BREASTFEEDING PRACTICES AND ASSOCIATED FACTORS: THE CASE OF HIV INFECTED MOTHERS WITH CHILDREN LESS THAN TWO YEARS IN MBEYA URBAN, MBEYA REGION

By

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CERTIFICATION

The undersigned certifies that she has read and hereby recommends for acceptance of dissertation entitled ***Breastfeeding practices and associated factors: The case of HIV infected mothers with children less than two years in Mbeya urban, Mbeya region***, in fulfilment of the requirements for the degree of Master of Public Health of Muhimbili University of Health and Allied Sciences.

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Date: 16/11/09

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AND

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DEDICATION

To my late father, Sylvanus Lema Buchwa

ABSTRACT

Breast milk contains growth factors that may help the infant's gut mature, thus maintaining its integrity and hindering infection by micro-organisms, including the Human Immunodeficiency Virus (HIV) where the mother has HIV infection. The beneficial effects of breast-feeding are greatest in the first few months of life and decline as the child becomes older and other foods are introduced. The study aimed at assessing breastfeeding practices and associated factors among HIV infected mothers with children less than two years. A cross-sectional analytical study was carried out involving 338 HIV infected mothers with children less than two years attending CTC in Mbeya urban. A structured questionnaire was used to collect the data. Findings revealed that 303 (89.6%) of the interviewed mothers ever breastfed their babies and 67.5% of babies aged 0-6 months were exclusively breastfed. Sub-optimal breastfeeding practices were reported, including use of pre-lacteal feeds, discarding of colostrums, delayed initiation of breastfeeding and mixed feeding practices. Occupation, level of education and places where the mothers delivered were significantly associated with exclusive breastfeeding. Binary logistic regression demonstrated that mothers who delivered at the hospitals were more than three times likely to practice exclusive breastfeeding compared to mothers who delivered at homes (OR=3.2, 95%:1.4-7.4). Reduction of HIV transmission through promotion of exclusive breastfeeding for six months as the optimal method of infant feeding especially among mothers infected with HIV should be promoted. However the key challenge is to find ways to make breastfeeding safer for the infants, to find effective strategies for supporting women in their infant feeding choices.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
CTC	Care and Treatment Centre
EBF	Exclusive breastfeeding
BFHI	Baby Friendly Hospital Initiative
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
MoHSW	Ministry of Health and Social Welfare
MTCT	Mother-to-Child-Transmission
MUHAS	Muhimbili University of Health and Allied Sciences
PMTCT	Prevention of Mother to Child Transmission
TDHS	Tanzania Demographic and Health Survey
THMIS	Tanzania HIV/AIDS and Malaria Indicator Survey
UNAIDS	United Nations Programme on HIV and AIDS
UNCEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
WHO	World Health Organization

DEFINITIONS OF OPERATIONAL TERMS

Commercial infant formula: a breast milk substitute formulated industrially in accordance with applicable Codex Alimentarius standards to satisfy the nutritional requirements of infants during the first months of life up to the introduction of complementary foods.

Complementary feeding: the child receives both breast milk or a breast milk substitute and solid (or semi-solid) food.

Exclusive breastfeeding: an infant receives only breast milk and no other liquids or solids, not even water, with the exception of drops or syrups consisting of vitamins, mineral supplements, or medicines

HIV-positive: refers to women with children less than two years who have taken an HIV test and who know that they tested positive.

Mixed feeding: feeding both breast milk and other foods or liquids

Replacement feeding: feeding infants who are receiving no breast milk with a diet that provides the nutrients infants need until the age at which they can be fully fed on family food

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background information

Breast milk contributes 100% of the daily nutritional requirements of children 0-6 months (MoHSW, 2008), and it is promoted world wide because of its many benefits to infants and mothers (Kruger & Gericke, 2001). Exclusive breast-feeding which means giving the newborn no food or liquids other than breast milk, except for vitamin or medication drops or syrups for the first six months of life improves child health and survival. This is of particular benefit in developing countries where safe and practical alternatives to breastfeeding are limited (WHO, 2000).

Breast milk contains growth factors that may help the infant's gut mature, thus maintaining its integrity and hindering infection by micro-organisms, including the Human Immunodeficiency Virus (HIV) where the mother has HIV infection. The beneficial effects of breast-feeding are almost greatest in the first few months of life and decline as the child becomes older and other foods are introduced.

Breastfeeding has however, been documented as a source of HIV infection in babies born to HIV positive mothers, the concept which represents a public health dilemma, especially in countries with a high HIV prevalence rate and where breastfeeding is the norm and essential to child survival (WHO, 2003; Kuhn, et al, 2004; Thairu et al, 2005). Mixed feeding may be more risky for HIV transmission than exclusive breastfeeding, possibly because damage to the epithelial integrity of the intestine may facilitate entry of the virus and because breast

engorgement, which is more likely to occur with mixed feeding, causes subclinical mastitis, a condition that increases the viral load in breast milk (Feachem, 1984).

While breastfeeding is the primary guarantee of child survival in resource-poor settings, breastfeeding by HIV-infected women significantly increases the incidence of HIV infection among breastfed infants. Among women with established HIV infection, the estimated additional risk of transmission from breast milk over and above the risk during pregnancy and delivery is about 15% for HIV-exposed babies who are breastfed for up to 6 months. The risk is about 20% for babies who breastfeed into the second year of life (Tindyebwa, et al, 2006). The risk of early transmission through breast milk may be increased by the immature immune system of the infant, as well as by the higher cellular content of the early breast milk. On the other hand, the high risk of late transmission may be attributed to the considerably larger volume of milk ingested by the infant as well as the occasional gastrointestinal infections.

With the onset of the HIV/AIDS epidemic, together with the recognition that HIV-infected mothers can transmit the virus to their infants through breastfeeding, some infant feeding policies have emerged. Such policies recommend avoidance of breastfeeding by HIV infected women in the developed world, and under specific circumstances in developing countries (Coutsoudis, et al, 2001). Nevertheless, WHO (2004) came up with specific recommendations which should generally apply to infants born to HIV-infected mothers. These are exclusive breastfeeding for six months; early cessation of breastfeeding; and expressed and heat treated breast milk. The overall aim of these recommendations is to achieve the ultimate goal of

increasing child survival, while reducing HIV infection in infants and young children (Hoosen, et al, 2007).

Most women in developing countries regardless of their HIV status, cannot formula feed safely. They have inadequate access to clean water, proper sanitation, and a reliable, sustainable supply of formula milk. In these situations, formula feeding may lead to increased infant mortality. In addition, breastfeeding usually is the norm in resource-poor settings. Formula feeding therefore may be culturally unacceptable, and may indirectly reveal a mother's HIV status and expose her to stigma (Moodley, et al, 2003; Nduti, 2000). Exclusive breastfeeding is therefore recommended both nationally and internationally because it protects infants from morbidity and mortality whether or not HIV related (Victora, et al, 1987). Despite such recommendations, exclusive breastfeeding is not widely practiced, instead, at very early age many infants are given water, breast milk substitute or other drinks or feeds (Shirima, et al, 2001).

1.2 Problem Statement

Exclusive breastfeeding, apart from providing all nutrients for the first six months of life, it provides antibodies and other factors that protect the baby against diarrhea and other infections. On the other hand, breastfeeding among mothers infected with HIV is said to be responsible for as much as one third to one half of all HIV infections in infants and young children in the African settings (Nduati, et al, 2000). Recent studies further suggest that exclusive breastfeeding during the first months of life is associated with a lower risk of HIV infection among infants born to HIV infected mothers, while mixed feeding has been documented to be associated with an increased risk of the infection (Coutsoudis, et al, 2001)

Mbeya region is one of the areas reported to have high prevalence of HIV in the country. According to recent national data, HIV prevalence rate is 5.7% while for pregnant women is 8.2% (THIS, 2007/2008). According to the National AIDS Report of 2008, the prevalence rates are 7.9% and 12.6% respectively for the general population and pregnant women.

Suboptimal infant feeding practices which may expose infants from HIV infected mothers to acquire the infection are quite common in Mbeya and Tanzania in general. For example, almost 60% of mothers do not practice exclusive breastfeeding (TDHS, 2004/05). Several factors have been found to be associated with low exclusive breastfeeding rates. Some of them relate to lack of knowledge, socio-economic factors, socio-cultural factors, beliefs and customs. Information currently available does not however, indicate to what extent mothers in Mbeya, an area that has high HIV prevalence among pregnant women generally practice exclusive breastfeeding, leave alone breastfeeding practices among mothers infected with

HIV. This study therefore sought to find out breastfeeding practices and associated factors among HIV infected mothers with children under the age of two years attending care and treatment centers (CTC) in Mbeya urban district.

1.3 Rationale of the Study

Available interventions (antiretroviral therapy, antiretroviral prophylaxis, modified obstetric care) of mother-to-child-transmission of HIV can reduce substantially the risk of transmission during pregnancy, labour and delivery. However, risk reduction during breastfeeding has been less successful (WHO, 2004). In Tanzania, all alternatives to breastfeeding are considered expensive (de Paoli, et al, 2000), and therefore, there is an urgent need of finding ways to make breastfeeding safer for HIV infected mothers living in resource limited settings. Information from this study which focused specifically on breastfeeding practices and associated factors among HIV infected mothers will help policy makers in planning feasible interventions and strengthening child feeding programs. This will contribute to reduction of postnatal HIV transmission and other nutritional related health problems. This information useful in informing the design of health education messages on infant feeding among HIV infected mothers, amidst the dilemma of feeding options in the era of HIV/AIDS. HIV infected women can therefore be informed of the dangers of mixed feeding and supported to breastfeed appropriately in order to improve HIV-free child survival in settings with high HIV prevalence rates.

1.4 Research questions

1. What are the breastfeeding practices of infected mothers with children below 2 years in Mbeya urban?

2. What are the factors associated with breastfeeding practices among HIV infected mothers with children below 2 years in Mbeya urban?

1.5 Broad objective

To assess breastfeeding practices and associated factors among HIV infected mothers with children below 2 years attending CTC sites in Mbeya Urban district.

1.6 Specific objectives

1. To determine breastfeeding practices among HIV infected mothers with children below 2 years attending CTC sites in Mbeya urban
2. To determine the association between breastfeeding practices of HIV infected mothers with children below 2 years and their socio-demographic characteristics.
3. To determine the association between level of knowledge on MTCT and current breastfeeding practices among HIV infected mothers who have children aged 0-6 months.
4. To determine factors perceived to enable/inhibit HIV infected mothers breastfeed their infants exclusively for the first six months of life.
5. To determine the proportion of HIV infected mothers who disclosed their HIV sero-status with spouses or close relatives.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Breastfeeding practices

Breastfeeding is usually the healthiest choice for both infants and mothers. For infants, breastfeeding has nutritional and psychological benefits, and can prevent diseases and infections. Worldwide, breastfeeding is usually initiated, but is supplemented with water or other drinks or feeds at an early age (Nicoll, et al., 2000). In most low income countries, initiation of breastfeeding is almost universal, with nearly all infants initially breastfeeding in the first week of life (WHO, 2006). Most children continue to be breastfed until at least six months of age, frequently into the second year of life (Nicoll, et al. 2000; WHO, 2000). Continued breastfeeding (beyond 12 months) is common in sub-Saharan Africa and Asia, but less so elsewhere (Nicoll & Williams, 2002). In 2005, it was estimated that 94% of infants in the world were breastfed for some time, 79% continued breastfeeding at age one year and 52% at two years of age (WHO, 2006). The practice of exclusive breastfeeding at age one month varies according to geographic region and is mainly observed in East Africa and Nepal, while it remains low (less than 30%) in other regions like Pakistan, Philippines, Indonesia, India, and Bangladesh (Nicoll, et al, 2000). In sub-Saharan Africa (Labbok, 2006; UNICEF, 2005) between 1990 and 2000, exclusive breastfeeding levels in the developing world increased substantially among infants aged less than four months (from 46% to 53%) and those aged less than six months (from 34% to 39%).

Breastfeeding is traditionally and socially accepted way of feeding infants and young children in Tanzania. Data from the recent nation-wide survey in Tanzania (TDHS, 2004/2005) however, showed that in the general population, infants who were exclusively breastfed were 41% among all infants less than six months of age. Åstrøm, et al, (2006) reported that in Kilimanjaro region (Tanzania), exclusive breastfeeding was not seen as being customary or feasible beyond three months because breast milk was considered insufficient for the child's growth and also because mothers generally had to resume activities outside the house. In the same study, mothers reported that they introduced light porridge mixed with cow's milk at around two months because they believed their milk was not enough to make the baby grow 'fat and shiny' as expected by kin and neighbours.

With the onset of the HIV/AIDS epidemic, together with the recognition that HIV-infected mothers can transmit the virus to their infants through breastfeeding, some policies have emerged. Such policies recommend avoidance of breastfeeding by HIV infected women in the developed world, and under specific circumstances in developing countries (Coutsoudis, et al, 2001). Nevertheless, (WHO, 2004) came up with specific recommendations which should generally apply to infants born to HIV-infected mothers. These are exclusive breastfeeding for six months; early cessation of breastfeeding; and expressed and heat treated breast milk. The overall aim of these recommendations is to achieve the ultimate goal of increasing child survival, while reducing HIV infection in infants and young children (Hoosen, et al, 2007). However, in Africa, replacement feeding is uncommon and many HIV positive women are choosing to breastfeed (Kiarie et al, 2004).

2.2 Breastfeeding and the risk of HIV transmission

While breastfeeding is the primary guarantee of child survival in resource-poor settings, breastfeeding by HIV-infected women significantly increases the incidence of HIV infection among breastfed infants (UNAIDS, 2004). In developing countries HIV is a big problem and it has become an increasing cause of death among children through perinatal exposure from their infected mothers. It is estimated that 20-40% of infants born to infected mothers acquire HIV infection from their mothers (John et al, 1991). This infection can be acquired by the infant during pregnancy, labour and delivery or through breastfeeding. If no interventions are in place to reduce mother-to-child-transmission (MTCT), an estimated 5-10% of transmission will occur during labour, 10-15% during delivery and 5-20% through breastfeeding (Linkages, 2005). Continued breastfeeding for more than one year has been estimated to pose a 10–20% risk of HIV transmission in children of infected mothers (WHO, 2003) and HIV risk increases by 3% per child year as breastfeeding continues (Leroy et al, 1998).

Variations in breastfeeding patterns may therefore be important in studies of HIV transmission. The risk of HIV transmission may be lower when exclusive breastfeeding is practiced. Some studies suggest that the high concentrations of lymphocytes, macrophages, immunoglobulins, and other immune proteins in the colostrums may protect the newborn against HIV transmission, making early breast milk less infectious than mature milk (Newell, et al, 1997). Furthermore, it was observed in South Africa that infants of HIV infected mothers who were exclusively breastfed for at least 3 months had lower risk of HIV infection (Coutsoudis, et al, 1999). Another study done in Zimbabwe by Peter at al (2002), showed that introduction before age of 3 months of solid foods or animal milk to breastfeeding infants born

to HIV mothers was associated with a four fold greater risk of transmission compared to exclusive breastfeeding. Thus, the more strictly HIV positive mothers are able to breastfeed exclusively the lower the risk of transmission.

Although WHO suggests avoidance of all breastfeeding by HIV infected mothers when replacement feeding is acceptable, feasible, affordable, sustainable and safe (Lauer, et al, 2006), in Africa, replacement feeding is uncommon and HIV positive women are choosing to breastfeed (Kiarie, et al, 2004). According to a study in four African countries by Latham (2001), infants in poor households who are not breastfed are five times more likely to die from infections in the two months of life and have a much higher risk of getting diseases that are costly to parents and thus the risk of not breastfeeding is much higher than the risk of infection through breastfeeding.

In South Africa, almost 80% of HIV infected mothers breastfeed their children (Coutsoudis, et al, 2001), with only a fifth of them practicing exclusive breastfeeding. In similar studies in Kenya by Nduati, et al (2000) and Kilimanjaro by de Paoli et al (2001), 9% and 8% respectively of mothers infected with HIV breastfed exclusively 6 months after delivery.

2.3 Socio-demographic factors influencing breastfeeding practices

A study by Ogunlesi (2009) found that significantly higher proportions of mothers with at least secondary education, clinic-based antenatal care and delivery in health facilities initiated breastfeeding within 1 h of birth, avoided pre-lacteal feeding and practiced exclusive breastfeeding for the first 6 months of life. Maternal age and parity did not present any advantage on breastfeeding practices

A study by Ogunlesi (2009) found that significantly higher proportions of mothers with at least secondary education, clinic-based antenatal care and delivery in health facilities initiated breastfeeding within an hour of birth, avoided pre-lacteal feeding and practiced exclusive breastfeeding for the first 6 months of life. Delivery of children outside health facilities strongly contributed to delayed initiation of breastfeeding ($P < 0.001$), pre-lacteal feeding ($P = 0.003$) and failure to breastfeed exclusively ($P = 0.049$). Further funding indicated that maternal education below secondary level strongly contributed to pre-lacteal feeding ($P = 0.004$) and failure to practice exclusive breastfeeding ($P = 0.008$).

Available studies further suggest that level of education is associated with a marked reduction in duration of breastfeeding, with a median duration of 3 months (95% CI 0–10.2) among mothers with more than 12 years of schooling, and a median duration of 18 months (95% CI 15.0–21.0) among mothers with no formal education (Lars, et al, 2009). Breastfeeding duration differed significantly among mothers in the poorest and least poor quintiles. The median duration was 8 months (95% CI 5.9–10.1) among the least poor and 17 months (95% CI 15.2–18.8) among the poorest. Further data indicated that mother's age, marital status, rural

or urban life, self-rated health of the mother and health of the infant were not significantly associated with breastfeeding duration.

Another study revealed that the level of education, employment status and opinion of the family influence HIV infected mother's decision on infant feeding (Gara, et al, 2005). In addition, the study also indicated that in middle and poor income countries, it should be a human right priority that all women have access to clean water, alternative milk and condition willing to disclosure of HIV status in order to enable safe and feasible replacement feeding. In central Tanzania it was observed that resource limitation and insufficient education present a challenge to adaptation of prevention of mother to child transmission (PMTCT) intervention (Burke, 2004).

2.4 Mother's knowledge on mother-to-child transmission (MTCT) of HIV

Mother-to-child transmission (MTCT) of the virus is responsible for more than 90% of HIV infections in children. In a study investigating barriers of exclusive breastfeeding among mothers on AZT, 62% of HIV-infected mothers were aware of the risk of HIV transmission through breast milk. However, the majority of mothers who breast-fed their infants introduced other liquids. Other types of milk were introduced by 52% of mothers within the first month of feeding. Within 3 months, 82% of mothers had introduced other types of milk to their infants (Chopra, et al, 2000). In Bushenyi district (Uganda) it was found that 87% of mothers of children aged 0-11months knew that HIV can be transmitted through MTCT (Asiimwe, et al, 2004)

Lack of enough information and knowledge regarding the optimal duration of exclusive breastfeeding and its benefits has been considered as one of the factors contributing to early cessation of exclusive breastfeeding (Bovell-Benjamin, et al, 2001). According to de Paoli et al, (1999) awareness of MTCT among mothers in Kilimanjaro, Tanzania was high, and most of the respondents knew that the virus could be transmitted during pregnancy or through breastfeeding. Two-thirds of them knew that it could be transmitted during labour. In Kenya, 13.5% of the respondents had no knowledge at all on MTCT via breastfeeding (Oguta, et al, 2006).

2.5 Factors perceived to enable/inhibit HIV infected mothers breastfeed exclusively

Bentley et al, (2005) conducted a study in Lilongwe Malawi which found that several HIV infected women were of the view that their nutritional status was declining due to their illness. The women were also concerned that exclusive breastfeeding might accelerate the progression of their disease and therefore opted for mixed feeding. In a different study in Kilimanjaro Tanzania, mothers were generally concerned that exclusive breastfeeding might raise suspicion of HIV positive status (Peggy, et al, 2006).

The impact of stigma and discrimination faced and feared by HIV positive women has been well described (Paxton et al 2004). In central Tanzania, stigma of HIV and AIDS, fear of HIV testing and insufficient education present a challenge to adopting Prevention of Mother to Child Transmission (PMTCT) interventions. Strong beliefs about maternal nutrition, milk production and infant hunger lead to early complementation of infants. HIV positive women who choose not to breastfeed may be assumed to have some problems. Mothers' beliefs and

attitudes towards exclusive breastfeeding can affect this practice either negatively or positively (Burke, 2004).

2.6 Disclosure of HIV serostatus

Disclosure of HIV-positive status is an important part of coping with the disease; and understanding the circumstances surrounding it is critical in both prevention of HIV and mitigation of its impact (Varga, et al, 2006). Replacement feeding may be interpreted as a sign of HIV, especially if no proper explanation can be produced for replacement feeding, such as Caesarean Section delivery. The cost of replacement feeding coupled with suspicion from relatives make replacement feeding an option only for women who have disclosed their HIV status to their partners or who are not married or who are not living with close members of the family (Blystad et al, 2007).

According to Leshabari et al, (2007) 65% of the study participants in Kilimanjaro, Tanzania did not disclose their HIV positive status to their partners or to anyone else. Similarly, in Abidjan Côte D'Ivoire, less than half of the HIV-positive women had told their partner about their HIV status (Hermann et al, 2007). Other studies report wide variations in partner disclosure rates, ranging from 16.7 to 22% in urban Tanzania (Antelman et al., 2001; Kilewo et al., 2001); 31.6% in Burkina Faso (Issiaka et al., 2001); 34% in South Africa (Matthews, et al., 1999); 79% in Rwanda (Keogh et al., 1994); 58% to 64% among antenatal clinic attendees in Kenya and 72% among those in urban Zambia (Rutenberg, 2003).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study design

The study was cross sectional analytical in design

3.2 Study area

The study was conducted in Mbeya urban district, Mbeya region which is in the south-west of Tanzania. The region has eight administrative districts with a total of 2.3 million people. The region is boarded by Malawi country to the immediate south, Rukwa region to the west and Tabora and Singida regions to the north while Iringa region lies to the east. Mbeya is the first large urban settlement encountered when traveling overland from the neighboring nation of Zambia. Two cross-country highways i.e. the Tanzania-Zambia and Tanzania-Malawi highways cross the city of Mbeya, playing a significant role in HIV transmission in the city and the neighborhood. The health facilities in Mbeya urban consist of four hospitals which include the Mbeya referral hospital; the regional hospital; and two private hospitals which are the Ks' hospital and Uyole hospital. There are also seven health centers and 27 dispensaries some of which are privately owned

The main tribes in the area include Nyakyusa and Safwa and there are many immigrants. Food crops include maize, rice, bananas and potatoes. Tanzania has a free market in agricultural produce, and Mbeya transports vast amounts of its maize to other areas of the country. There is also extensive animal husbandry with dairy cattle predominating. Mbeya region was purposely selected for this study because it is among the regions with the highest rates of HIV

infection in Tanzania, with a prevalence of 7.9% among adults and 8.6% among pregnant women (THIMS, /2007/2008). Mbeya urban was chosen because of its high HIV prevalence (12%).

3.3 Study population

This study involved HIV infected mothers with children less than 2 years attending CTC sites in Mbeya Urban district. The district has a total of six Care and Treatment Clinic (CTC) sites and these are the Referral hospital, Regional hospital, Igawilo, Ruanda, Kiwanja Mpaka and Uhai health centre.

3.4 Sample size estimation

The sample size was determined by using the following formula

$$N=\frac{Z^2\, p\,(100-p)}{d^2}$$

Where,

N = the minimum desired sample size

Z = the standard normal deviate (normally set at 1.96 which corresponds to a 95% confidence level of parameter estimation).

d = the degree of accuracy desired, set at 5%

p = 21% which is the proportion of HIV infected mothers who practice exclusive breastfeeding (Coutsoudis et al, 2001)

Substituting these figures in the above formula gave a minimum required sample size of 265. Ten percent (10%) was added to carter for non respondents, making the minimum sample size 290 mother-child pairs.

3.5 Sampling procedure

Mbeya region and also the urban district were purposely selected due to the fact that Mbeya is one of the regions with high prevalence of HIV in Tanzania (the first is Iringa followed by Dar es Salaam). Furthermore, this selection was limited by the financial constraints which necessitated the research work to be concentrated in the urban area. All the six CTC sites in Mbeya urban were included in the survey. All HIV positive women who had children less than two years of age attending the respective clinics at the time of data collection were invited to participate in the interviews. Recruitment of respondents was on daily clinic basis until the required sample size was achieved.

3.6 Data collection procedure

3.6.1 Recruitment and training of research assistants

Three research assistants, comprising of two intern doctors and one student assistant medical officer, all from Mbeya referral hospital were recruited and given a one day orientation to the

study. The training content covered an overview of the study; research tools; how to identify study respondents; maintain confidentiality and how to administer the questionnaire.

3.6.2 Pre-testing of the study tool

Prior to commencement of the study, the questionnaire was pre-tested in one CTC in Kinondoni Municipal Council which offers similar services to HIV infected mothers. Pre-testing included 10% (30 respondents) of the required sample of this study. The findings from this exercise were used to check the logic and flow of the questions and whether they were clearly understood by the target group. Another purpose of the pre-test was to verify whether the tool was adequate to collect the desired information as well as ensuring completeness, comprehensibility, consistence, and reliability of the questions.

3.6.3 Data collection

Data were collected by using structured questionnaire with closed and open ended questions. The questionnaire was prepared in English and translated into Kiswahili, the national medium of communication. The questionnaire was designed to collect data on socio-demographic characteristics of the respondents, their breastfeeding practices, knowledge on MTCT, factors enabling/inhibiting them from breastfeeding their infants exclusively for six months after birth as well as information related to disclosing their HIV status. Every potential respondent who attended the clinic was invited to participate. Each interview lasted for about 20-30 minutes. Data collection was done on daily basis every clinic day.

3.7 Study variables

Dependent variable: Breast feeding practices

Independent variables: These included socio-demographic characteristics of the mothers (age, education level, occupation, religion and marital status); level of knowledge on mother to child transmission of HIV; HIV related stigma; decision making processes regarding infant feeding and issues surrounding disclosure of HIV positive status.

3.8 Data management and analysis

The data were checked on daily basis in order to correct any errors encountered during the interviews. All the questionnaires were given serial numbers and then coded prior to the data entry. Data entry, cleaning, validation and analysis were done with the assistance of an experienced computer technician using SPSS computer software. Significant level was set at a cut-off p-value of 0.05. Variables which had significant association with the outcome of interest (breastfeeding practices) were subjected to logistic regression analysis.

Mothers' knowledge on mother to child transmission of HIV was assessed using a series of five questions. Responses were credited yes=1 or no=2, the minimum score that a mother could get was 5 and the maximum was 10. The score were then categorized as follows: high knowledge (5-7) and low knowledge (8-10)

3.9 Ethical considerations

Ethical approval for conducting this study was obtained from the Research and Publications Committee of the Muhimbili University of Health and Allied Sciences (MUHAS). Subsequently, permission for data collection was obtained from the Mbeya Regional Administrative Secretary, Mbeya City Director, Mbeya City Medical Officer and respective CTC administrators or person's in-charge of the clinics. For each selected HIV infected mother, the aim of the study was explained and she was informed on the voluntary nature of participation in the interview as well as assured of the confidentiality and the fact that whether she agreed to participate or not it had no implications on her access to CTC services.

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CHAPTER FOUR

4.0 RESULTS

This chapter presents results from interviews of a total of 338 HIV infected mothers with children less than 2 years (0-23 months) who were attending six CTC services in Mbeya urban district. Information gathered included demographic characteristics of the mothers, age and sex of their children as well as breastfeeding practices and their associated factors.

4.1 Socio-demographic characteristics of the study population

The socio-demographic characteristics are as shown on Table 1. The age of the mothers ranged from 17-42 years and the highest proportion (33.4%, N= 113) was in the age of 25-29 years, while 15 mothers (4.4%) were aged 15-19 years. Their mean age was 28.7 (± SD 6.3) years.

Two hundred and thirty three (69%) mothers were married and about a fifth (19.5%) of them were single. Majority of them (71.6%) had completed primary school education. Although quite a few (14.8%) reported to have attained secondary education, a sizable proportion (12.4%) had never been to a formal school. The data further shows that 42.3% of the mothers reported to be self employed, whereas 26.2% and 21.3% reported to be peasants and housewives respectively; and 86.6% were Christians. Over half of the babies (55.9%) were in the age group 0-6 months and the least proportion was in the age group of 19-23 months (10.1%). There were slightly more female (52.4%) than male (47.6%) babies.

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Table 1: Socio-demographic characteristics of the study population (N=338) cross tabulate with breath feeding practice or other factors

Characteristic	Frequency	Percentage (%)
Age (years)		
15-19	15	4.4
20-24	68	20.1
25-29	113	33.4
30-34	92	27.2
35+	50	14.8
Marital status		
Married	233	69.0
Single	66	19.5
Separate/divorced/widow	39	11.5
Education		
No formal education	42	12.4
Primary education	242	71.6
Secondary education	50	14.8
College education	4	1.2
Occupation		
Employed	23	6.8
Self employed	153	42.3
Peasant	90	26.2
Housewives	72	21.3
Religion		
Christians	292	86.6
Muslims	36	10.7
Others	9	2.7
Age of children (months)		
0-6	189	55.9
7-12	65	19.2
13-18	50	14.8
19-23	34	10.1
Sex of children		
Male	161	47.6
Female	177	52.4

4.2.1 Breastfeeding practices

As shown on Table 2, close to 90% of HIV infected mothers in Mbeya urban district ever breastfed their infants, with half (50.2%) of them initiating breastfeeding within the first hour after delivery. The remaining half delayed, some for longer than four hours. A quarter of the mothers reported to have given their babies pre-lacteal feeds; commonly glucose (10.9%) and cow/formula milk (8.5%). When enquired whether they breastfed their newborn babies the first milk that came out of their breasts (colostrum), 91.4% of the mothers said to have done so.

Furthermore the study results show that at the time of data collection, 57% (172 out of 303 mothers who ever breastfed their children) were still breastfeeding. Out of those, 67.7% were breastfeeding exclusively while the rest (32.5 %) were on mixed feeding.

Table 2: Breastfeeding practices among HIV infected mothers with children aged below two years in Mbeya urban district

Characteristic	Frequency	Percentages
History of ever breastfeeding		
0-6	176	93.1
7-12	57	87.7
13-18	39	78.0
19-23	31	91.2
Total	303	89.6
Initiation of breastfeeding		
Immediately	152	50.2
Delayed	151	49.8
Total	303	100
Giving pre-lacteal feeds		
No	253	74.9
Yes	85	25.1
Total	338	100
Types of pre-lacteal feeds		
Breast milk	253	74.9
Glucose	37	10.9
Cow/formula milk	29	8.5
Water	11	3.3
Light porridge	8	2.4
Total	338	100
Feeding colostrums		
Yes	277	91.4
No	26	8.6
Total	303	100
Current breastfeeding practices*		
Exclusive breastfeeding	116	67.5
Mixed feeding	56	32.5
Total	172	100

*172 mothers were breastfeeding their children at the time of the study

4.2.2 Reasons for delaying breastfeeding initiation

Among the 151 mothers who reported to have delayed initiating breastfeeding to their newborn babies, their main reasons included delayed milk production (49.0%) followed by Caesarean Section deliveries which accounted for 23.2%) as shown on Table 3

Table 3: Main reasons for mothers delaying initiation of breastfeeding

Main reason	Frequency	Percentage
Delayed milk production	74	49.0
Caesarean Section	35	23.2
Sick Mother	20	13.2
Sick babies	22	14.6
Total	151	100

4.2.3 Feeding practices of children aged 0-6 months

At the time of data collection 138 of children aged 0-6 months were breastfeeding. Majority of infants (92.1%) aged 0-1 months were exclusively breastfed and the proportions decreased gradually to 78% and 67.6% respectively among infants aged 2-3 and 4-6 months (see Table 4).

Table 4: Distribution of currently breastfeeding infants aged 0-6 months according to their breastfeeding practices (N=138)

Age of infant (in months)	Breastfeeding Practice				
	EBF		Mixed feeding		
	Frequency	%	Frequency	%	Total (100%)
0-1	58	92.1	5	7.9	63
2-3	32	78.0	9	22.0	41
4-6	23	67.6	11	32.4	34

4.3 Association between socio-demographic characteristics of the mothers and their current breastfeeding practices

Table 5 shows distribution of breastfeeding practices of the 172 mothers who were still breastfeeding according to their socio-demographic characteristics. The highest group of mothers practicing EBF were among mothers aged above 35 years (76.5%); mothers not married or cohabiting (72.7%); mothers with primary education (72.0%); self employed mothers (73.7%) and mothers who reported to be Muslims followers (75.0%).

Furthermore the analysis shows that mothers who where not in union were likely to practice EBF compared to single and married mothers ($\chi 2=5.9$, $P=0.05$), mothers with primary education where likely to practice EBF than mothers who had no formal education or had secondary education ($\chi 2=8.5$, $P= 0.01$), and self employed mothers where more likely to practice EBF compared to employed mothers and housewives ($\chi 2=8.9$, $P= 0.03$).

Table 5: Distribution of breastfeeding practices by socio-demographic characteristics of the mothers

Characteristics	Breastfeeding Practices					
	EBF		Mixed feeding			
	Frequency	%	Frequency	%	Total	Significance
Age (years)						
15-19	6	75.0	2	25.0	8	
20-24	29	61.7	18	38.3	47	
25-29	44	68.8	20	31.3	64	$\chi2=1.6$
30-34	24	66.7	12	33.3	36	P=0.808
35+	13	76.5	4	23.5	17	
Marital status						
Married	91	71.7	36	28.3	127	$\chi2=5.9$
Single	17	50.0	17	50.0	34	P=0.053
Separate/divorced/widow	8	72.7	3	27.3	11	
Education						
No formal education	10	41.0	14	58.3	24	
Primary education	90	72.0	35	28.0	125	$\chi2=8.5$
Secondary education	16	69.0	7	30.4	23	P=0.014
Occupation						
Employed	62	75.6	20	24.4	82	$\chi2=7.1$
Peasant	26	53.1	23	46.9	49	P=0.028
Housewives	28	68.3	13	31.7	41	
Religion						
Christians	102	67.1	50	32.9	152	$\chi2=0.9$ P=0.613
Muslims	12	75.0	4	25.0	16	
Others	2	50.0	2	50.0	4	

* The missing 5 were not breastfeeding at the time of data collection

4.4: Factors enabling/inhibiting HIV infected mother's breastfeed their infants exclusively for the first six months

The commonest factors that were said to enable HIV infected mothers breastfed exclusively included: proper health information (52.4%), support from the spouse (29.3), good maternal health (25.7%), support from the family (25.4%) and good child health (20.7%). On the other hand when the mothers were asked to mention possible factors that might inhibit them from exclusively breastfeeding their babies, they mentioned; said lack of information on the importance of exclusive breastfeeding (41.1%), fear of being stigmatized (37.3%) deep rooted traditional beliefs (23.4%), work load (19.5%), fear of indirect disclosure of their HIV status (17.8%) and for formally working mothers, short maternity leaves (8.3%)

4.5 Association between place of delivery and breastfeeding practices

Of the 172 babies who were breastfeeding at the time of the study, 111 (64.6%) were born in hospital while 30 (17.4%) were born at home. As shown on Table 6, the highest proportion (73.9%) of babies who were reported to have been exclusively breastfed was among the ones born in hospitals followed by dispensaries/health centres (64.5%)

Further analysis shows that mothers who gave birth at the hospitals were significantly more likely to practice exclusive breastfeeding compared to mothers who delivered at the other areas $\chi 2=8.1$, $P=0.01$

Table 6: Association between place of delivery and current breastfeeding practices among HIV infected mothers with children aged below two years (N=172)

Place of delivery	Exclusive breastfeeding		Mixed feeding			Significance
	Frequency	%	Frequency	Total	%	
Hospital (N=111)	82	73.9	29	111	26.1	
Dispensary/Health centre(N=33)	20	64.5	11	31	35.5	$\chi 2=8.1$ P=0.01
Home (N=30)	14	46.7	16	30	53.3	
Total	116	67.4	56	172	32.6	

4.6 Association between level of knowledge on mother-to-child-transmission of HIV and breastfeeding practices

Over sixty nine percent (69.8%) of mothers with high knowledge of mother to child transmission (MTCT) of HIV are likely to practice exclusive breastfeeding to their infants than mothers with low level of knowledge (Table 8). However mothers' level of knowledge on MTCT was not statistically significantly associated with breastfeeding practices (p=0.3).

Table 7: Association between level of knowledge on mother-to-child-transmission of HIV and breastfeeding practices among currently breastfeeding mothers

Level of knowledge	EBF		Mixed feeding		Total		Significance
	N	%	N	%	Frequency	%	$\chi 2=0.9$ p=0.3
Low	35	62.5	21	37.5	56	32.6	
High	81	69.8	35	30.2	116	67.4	
Total	116	67.4	56	32.6	172	100	

4.7 Disclosure of HIV positive sero status

Out of 338 HIV infected mothers, 81.4% reported to have disclosed their HIV sero status as shown on Table 9. The disclosure was mostly made to spouses (60.4%) and mother (20.4%),

while (14.5%) had disclosed their HIV serostatus to other persons including aunts, grandmothers and friends.

Table 8: Distribution of study population according to disclosure of HIV status

Disclosure status (N=338)	**Frequency**	**Percent**
Yes	275	81.4
No	63	18.6
Person to whom disclosed (N=275)		
Spouse	204	60.4
Mother	69	20.4
Siblings	16	4.7
Others	45	14.5

4.8 Predictors of exclusive breastfeeding

The model on binary logistic regression of predictors of EBF is shown on Table 10. The only factor which remained statistically significant in the model is the place where the mothers delivered. Compared to mothers who delivered at home, mothers who reported to have delivered in hospital were more than three times more likely to practice exclusive breastfeeding (OR=3.2, 95% CI=1.4-7.4, p=0.01). Mothers with primary or higher education level were more likely to exclusively breastfeed than those with no formal education.

Table 9: Logistic regression analysis results-factors associated with exclusive breastfeeding

Factor	Frequency	Odds ratio	95% CI	P value
Marital status				
Married	127	0.3	0.1-1.6	0.1
Single	34	0.9	0.2-3.7	0.9
Separate/divorced/widow	11	1		
Education				
No formal education	24	0.3	0.1-1.04	0.05
Primary education	125	1.1	0.4-2.9	0.8
Secondary education	23	1		
Occupation				
Employed	82	1.4	0.6-3.3	0.39
Peasant	49	0.5	0.2-1.2	0.1
Housewife	41	1		
Place of delivery				
Hospital	111	3.2	1.4-7.4	0.01
Health centre	31	2.0	0.7-5.8	0.16
Home	30	1		

CHAPTER FIVE

5.0 DISCUSSION

Findings from this survey revealed that 89.6% of HIV infected mothers in Mbeya Urban ever breastfed their babies. Furthermore, 67.5% of the mothers who were breastfeeding at the time of the study reported to practice exclusive breastfeeding.

Breastfeeding practices among HIV infected mother

Breast milk contains growth factors that may help the infant's gut mature, thus maintaining its integrity and hindering infection by micro-organisms, including HIV where the mother is infected. However, exclusive breastfeeding is recommended for HIV-infected women for the first six months of life unless replacement feeding is acceptable, feasible, affordable, sustainable and safe for their infants before that time. When replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breastfeeding by HIV-infected women is recommended. (WHO, 2009).

Results from this study showed that breastfeeding was practiced by majority of the HIV infected mothers with almost 90% of all infants being ever breastfed; half of them being initiated within one hour after delivery. This high level of breastfeeding despite the HIV infection could be explained by the fact that breastfeeding in Tanzania and other parts of Africa is a norm (Shirima et al, 2001). Generally, high proportions of breastfeeding initiation

have also been documented in previous studies (Shirima et al, 2001; de Paoli, et al 2001; TDHS 04/05; WHO 2006).

In most low income countries, initiation of breastfeeding in general is almost universal (WHO, 1993; WHO, 1996). In a study among HIV infected mothers in Kwa Zulu Natal, South Africa, 83% of mothers initiated exclusive breastfeeding from birth (Coovadia et al, 2007). In the Mbeya study, the corresponding proportion was found to be 74.9%. The differences in these two studies could be attributed to the different study designs and contexts, in which the former was a prospective intervention cohort study involving HIV pregnant women and the later was a cross sectional study involving postnatal mothers with children aged less than two years.

Some studies suggest that the high concentrations of lymphocytes, macrophages, immunoglobulin, and other immune proteins in the colostrums may protect the newborn against HIV transmission, making early breast milk less infectious than mature milk where the mother is HIV infected (Newell et al, 1997). In spite of the importance of colostrums to the infants, and the fact that majority of the HIV infected mothers in this study breastfed their babies at some point, still 8.6% of the mothers did not give colostrums to their newborns, increasing their risk to acquiring the infection. The main reason for not giving this milk was ill health conditions of the mothers as reported by 22 of the 26 mothers (84.65). However, this proportion is lower than what has been observed among mothers with unknown HIV status (45%) in Morogoro who claimed that they could not give colostrums to the baby since they thought the colostrums were dirty milk (Shirima et al, 2001).

International guidance currently states that when replacement feeding is acceptable, feasible, affordable, sustainable and safe, the avoidance of all breastfeeding by HIV-infected mothers is recommended (WHO, 2000). Otherwise, EBF is recommended during the first months of life. In this, 67.5% of mothers who were breastfeeding at the time of data collection were practicing EBF. This was not surprising since breastfeeding as said before is a norm, and also in Africa, replacement feeding that is acceptable, feasible, affordable, sustainable and safe is uncommon, and many HIV-positive women are choosing to breastfeed (Omari et al, 2003; Kiarie et al, 2004).

The Baby Friendly Hospital Initiative (BFHI) discourages the use of pre-lacteal feeds by all infants because they limit the frequency of sucking and expose the baby to risk of infection like HIV where the mother is infected. Findings from this study have shown that a quarter (25.1%) of the HIV infected mothers in Mbeya urban gave their newborn babies pre-lacteal feeds, most commonly glucose water. This observation is slightly higher than what was observed in Moshi by de Paoli et al (2001) whereby 18% of newborns received pre-lacteal fluids. The difference could be explained by the time difference between these studies as well as the fact that unlike the Mbeya study which recruited respondents from the urban district only, the Moshi study included respondents from both urban and rural districts with variable cultural practices. However, with or without HIV infection, the practice of giving pre-lacteal feeds is quite common (Shirima et al, 2001, Agnarson et al, 2007)

Most women in developing countries (like Tanzania) regardless of their HIV status, cannot formula feed safely. They have inadequate access to clean water, proper sanitation, and a

reliable, sustainable supply of formula milk. In these situations, formula feeding may lead to increased infant mortality. The findings from this study found that only 10.4% of HIV infected mothers were practicing replacement feeding this may be because breastfeeding usually is the norm in resource-poor settings. Formula feeding therefore may be culturally unacceptable, and may indirectly reveal a mother's HIV status and expose her to stigma (Moodley, et al, 2003; Nduti, 2000).

Socio-demographic factors influencing breastfeeding practices

Similar to other studies (Gara et al, 2005; Lars, et al, 2009) this study did not reveal any significant relationship between age and marital status of the mother with exclusive breastfeeding ($\chi 2=1.6$; $p=0.8$; and ($\chi 2=5.9$; $p=0.05$ respectively). Therefore it appears that the influence of maternal age and marital status on exclusive breastfeeding is the same regardless of culture and the characteristics of the study population.

Also results from this study show that occupation was statistically associated with exclusive breastfeeding. Mothers who reported to be employed i.e. teachers, health workers and other civil servants (75.6%) were more likely to practice exclusive breastfeeding compared to mothers who were peasants (53.1) and housewives (68.3%). The difference was statistically significant ($\chi 2= 7.1$, $p=0.028$). These findings are consistent with results from a related study in Zimbabwe (Gara, et al, 2005), which indicated that the employment status of the HIV infected mothers had influence on the infant feeding options. In the present study, it is reported that maternal level of education is associated with breastfeeding practices ($P=0.01$).

This findings has been reported in other study which showed that level of education, was found to influence HIV infected mother's decision on the route of infant feeding (Gara, et al, 2005).

Mother's level of knowledge on mother to child transmission of HIV and breastfeeding practices

Knowledge of mothers on MTCT especially through breastfeeding is an important factor for the mother to make an informed decision on infant feeding. In a study in Moshi, (de Paoli, et al (1999) found that most of the respondents knew that the virus could be transmitted during pregnancy or through breastfeeding. Similarly, in the current study, 67.4% of the mothers who were breastfeeding had high level of knowledge of MTCT including preventive measures. Furthermore, mothers with high knowledge on MTCT were more likely to practice EBF compared to their colleagues who had low level of knowledge, although the association was not statistically significant ($p=0.3$).

Factors perceived to enable/inhibit the HIV infected mothers breastfeed their infants exclusively for the first six months of life.

Results from this study showed that proper health information, support from the spouse, good maternal health, and good child health are the main factors which would enable HIV infected mothers to breastfed exclusively. These findings are also supported by Bentley, et al, (2005) who pointed out that the mothers were concerned that EBF might accelerate the progression of their disease and therefore opted for mixed feeding. Furthermore mothers reported that fear of

being stigmatized, deep rooted traditional beliefs and fear of indirect disclosure of HIV status were the main reasons which would inhibit mothers to practice exclusive breastfeeding, similar to observations by Bentley, et al, (2005). Exclusive breastfeeding, however, has not been seen as being customary or feasible beyond three months because breast milk was considered insufficient for the child's growth and because mothers generally had to resume activities outside the house (Peggy et al, 2006)

Disclosure of HIV serostatus

The present findings indicate the proportion of HIV infected mothers who disclosed their HIV status in was high (81.4%) compared to the available data in a study done in Kilimanjaro (35%) Tanzania by Leshabari et al (2007) and Abidjan Côte D'Ivoire (50%) by Hermann, et al (2007). The difference of disclosure of HIV status in the present study may be attributed to the fact that, the current study was facility based which might have led to respondents giving socially desirable responses. Furthermore, frequent health education messages in the media might have also increased the likelihood of exposure over time. In addition may be stigma also is reducing with time as many people are becoming aware of the importance of disclosure.

Limitations of the study

This study was a health facilities based and hence responses could have been biased due to fear of health care workers. To minimise this, intern medical doctors and a student in the assistant medical officers' school from Mbeya referral hospital were recruited as research assistants rather using the nurses working at the CTC sites. Another limitation was that mothers whose babies died as a result of HIV infection or any condition were not included in this survey, and therefore studying breastfeeding practices of survivors. However, a high proportion of mothers with children below six months were covered in the study sample, and thus, providing a general picture of breasting practices across children of the various age groups.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Generally a high proportion of HIV infected mothers in Mbeya urban initiate breastfeeding with however, only 67.5% practicing exclusive breastfeeding. Suboptimal breastfeeding practice such as use of pre-lacteal feeds, delayed initiation of breastfeeding and discarding colostrums are also common. Some socio-demographic characteristics such as occupation and level of education were associated with exclusive breastfeeding practice, with marital status being only marginally associated. Proper health information, supports from the family/spouse as well as good maternal and child health were perceived as factors that would enable mothers' breastfeed exclusively. Stigma and the fear of disclosure of positive HIV status are a major concern influencing mothers' infant breastfeeding choice.

6.2 Recommendations

The key challenge is to find ways to make breastfeeding safer for infants of HIV-positive mothers and to find effective strategies for supporting women in their infant feeding choices. The following are key recommendations for policy, practice and research:

1. Although the rate of exclusive breastfeeding was high, there is a need of promoting recommended infant feeding practices and clearly indicate the need for a multi-

dimensional behavior change strategy involving both mothers, counselors and significant others who influence decision making processes.

2. Provision of adequate and consistent information on the risk of HIV transmission through mixed feeding practices should be provided to mothers. In our community messages from health workers are highly valued; therefore there is a need to equip them with accurate information on exclusive breastfeeding. Existing programs in the health facilities and community should be strengthened and evaluated for improved performance of breastfeeding especially exclusive breastfeeding.
3. Further research is needed on breastfeeding practices to infants born to HIV infected mothers using qualitative methods in order to explore further the different contexts
4. There is a need to empower women in terms of formal education and regular income since these two attributes have been shown to be significantly associated with exclusive breastfeeding which will lessen the risk of postnatal transmission of HIV
5. Deliberate efforts should be taken to minimize the stigma attached to HIV in general so that mothers who are HIV infected can make infant feeding choices freely.

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APPENDICES

APPENDIX 1: Questionnaire-(English Version)

Questionnaire on assessment of breastfeeding practices and associated factors among HIV infected mothers with children below 2 years attending CTC in Mbeya Urban and Rural Districts.

GENERAL INSTRUCTIONS:

1. Any information collected will be strictly confidential.
2. Do not write names of interviewee on the questionnaire
3. Circle all appropriate response
4. for the opening questions write the response given

IDENTIFICATION INFORMATION

Questionnaire No……..

Name of the CTC centre.....

Name of interviewer……

Date of interview.....

SECTION 1:SOCIO-DEMODRAPHIC INFORMATION OF THE MOTHER		
Q1	How old are you?	Years_____
Q2.	What is your religion?	1. Christian 2. Muslim 3. Others (specify)_____
Q3	What is your tribe?	1. Nyakyusa 2. Safwa 3. Ndali 4. Malila 5. Bungu 6. Wanji 7. Sangu 8. Nyiha 9. Sukuma 10. Others(specify)
Q4	What is your current marital status?	1. Single 2. Married 3. Cohabiting 4. Separated/divorced 5. Widowed
Q5.	What is your highest level of education?	1. None 2. Adult education 3. Primary 4. Secondary 5. College 6. University
Q6.	What is your current occupation?	1. Employed 2. Self employed 3. Petty business 4. Housewife 5. Peasant 6. Others_____
SECTION 2: INFORMATION OF THE CHILD		
Q7	What is the date birth of your child? (check the child MCH card write complete months)	_____Months
Q8	What is the sex of your child?	1. Female 2. Male

Q9	Where did you deliver this child?	1. Hospital 2. Health centre/dispensary 3. Home 4. Others (specify)_____
SECTION 3: INFORMATION ON BREASTFEEDING PRACTICES		
Q10	What was the first thing given to the baby after birth?	1. Water 2. Glucose 3. Breast milk 4. Formula milk 5. Cow milk 6. Light porridge 7. Others (specify)
Q11	If not breast milk ask why was the baby given such fluids.	1. Delivered by operation 2. delayed milk secretion 3. it is cultural 4. baby was sick 5. mother was sick 6. others (specify)_____
Q12	Was this baby ever breastfed?	1. Yes **if yes go to question 14** 2. No **if no go to question 13**
Q13	What did you feed your baby instead?	1. Formula milk 2. cows milk 3. light porridge 4. others (specify)
Q14	After delivery, how long did you take to initiate breastfeeding?	1. Within one hour 2. Within first four hours 3. more than four hours 4. more than 24 hours
Q15	If the mother took more than one hour to initiate breastfeeding ask why?	1. Delivered by operation 2. delayed milk secretion 3. sick mother 4. others_____
Q16	Did you feed the baby the first yellowish milk?	1. Yes 2. No **if no go to question 17**
Q17	If the answer is no, ask what was the reason?	1. Mother was sick 2. baby was sick 3. delayed milk secretion 4. others_____

Q18	Are you still breastfeeding this child?	**1.** Yes **if yes go to question 20** 2. No **if no go to question 19**
Q19	If no, ask at what age did she stop breastfed the child	1. One month 2. two months 3. three months 4. four months 5. five months 6. six months 7. others (specify)
Q20	Apart from breastfeeding, do you feed the baby other foods/fluids?	**1.** Yes **if yes go to question 21** **2.** No
Q21	If answer is yes, what do you give?	1. Formula milk 2. Cow milk 3. Thin porridge 4. Tea 5. Water 6. Fruit juice 7. Mashed potatoes 8. others (specify)_____
Q22	Why did you decide to give the baby addition foods/foods on top of breastfeeding?	1. Insufficient milk 2. baby not gaining weight 3. the bay was crying 4. grownup baby 5. thirsty 6. others_____
Q23	Why did you stop breastfeeding the baby at this age?	1. Insufficient milk 2. baby refused to be breastfed 3. mother was sick 4. baby was sick 5. resume work 6. others (specify)_____
Q24	At what age did you start to give the baby fluids like water, fruits juice etc?	_____months
Q25	At what age did you start to give the baby solid foods like porridge?	_____months

Q26	In you opinion up to what age do you think only breast milk is sufficient without any other addition of fluids/foods for a baby?	_____months
Q27	What do you think is the appropriate time to introduce foods/fluids other than breast milk?	_____months
SECTION 4: ASSESSMENT ON KNOWLEDGE ON HIV TRANSMISSION FROM MOTHER TO CHILD		
Q28	Do you think a mother can transmit HIV to her baby?	1. yes 2. No
Q29	Do you think a pregnant mother can transmit HIV to her baby?	1. yes 3. No
Q30	Do you think a mother infected with HIV can transmit HIV to her baby during delivery?	1. Yes 2. No
Q31	Do you think a mother infected with HIV can transmit HIV during breastfeeding?	1. Yes 2. No
Q32	Do you think a mother infected with HIV can prevent mother to child transmission?	1. Yes 2. No
SECTION5:FACTORS ENABLING/ INHIBITING EXCLUSIVE BREASTFEEDING		
Q33	What reasons do you think enable a mother infected with HIV to breastfed a child exclusively for six months after delivery	1. support from the spouse 2. support from the family 3. proper health information 4. good maternal health 5. good child health 6. others (specify)
Q34	In your opinion, what reasons do you think inhibit a mother infected with HIV to breastfed a baby exclusively for six months?	1. no information on health education messages that breastfeeding is best 2. deep rooted traditional beliefs 3. stigmatisation 4. fear of indirect disclosure of HIV status 5. work load 6. short matenity leave 7. otherrs (specify)_____

SECTION 6:HIV DISCLOSURE TO SPOUSE OR CLOSE RELATIVES		
Q35	Have you shared with any body that you are HIV infected?	1.yes 2.No
Q36	To whom did you share your HIV status?	1. spouse 2. mother 3. brother 4. sister 5. neighbour 6. others (specify)

Thank you very much for your cooperation

APPENDIX 2: Questionnaire- (Kiswahili Version)

Utafiti kuhusu tabia ya unyonyeshaji wa maziwa ya mama pamoja na vigezo vinavyosaidia akina mama kuwanyonyesha watoto maziwa ya mama pekee katika halmashauri ya jiji la mbeya, Tanzania

MAELEZO YA JUMLA

1. Maelezo yoyote yatakayokusanywa yatatunzwa kwa siri
2. Jina la msailiwa lisiandikwe kwenye dodoso hli
3. zungushia majibu yote sahihi
4. Andika majibu kwa maswali yanayoachwa wazi

MATUMIZI YA OFISI TU

Namba ya Dodoso……..

Jina la kituo.....

Jina la msaili……

Tarehe ya usahili.....

		2. Mume
Q9	Ulijifungulia wapi mtoto huyu?	1. Hospitali 2. Kituo cha afya 3. Nyumbani 4. Nyingine (taja)
KIPENGALE 3: TAARIFA ZA ULISHAJI WA MTOTO		
Q10	Baada ya mtoto kuzaliwa alipewa nini kwanza?	1. Maji 2. Glucose 3. Maziwa ya mama (nenda Qn 12) 4. Maziwa ya kopo 5. Maziwa ya ng'ombe 6. Uji mwepesi 7. Nyingine (taja)_____
Q11	Kama sio maziwa ya mama uliza kwani sababu gani alipewa kinywaji kingine?	1. Kujifungua kwa operation 2. Maziwa yalichelewa kutoka 3. Mila na desturi 4. Mtoto aliwa mgongwa 5. Mama allikuwa mgonjwa 6. Nyingine (taja)
Q12	Je umemnyonyesha mtoto huyu?	1. Ndiyo (nenda swali 14) 2. Hapana (nenda swali 13)
Q13	Je,ulimpa nini mtoto?	1. Maziwa ya kopo 2. Maziwa ya ngombe 3. Uji mwepesi 4. Nyingine (taja)
Q14	Baada ya kujifungua ulichukua muda gani kuanza kumnyonyesha mtoto?	1. Kipindi cha saa moja 2. Masaa manne ya mwanzo 3. Zaidi ya saa nne 4. Zaidi ya siku moja
Q15	Kama mama hakunyonyesha katika kipindi cha saa moja,uliza sababu	1. Kujifungua kwa upasuaji 2. Maziwa yalikuwa hajatoki 3. Mtoto alichelewa kulia (low apgar score 4. Nyingine (taja)_____
Q16	Je ulimnyonyesha mtoto maziwa yanayotoka siku za mwanzo baada ya kijifungua?(colostrum)	1. Ndiyo 2. Hapana(kama hapana nenda swali 17)

Q17	Ni sababu zipi zilizokupelekea kuto mnyonyesha mtoto?	1. Mama mgonjwa/ hakuwa na afya nzuri 2. Mtoto alikuwa mgonjwa 3. Maziwa yalichelewa kutoka 4. Nyingine (taja)
Q18	Je mtoto bado ananyonya?	1. Ndiyo (kama ndio nenda swali la 20) 2. Hapana (kama hapana nenda swali 19)
Q19	Kama jibu ni hapana, uliza mtoto alikuwa na miezi mingapi alipo mwachisha?	1. Mwezi mmoja 2. Miezi miwili 3. Miezi mitatu 4. Miezi minne 5. Miezi mitano 6. Miezi sita 7. Nyingine (taja)
Q20	Ukiondoa maziwa yako, kuna chakula/kinywaji unampa mtoto?	1. Ndiyo (kama ndio nenda swali 21) 2. Napana
Q21	Kama jibu ni ndiyo,nini unampa?	1. Maziwa ya kopo 2. Maziwa ya ng'ombe 3. Uji 4. Chai iliyopoa sana 5. maji 6. juice 7. viazi/ndizi za kuponda 8. vingine (taja)_____
Q22	Je kwa sababu gani uliamua kumwanzishia mtoto vyakula vya ziada kama fluids/food	1. Maziwa machache 2. mtoto haongezeki uzito 3. mtoto alikuwa analia sana 4. mtoto amekuwa 5. kiu 6. nyingine (taja)

Q23	Je ni kwanini ulimwachisha mtoto kunyonya?	1. Mtoto aliugua 2. mama aliugua 3. mtoto alikataa ziwa 4. maziwa yalikuwa hayatoki 5. nyingine (taja)
Q24	Je,ulianza kumpa mtoto vinywaji vya majimaji kama maji, juisi, chai n.k akiwa na umri gani?	Miezi_____
Q25	Je, ulianza kumpa vyakula laini kama uji, viazi vya kuponda, ndizi za kuponda akiwa na umri gani?	Miezi_____
Q26	Kumnyonyesha mtoto maziwa ya mama pekee yanamtosheleza mtoto kwa muda wa miezi mingapi?	Miezi_____
Q27	Je mtoto anapaswa kuanzishiwa vyakula vya nyongeza akiwa na umri gani?	Miezi _____
KIPENGELE 4: TAARIFA ZA UELEWA WA MAMA KUHUSU UAMBUKIZA WA VVU KUTOKA KWA MAMA KWENDA KWA MTOTO		
Q28	Unafikiri mama anaweza kumuambukiza mtoto wake VVU	1. Ndio 2. hapana
Q29	Je unafikiri mama mjamzito mwenye VVU anaweza kumuambukiza mtoto VVU ?	1. Ndiyo 2. Hapana
Q30	Je unafikiri mama mwenye VVU anaweza kumuambukiza mtoto wake wakati wa kujifungua?	1. Ndiyo 2. Hapana
Q31	Je unafikiri mama mweye VVU anaweza kumwambukiza mtoto wake VVU wakati wa kumnyonyesha?	1. Ndiyo 2. Hapana
Q32	Unafikiri mama mwenye VVU anaweza kuzuia maambukizo kutoka kwake kwenda kwa mtoto	1. ndiyo 2. hapana
KIPENGELE 5: VIKWAZO VYA KUNYONYESHA MAZIWA YA MAMA PEKEE		

Q33	Je kwa mawaza yako,unafikiri ni sababu zipi zinazomfanya mama aweze kumnyonyesha mtoto maziwa ya mama pekee katika kipindi cha miezi sita?	1. ushirikiano kutoka kwa mume 2. ushirikiano kutoka kwa familia 3. taarifa sahihi za afya 4. afya bora ya mama 5. afya bora ya mtoto 6. nyingine (taja)
Q34	Je kwa mawazo yako,unafikiri ni sababu zipi za muhimu zinazomfanya mama ashindwe kumnyonyesha mtoto maziwa ya mama pekee katika kipindi cha miezi sita	1. (kutokuwa na taarifa) elimu ya afya kuhusu unyonyeshaji wa maziwa ya mama pekee sijaipata vizuri 2. mila na desturi 3. uoga wa kutambulika kuwa na VVU 4. kunyanyapaliwa 5. kazi nyingi 6. muda mfupi wa likizo ya uzazi 7. nyingine (taja)_____
KIPENGELE 6: KUSHIRIKISHA MUME AU NDUGU KUHUSU KUISHI NA VVU		
Q35	Je umemshirikisha mtu yeyote kuhusu hali yako ya kuishi na VVU?	1. ndiyo 2. hapana
Q36	Ulimshirikisha nani?	1. Mume 2. mama yako 3. kaka yako 4. dada yako 5. jirani 6. nyingine (taja

APPENDIX 3: Consent Form (English Version)
INFORMED CONSENT AGREEMENT

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIECES

DIRECTORATE OF RESEARCH AND PUBLICATIONS, MUHAS

ID-NO

Invitation

Good morning/Good afternoon

Dear Respondent,

My name is _____ I am from School of Public of Health and Social Sciences Muhimbili University of Health and allied Sciences, Dar-es-Salaam. You are being invited to take part in a research project, which tries to assess the breastfeeding practices and associated factors among HIV infected mothers with children up to 2 years of age attending CTC in Mbeya urban and rural districts, Tanzania. Your participation in this study is voluntary and therefore you can withdraw from the research anytime without any consequences. Your response will also be kept confidential and anonymous

Purpose of the study

I am conducting a study on breastfeeding practices and associated factors among HIV infected mothers with children up to 2 years of age attending CTC in Mbeya urban and rural districts. I therefore request you to answer some questions that seek to find out mothers breastfeeding practices, knowledge on MTCT of HIV, factors enabling or inhibiting an infected HIV mother to breastfeed their children exclusively for the first six months after birth and disclosure status to spouse or close relative.

This study will provide important information for planning possible interventions and strengthening the existing WHO recommendations.

What participation involves

If you agree to participate, you will be interviewed today.

The interviewer will ask you about your demographic information, the breastfeeding practices, knowledge on MTCT of HIV, factors enabling or inhibiting an infected HIV mother to breastfeed their children exclusively for the first six months after birth and disclosure status to spouse or close relative

Confidentiality

You have been selected as a study respondent to share with us your practice in respect to breastfeeding practices. Your response will be kept confidential and anonymous.

Risk/discomfort

Some of the questions may be sensitive and personal so you might feel uncomfortable at the same time it will take your time, as you can be doing other productive work

Right to withdraw and alternatives

You can stop being in the study at ant time. During the interview, you can stop the interview by asking the interviewer to stop. The interviewer may stop you from being in the study if he or she believes you are unable to answer questions because you are too tired.

Cost/compensation

This exercise is voluntary there will be no payment given to participants

Who to contact

If you ever have questions about this study, you should contact the study Coordinator or the Principal Investigator, Dr Agnes Buchwa Telephone number 0784616177 and Dr A T Kessy, from Muhimbili University of Health and Allied Sciences, P.O. Box 65001, Dar es Salaam.

If you have questions which need further clarification, as a participant you have a right to call, Chairman of the College Research and Publications Committee, P.O. Box 65001, Dar es Salaam. Tel: 2150302-6.

Signature:

Do you agree?

Participant agrees..... Participant does not agree .....

I _____ have read the contents in this form.

My questions have been answered. I agree to participate in this study.

Signature of Participant _____

Signature of Research Assistant_____

Date of signed consent _____

APPENDEX 4: Consent Form (Swahili Version)
FOMU YA RIDHAA YA KUSHIRIKI KATIKA UTAFITI

CHUO KIKUU CHA AFYA NA SAYANSI ZA TIBA MUHIMBILI

KURUGENZI YA UTAFITI NA UTOAJI MAKALA ZA MAANDISHI, MUHAS

Namba ya utambulisho

Ridhaa ya kushiriki kwenye utafiti

Habari za asubuhi/habari za mchana! Mimi jina langu ni_____ nimetokea chuo kikuu cha Afya na sayansi za tiba Muhimbili. Ninakusanya takwimu kwa ajili ya utafiti **kuhusu unyonyeshaji wa maziwa ya mama pamoja na vigezo vinavyosaidia akina mama wanaoishi na VVU kuwanyonyesha watoto maziwa ya mama pekee katika halmashauri ya jiji la mbeya, tanzania** .

Madhumuni ya Utafiti.

Utafiti huu ni kutaka kuainisha ni kwa namna gaini wakimama wanoishi na virusi vya ukimwi wanavyo nyonyesha watoto wao, katika kuzuia maambukizo kutoka kwa mama kwenda kwa mototo.

Nini kinahitajika ili kushiriki.

Ili kushiriki katika utafiti huu inabidi kukubali na kujiunga kwa kujibu maswali nitakayo kuuliza kwenye muongozo wa maswali yaliyotungwa kwa ajili ya utafiti huu.

Usiri

Taarifa zitakazokusanywa kupitia dodoso hili zitakuwa ni za siri na hakuna mtu yeyote atakayeambiwa ulichosema. Taarifa zitaingizwa kwenye ngamizi kwa kutumia namba za utambulisho.

Athali/Adha

Maswali mengine utakayoulizwa yatakuwa nyeti na yanakuhusu wew binafis,kwa hiyo unaweza kujisikia vibaya,vilevile tutachukua muda wako badala ya kwenda kwenye shuguli zingine za ushalishaji mali

Haki ya kushiriki au kujitoa au vinginevyo.

Ushiriki katika utafiti huu ni wa hiari. Kutoshiriki au kujitoa kutoka kwenye utafiti hakutakuwa na adhabu yeyote na hutapoteza stahili zako, endapo utaona ni vema ku fanya hivyo.

Ghalama/malipo

Zoezi zima ni la hiari,kwa hiyo hakuna malipo yoyote yatakayo tolewa

Faida

Kama utakubali kushiriki kwenye utafiti huu itakuwa ni vyema kwa vile taarifa utakazo toa itazaidia katika kuainisha sababu zinazofanya wakina mama washindwe au kuwawezesha kuwanyonyesha watoto wao kisahihi pasipo kuhatarisha afya ya mtoto na maambukizi ya VVU kutoka kwa mama kwenda kwa mtoto. Taarifa Hizi zitasaidia vitengo vinavyotoa elimu ya afya kwa akina mama nchini.

Endapo utapata madhara

Hutegemei kuwa utapata madhara yoyote kutokana na kushiriki wako katika utafiti huu.

Nani wa kuwasiliana naye

Kama una maswali kuhusiana na utafiti huu , unaweza kuwasiliana na Mtafiti mkuu wa utafiti huu **Dr Agnes Buchwa namba ya simu 0784616177** na **Dr A.T KESSY** wa Chuo Kikuu cha Afya na Sayansi ya Tiba Muhimbili, SLP 65001, Dar es salaam. Kama una swali kuhusu staili zako kama mshiriki unaweza kumpigia prof. **E.F. LYAMUYA,**

Mwenyekiti wa kamati ya utafiti na uchapishaji, S.L.P 65001, Dar es salaam, Simu 2150302-6

Sahihi:

Je umekubali?

Mshiriki amekubali ..... Mshiriki hajakubali .....

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