risks

I do not expect that any harm will happen to you as a result of participating in the study.

Right to participate in the study

Taking part in this study is completely of your choice. You have the right to participate or decide otherwise without giving any reason for your decision. Once you have decided to participate you are also free to terminate your participation at any time.

Benefits of participating in this study

If you agree to participate in this study you will help us to know the current Knowledge, Attitude and Practice on safe feeding and enable the local authorities and the country at large to establish proper intervention plans.

Who to contact

If you have any questions about this study you are free to contact, the principal investigator, Dr. Delfina Mkenda (0713779427).

If you have any questions/concerns about your rights as a participant you may contact Prof M. Aboud, Chairman of MUHAS Research and Publications Committee. P.O.BOX 65001 Dar es Salaam. Tel 2150302-6

If you agree to this interview, please sign this consent form.

I …… have read and understood the contents of this consent form and my questions have been sufficiently answered. I therefore consent for the interview for this study.

Signature of the interviewee ……..... Date ……

Signature of the interviewer ……....……. Date ……

FOMU YA RIDHAA YA KUSHIRIKI KATIKA UTAFITI

Ufahamu, Mtazamo, Utendaji kuhusu ulishaji/unyonyeshaji salama unaoshauriwa kwa watoto chini ya miezi sita kwa kina mama waliokwisha jifungua wanaohuthuria kliniki ya kuzuia maambukizi ya virusi vya ukimwi kutoka kwa mama kwenda kwa mtoto katika hospitali ya rufaa Mbeya.

Utangulizi

Jina langu ni Dk. Delfina Mkenda. Mimi ni mtafiti kutoka chuo cha mafunzo ya afya cha Muhimbili. Ninafanya tathmini ya uelewa, mtazamo na utekelezaji kuhusu lishe/unyonyeshaji unaoshauriwa kwa kina mama wanaohuthuria kliniki ya kuzuia maambukizi ya virusi vya Ukimwi kutoka kwa mama kwenda kwa mtoto katika hospitali ya Rufaa Mbeya. Utafiti huu utatusaidia kupata taarifa zitakazotusaidia kupanga mikakati ya kusaidia utekelezaji wa mipango ya kuzuia maambukizi ya mama kwenda kwa mtoto na ni jinsi gani basi ya kuwasaidia kina mama waweze kunyonyesha kama inavyoshauriwa kwa hapa Mbeya na hata katiak nchi yote kwa ujumla.

Jinsi ya kushiriki katika utafiti huu

Unaombwa kushiriki katika utafiti huu Kwa sababu wewe ni mmoja kati ya wanawake wenye watoto chini ya miezi sita. Ukikubali kushiriki, utahojiwa kwa kama nusu saa hivi mara moja tu.

Usiri

Kila kitu kitabakia kuwa siri na kitatumika kwa ajili ya utafiti tu. Timu inayohusika na utafiti itatumia majibu yote kuandaa ripoti itakayokuwa na habari za wanawake wengine pia, bila kuandika jina mahali popote.

Madhara

Sitegemei kutakuwa na kitu chochote kitakachotokea kwako kwa kushiriki katika utafiti huu.

Haki ya kushiriki

Ushiriki wako katika utafiti huu si lazima. Una uwezo wa kukubali au kukataa bila kutoa sababu zozote za kufanya hivyo. Na ukikubali, unaweza kubadili uamuzi wako wakati wowote

Faida za kushiriki

Ukikubali kushiriki, utatusaidia kujua vizuri kwa sasa kuhusu uelewa ,mtizamo,na utekelezaji wa unyonyeshaji bora unaoshauriwa na wataalamu wa afya na kuzisaidi mamlaka zinazohusika kwa hapa Mbeya na taifa kwa ujumla katika kupanga mikakati ya kuzuia maambukizi ya mama kwenda kwa mtoto na kuzuia watoto wengi zaidi wasiambukizwe.

Ukiwa na maswali yoyote kuhusu utafiti huu, uwe huru kuwasiliana nami, mtafiti mkuu, Dk Delfina Mkenda (0713779427).

Kama utakuwa na maswali kuhusu haki zako kama mshiriki, unaweza kumpigia Prof M. Aboud,Mwenyekiti wa kamati ya utafiti. Simu namba 2150302-6

Kama umekubali kuhojiwa, tafadhali saini hapa:

Mimi……., nimesoma na kuelewa kilichoelezwa kwenye fomu hii na maswali yangu yamejibiwa kiufasaha. Hivyo ninakubali kuhojiwa kwa ajili ya utafiti huu.

Sahihi ya mhojiwa …….. Tarehe ……..

Sahihi ya mhoji…… Tarehe……

APPENDIX II

QUESTIONAIRE (ENGLISH VERSION)

I am a student of MMED OBGY at MUHAS. I would like to thank you for agreeing to participate in this study. The aim of the study is to assess knowledge, attitude and practice of safe infant feeding options among HIV infected mothers attending PMTCT clinic at Mbeya referral hospital. Please feel free to ask questions during and after the interview.

Thank you

SECTION 1: Social demographic characteristics
Questionnaire no ……

Number	Question		Go to
1.	How old are you (in complete years)……		
2.	What is your occupation	House wife 1 Pet trader 2 Peasant 3 Employed 4 Student 5	
3.	What is your parity……		
4.	What is the level of education you have completed?	No formal education 1 Complete primary school 2 Incomplete primary school 3 Secondary education 4 College/university 5	
5.	What is your current marital status?	Single 1 Married 2 Divorced 3 Cohabiting 4 Widowed 5	
6.	Did you attend ANC when pregnant for this child?	Yes 1 No 2 (Go to qn 9)	

7.	Were you counseled on safe infant feeding options for HIV positive women?	Yes 1 No 2 (Go to qn 9) Don't remember (Go to qn 9)	
8.	What information/advice were you given on infant feeding?	Y YES NO About Breast feeding only 1 2 About bottle feeding 1 2 About replacement feeding 1 2 About supplementary feeding 1 2 Other (specify)……..	
	SECTION TWO- **Knowledge on MTCT**		

9.	**I will read to you the following sentences so please answer me if its yes , no ,or don't know** Can HIV be transmitted from HIV infected mother to her child?	Yes No (Go to Qn 16) Don't know (Go to Qn 16)	
10.	When can an infected mother transmit the HIV infection to her child? (More than one response possible, ask for more)	Yes No Don't know During pregnancy 1 2 3 During delivery 1 2 3 During breast feeding 1 2 3	
	Knowledge on PMTCT		
11.	If a woman is infected with HIV, is there any way to avoid transmission to the baby?	Yes 1 No 2 (go qn 13) I Don't know 3 (go qn 13)	
12.	Can you mention the preventive methods/ways of reducing MTCT of HIV/AIDS from infected mother to	Yes No Don't know ARVS to the mother 1 2 3 By elective cesarean section 1 2 3 By EBF in first 6 months 1 2 3	

	her child?	By avoidance of breastfeeding 1 2 3 By ERF 1 2 3 Giving ARVS to the baby 1 2 3 Others……..	
13.	Is there medication given to the mother during pregnancy to reduce MTCT?	Yes 1 No 2 (go to qn 15) I don't know 3 (go to qn 15)	
14.	When does a pregnant woman start ARV prophylaxis?	First trimester. 1 Second trimester. 2 Third trimester. 3 I don't know 4	
	KNOWLEDGE ON INFANT FEEDING OPTIONS		
15.	Can HIV be transmitted from an infected mother to her baby during breastfeeding?	Yes 1 No 2 (Go to qn 18) I don't know 3	
16	Which of the recommended safe infant feeding options are you aware of?	Yes No Don't know Animal milk 1 2 3 Commercial Infant formula 1 2 3 EBF for first 6 months 1 2 3 Wet nursing 1 2 3 Heat treated breast milk 1 2 3 Others specify……	
17	Can you mention the factors you know which increase the risk of HIV transmission through breast feeding?	Yes No Mixed feeding 1 2 Oral lesions in fetal mouth 1 2 CD4 level 1 2 Crackled nipples 1 2 Others (mention)……	

18.	Does breast milk prevent childhood illnesses?	Yes 1 No 2 Don't know 3	
19.	Feeding only formula /Animal milk to baby prevents transmission of HIV from an infected woman to her baby?	Yes 1 No 2 Don't know 3	
20.	Feeding the baby brestmilk and other foods after six months increase MTCT.	Yes 1 No 2 Don't know 3	
21.	Giving the baby breast milk and other fluids /food reduces the chance of the baby to cry because of empty stomach.	Yes 1 No 2 Don't know 3	
22.	Exclusive breastfeeding for the first six months is nutritionally complete for the baby.	Yes 1 No 2 Don't know 3	
	Assessment of attitude on safe infant feeding options **I will read the following statements for you then tell me you response by saying strongly agree, Agree, Disagree, strongly disagree, Neither agree Nor disagree**		
23	Breast milk is the ideal food for babies	Strongly disagree 1 Disagree 2 Neither agree nor disagree 3 Agree 4 Strongly agree 5	

24.	Breast milk is more easily digested than formula milk.	Strongly disagree 1 Disagree 2 Neither agree nor disagree 3 Agree 4 Strongly agree 5	
25.	Formula is as healthy for an infant as breast milk	Strongly disagree 1 Disagree 2 Neither agree nor disagree 3 Agree 4 Strongly agree 5	
26.	Formula feeding is more expensive than breast milk.	Strongly disagree 1 Disagree 2 Neither agree nor disagree 3 Agree 4 Strongly agree 5	

27.	The benefits of breast milk last only as long as the baby is breast fed.	Strongly disagree 1 Disagree 2 Neither agree nor disagree 3 Agree 4 Strongly agree 5	
28.	Breastfed babies are healthier than formula fed babies	Strongly disagree 1 Disagree 2 Neither agree nor disagree 3 Agree 4 Strongly agree 5	
29.	Mothers who formula feed miss one of the great joys of motherhood	Strongly disagree 1 Disagree 2 Neither agree nor disagree 3 Agree 4 Strongly agree 5	

30	Formula feeding is the best choice if the mother plans to go out for work	Strongly disagree 1 Disagree 2 Neither agree nor disagree 3 Agree 4 Strongly agree 5	
31	**INFORMATION ABOUT THE BABY**		
	What is the age of your child?	_____ Days _____ Weeks _____ Months	
32	Is your child already tested for HIV?	Yes 1 (go to qn 33) No 2 (go to qn 34)	
33	What were the results?	HIV positive 1 HIV negative 2 Results not yet out 3	
	ASSESSMENT OF PRACTICES OF SAFE INFANT FEEDING OPTIONS		
34	Have you ever breastfed your child?	Yes 1 (go to qn 35 No 2 (If 'no' skip to Qn 39)	
35	Did your infant receive any thing to drink or eat before first put to the breast?	Yes 1 if Yes what was it mention…… No 2 (If 'no go to Qn 37)	
36	What are the types of liquids drank /food given over the last seven days, including yesterday.	y YES NO Plain water 1 2 Commercial formula 1 2 Fresh animal milk 1 2	

		Fruit juice/porridge 1 2 Any other liquid (mention)……	
37.	Are you currently breastfeeding your child?	Yes 1 No 2 (If 'no go to Q. 40)	
38	At what age of your child do you intend to stop breastfeeding……...completed months		

39	Then what have you been feeding your child	Infant formula only 1 Animals milk only 2 Others (mention)……..	
40	Since birth, have you given your child any foods/fluids other than breast milk?	Yes 1 (go to Qn. 41) No 2 (go to Qn. 45)	
41	Why did you provide these foods or fluids?	YES NO Infant perceived unwell 1 2 Mother unwell 1 2 Infant and mother unwell 1 2 Advised by husband 1 2 It is a norm of the society 1 2 Others (specify) _____	
42	What foods or fluids did the child receive? And at what age (more than one answer is possible)	Water/ tea 1.Yes 2.NO (Age of child……) Formula /powder milk 1.Yes 2.NO (Age of child…….. Cow milk 1.Yes 2.NO (Age of child _____) Porridge/stew 1.Yes 2.N(Age of child _____) Adult food 1.Yes 2.N(Age of child _____) Others (specify)_____	
43	What was your child's age at the	_____ Days	

	time you stopped breastfeeding?	_____Weeks _____Months	
44	Why did you stop breast feeding your child?	YES NO Infant no longer wanted to breast fed 1 2 To encourage infant to eat solid food 1 2 Pregnancy 1 2 Fear of transmitting HIV after baby diagnosed to be negative 1 2 Advised by health worker 1 2 Infant too sick to breastfeed 1 2 After child diagnosed to HIV negative in early infant diagnosis 1 2 Others(specify)_____	
45	At what age of your child do you intend to start additional food to breast milk?	_____days _____weeks _____month	

Dodoso kwa ajili ya kuchunguza uelewa,mtizamo na utekelezaji wa unyonyeshaji unaofaa kwa kina mama wenye maabukizi ya virus vya ukimwi katika hospitali ya rufaa Mbeya.

Mimi ni mwanafuzi wa shahada ya uzamilifu kutoka chuo kikuu cha Muhimbili.Ninakushukuru kwa kukubali kushiriki kwenye utafiti huu .Lengo la utafiti huu ni kutathimini kuhusu Uelewa, mtizamo na utekelezaji wa unyonyeshaji unaofaa kwa kina mama wenye maambukizi ya virusi vya ukimwi wanaohuthuria kliniki ya kuzuia maambukizi ya mama kwenda kwa mtoto hapa hospitali ya rufaa Mbeya.Uwe huru kabisa kuuliza swali wakati wowote wa maongezi yetu au hata baada ya maongezi.

Asante.

APPENDIX III-QUESTIONAIRE (SWAHILI VERSION)

SEHEMU YA 1: TABIA ZA TAKWIMU JAMII

NAMBA YA DODOSO……

namba	SWALI		Rejea
1.	Una umri wa miaka mingapi?	UMRI KATIKA MIAKA KAMILI…….	
2.	Unafanya kazi gani?	Mama wa nyumbani 1 Biashara ndogondogo 2 Mkulima 3 Nimeajiriwa 4 Mwanafunzi 5	
3.	Umezaa mara ngapi?		
4.	Elimu yako	Sina Elimu rasmi 1 Nimemaliza elimu ya msingi 2 Sikumaliza elimu ya msingi 3 Elimu ya sekondari 4 Elimu ya chuo 5	

5.	Hali ya ndoa	Sijaolewa 1 Nimeolewa 2 Nimeachika 3 Ninaishi na mwanaume bila ndoa 4 Nimefiwa na mume 5	
6.	Wakati wa ujauzito wa mtoto uliyenae sasa ulihuthuria kliniki ya wajawazito	Ndio 1 Hapana 2 (nenda swali la 9)	
7.	Je ulishauriwa kuhusu unyonyeshaji/lishe ifaayo kwa mtoto ikiwa mama ana maambukizi ya virusi vya ukimwi?	Ndio 1 Hapana 2 (nenda swali la 9) Sikumbuki 3 (nenda swali la 9)	
8.	Je, ulipewa ushauri gani kuhusu unyonyeshaji wa mtoto?	Ndio Hapana Kuhusu kumpa maziwa ya mama peke yake 1 2 Kuhusu kunyonyesha kwa kutumia chupa 1 2 Kuhusu kumpa mtoto maziwa mbadala 1 2 Kuhusu kipindi kinachofaa kumwanzishia chakula 1 2 KINGINE (Taja) ……..	

SEHEMU YA PILI- **Maswali kuhusu uelewa wa mama juu ya maambukizi ya mama kwenda kwa mtoto na jinsi ya kuzuia.**

9.	**Nitakusomea sentensi zifuatazo naomba unijibu Ndio,Hapana au sijui kama unavyoelewa.** Mama mjamzito mwenye maambukizi ya virusi vya ukimwi anaweza kumwambukiza mtoto wake.	Ndio 1 Hapana 2 (nenda swali la 16) Sijui 3 (nenda swali la 16)	
10.	Maambukizi ya mama kwenda kwa mtoto yanaweza kutokea wakati gani?	**Ndio Hapana Sijui** Wakati wa ujauzito 1 2 3 Wakati wa kujifungua 1 2 3 Wakati wa kunyonyesha 1 2 3	
11.	Je, maambukizi ya mama kwenda kwa mtoto yanaweza kuzuilika	Ndio 1 Hapana 2 (nenda swali la 13) Sijui 3 (nenda swali la 13)	
12.	Kama ndio, ni njia zipi basi zinazoweza kuzuia maambukizi ya	**Ndio Hapana Sijui** Utumiaji wa dawa (ARVs) 1 2 3	

	mama kwenda kwa mtoto unazozifahamu?	Operesheni ya mtoto ya kupangiwa1 2 3 Kumnyonyesha mtoto maziwa ya mama peke yake miezi 6 ya mwanzo 1 2 3 Kutokunyonyesha kabisa 1 2 3 Kumpa maziwa ya kopo peke yake miezi 6 ya mwanzo 1 2 3 Kumpammtoto dawa ya ARV 1 2 3	
13.	Je, kuna dawa za kupunguza maambukizi ya mama kwenda kwa mtoto	Ndio 1 Hapana 2 (nenda swali la 15) Sijui 3 (nenda swali la 15)	
14.	Ni wakati gani mama mjamzito huanza matumizi ya dawa za kurefusha maisha kama kinga ya kuzuia maaambukizi ya mama kwenda kwa mtoto?	Miezi mitatu ya kwanza 1 Miezi mitatu ya kati 2 Miezi3 ya mwisho ya mimba 3 Sijui 4	
	UELEWA KUHUSU NJIA TOFAUTI ZA UNYONYESHAJI UNAOFAA KWA MAMA MWENYE MAAMBUKIZI YA VIRUSI VYA UKIMWI		
15.	Je, mama mwenye virusi vya ukimwi anaweza kumwambukiza mtoto wake wakati wa kunyonyesha?	Ndio 1 Hapana 2 (nenda swali la 18) Sijui 3	
16.	**Nitakusomea sentensi zifuatazo naomba unijibu Ndio,Hapana au sijui kama unavyoelewa** Naomba unitajie njia zilizo salama za unyonyeshaji zinazoshauriwa kwa mama mwenyemaambukizi ya virusi vya ukimwi.	Ndio Hapana Sijui Maziwa ya ngombe 1 2 3 Maziwa ya kopo 1 2 3 Kumnyonyesha mtoto maziwa ya mama peke yake kwa miezi 6 ya mwanzo 1 2 3 Ndugu wa karibu asiye na maambukuizi kumnyonyesha mtoto 1 2 3 Kuchemsha maziwa ya mama1 2 3 Nyingine (Taja)……..	
17	Unaweza nitajia ni vitu /mambo gani ambayo yanaweza kuongeza uwezekano wa maambukizi ya mama kwenda kwa mtoto wakati wa kunyonyesha?	Kumchanganyia maziwa ya mama na vyakula vingine 1.Ndio 2. Hapana 3.sijui Mtoto akiwa na vidonda mdomoni 1.Ndio 2.Hapana 3.Sijui Kiasi cha kinga mwilini 1.ndio 2.hapana 3.sijui	

		Mipasuko kwenya matiti 1.Ndio 2.Hapana3.sijui	
18.	Je, maziwa ya mama yanamkinga mtoto na magonjwa ya utotoni.	Ndio 1 Hapana 2 Sijui 3	
19.	Kumpa mtoto maziwa ya kopo peke yake /au maziwa ya wanyama peke yake bila kumchanganyishia maziwa ya mama inasaidia kupunguza maambukizi kutoka kwa mama kwenda kwa mtoto?	Ndio 1 Hapana 2 Sijui 3	
20.	Kumpa mtoto maziwa ya mama na vyakula vingine baada ya miezi sita inaongeza maambukizi ya virusi kutoka kwa mama kwenda kwa mtoto.	Ndio 1 Hapana 2 Sijui 3	
21.	Kumpa mtoto maziwa ya mama na vyakula au maziwa mengine kwa miezi 6 ya mwanzo kunampunguzia mtoto kulia mara kwa mara kwa sababu ya kutoshiba	Ndio 1 Hapana 2 Sijui 3	
22.	Kumnyonyesha mtoto maziwa ya mama peke yake kwa miezi sita ya mwanzo bila kumpa kitu kingine chochote ni lishe inayojitosheleza kwa kila kitu kwa mtoto	Ndio 1 Hapana 2 Sijui 3	
	MTAZAMO KUHUSU UNYONYESHAJI UNAOFAA KWA KINA MAMA WENYE MAAMBUKIZI		
23	Maziwa ya mama ndicho chakula kinachofaa kwa mtoto mchanga	Sikubali kabisa…….1 Sikubali.....2 Siko upande wowote.....3 Nakubali kiasi.....4 Nakubali sana..... 5	
24.	Maziwa ya mama yanalainishwa /kumeng'enywa kirahihisi kwenye tumbo la mtoto kuliko maziwa ya kopo	sikubali kabisa…… 1 sikubali.....2 siko upande wowote.....,,.. .3 nakubali kiasi..... 4 nakubali sana..... .5	

25.	ubora wa maziwa ya kopo unalingana sawasawa na ubora wa maziwa ya mama	Sikubali Kabisa…… …..…1 Sikubali..... .2 Siko upande wowote.....3 Nakubali kiasi.....4 Nakubali sana..... 5	
26.	Maziwa ya kopo ni gharama/ghali zaidi kuliko maziwa ya mama.	Sikubali kabisa…… 1 Sikubali..... .2 Siko upande wowote.....3 Nakubali kiasi.....4 Nakubali sana.....5.	

27.	Umuhimu wa maziwa ya mama unadumu kwa kipindi kile ambacho mama anakuwa ananyonyesha peke yake	Sikubali kabisa…… ……..1 Sikubali.....2 Siko upande wowote..... .3 Nakubali kiasi.....4 Nakubali sana..... 5	
28.	Watoto walionyonyeshwa maziwa ya mama wanakuwa na afya zaidi kuliko wale waliopewa maziwa mbadala	Sikubali kabisa…… 1 Sikubali.....2 Siko upande wowote.....3 Nakubali kiasi.....4 Nakubalisana..... .. 5	
29.	Kina mama wanaowapa watoto maziwa ya kopo badala ya kuwanyonyesha wanakosa ile furaha ya kujiona kweli wao ni kina mama.	Sikubali kabisa…… ……1 Sikubali.....2 Siko upande wowote.....3 Nakubali kiasi.....4 Nakubalisana..... 5	
30	Maziwa ya kopo ni chaguo linalofaa kwa wale kina mama wasioshinda nyumbani/wanaoenda kazini	Sikubali kabisa…… 1 Sikubali..... .2 Siko upande wowote..... .3 Nakubali kiasi.....4 Nakubalisana..... 5	
	UNYONYESHAJI WA MTOTO		

31.	Mtoto wako ana umri gani? (hakikisha kutoka kwenye kadi ya ukuaji ya mtoto)	Siku…….. Wiki…… Miezi…….	
32	Mtoto wako ameshawahi kupimwa maambukizi ya virusi toka azaliwe? (Hakikisha kutoka kwenye kadi ya mtoto)	Ndio 1 (Nenda swali la 33) Hapana 2 (Nenda swali la(34)	
33	Kama ameshapimwa majibu yake yalikuwaje?	Hana maambukizi……..……1 Ana maambukizi……2 Majibu bado hayajatoka…….3	
34	Ulishawahi kumnyonyesha mtoto wako tangu azaliwe?	Ndio 1 Hapana 2 (Nenda swali la 39)	
35.	Je mtoto wako alipewa kitu kingine chochote baada ya kuzaliwa kabla hujaanza kumnyonyesha zaidi ya ile dawa ya maji ya ARV	Ndio 1 (Kama ndio taja kitu alichopewa…… Hapana 2 (Nenda swali la 37)	
36	Sasa naomba unitajie aina ya vinywaji /chakula ambacho mtoto amepewa kwa wiki moja iliyopita pamoja na jana. Je mtoto wako alipewa chakula au vinywaji vipi ?usisome mwambie ataje zaidi	Maji 1.ndiyo 2.hapana Maziwa ya kopo 1.ndiyo 2.hapana Maziwa fresh ya wanyama1ndiyo 2.hapana Juisi /uji 1.ndiyo 2.hapana Vinginevyo(taja)…….	

37	JE, Bado unamnyonyesha mtoto wako kwa sasa	Ndio 1 Hapana 2 (nenda swali la 43)	
38	Umepanga kumwachisha mtoto wako kunyonya atakapofikisha umri gani?	Miezi kamili……	
39	Kama humnyonyeshi mtoto wako,je ni lishe gani uliyokuwa ukimpatia toka azaliwe	1.Maziwa ya kopo peke yake 2.Maziwa ya wanyama peke yake 3. Vinginevyo (taja)……	

40	Toka mtoto wako azaliwe umeshawahi kumpa chakula/kinywaji kingine chochote?	Ndio 1 Hapana 2 (nenda swali la. 45)	
41	Kwanini uliamua kumpa chakula/vinywaji vingine?(uliza zaidi)	Mtoto alikuwa anaumwa 1.ndio 2.hapana Mama alikuwa anaumwa 1.ndio 2.hapana Mama na mtoto walikuwa wanaumwa. 1. 1.ndio 2.hapana Nilishauriwa na mme wangu 1.ndio 2.hapana Ni kawaida katika jamii yetu 1.ndio2.hapana Sababu zingine (taja)…….	
42	Je mtoto alipewa chakula/kinywaji cha aina gani na katika umri gani? (uliza zaidi ,jibu zaidi ya moja linawezekana)	Maji/chai 1.ndio 2.hapana (umri _____). Maziwa ya kopo 1 .ndio 2.hapana (umri…) Maziwa ya ngombe 1.ndio 2.hapana (umri…) Uji/mtori 1.ndio 2.hapana (umri…….) Chakula cha familia 1.ndio 2.hapana(umri wa mtoto _____) Vinginevyo (taja)_____	
43	Mtoto wako alikuwa na umri gani ulipomwachisha kunyonya?	Siku _____ Wiki _____ Miezi _____	
44	Kwa nini ulimwachisha mtoto kunyonya?	Ndio Hapana Mtoto alikataa kunyonya 1 2 Ili aweze kula vizuri vyakula Vingine 1 2 Ujauzito 1 2 Niliogopa kumwambukiza mtoto 1 2 Nilishauriwa na mtaalam wa afya. 1 2 Mtoto alikuwa anaumwa sana 1 2 Baada ya mtoto kugundulika hana maambukizi 1 2 sababu zingine taja)_____	
45	Umepanga kumwanzishia mtoto wako chakula kingine lini?	Siku _____ wiki _____ miezi _____	