FACTORS INFLUENCING EXCLUSIVE BREASTFEEDING AMONG HIV POSITIVE MOTHERS AT ILALA MUNICIPALITY-DAR ES SALAAM

Florence Jairus Saka, BSc HE&HN

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FACTORS INFLUENCING EXCLUSIVE BREASTFEEDING AMONG HIV POSITIVE MOTHERS AT ILALA MUNICIPALITY - DAR ES SALAAM

By

Florence Jairus Saka

A dissertation Submitted in (partial) Fulfilment of the Requirements for the Degree of Master of Public Health of the Muhimbili University of Health and Allied Sciences

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CERTIFICATION

The undersigned certifies that she has read and hereby recommends for acceptance by the Muhimbili University of Health and Allied Sciences a dissertation entitled: ***Factors influencing exclusive breastfeeding among HIV positive mothers at Ilala Municipality in Dar es Salaam***, in partial fulfilment of the requirements for the degree of Master of Public Health of Muhimbili University of Health and Allied Sciences.

_____

Dr. Sebalda Charles Leshabari, PhD

(Supervisor)

Date: _____

DECLARATION

AND

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I, **Florence Jairus Saka,** declare that this **dissertation** is my 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 ……

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DEDICATION

To my parents, Jairus and Phoebe - Atieno, who have always believed in me and whose support, prayers and encouragement, gave me hope.

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ABSTRACT

Background: Exclusive breast feeding practices to infants from birth to six months of age are declining as their age increases despite the associated benefits. Knowledge on the factors influencing exclusive breastfeeding among HIV positive mothers will create awareness on feeding practices that are risk to the infant's health.

Objective: To determine factors that influence exclusive breastfeeding among HIV positive mothers of infants aged 6-12 months old attending Reproductive and child Health clinic and care and treatment clinic at Ilala Municipality.

Materials and Methods: A cross-sectional survey was conducted among HIV positive mothers with infants aged 6-12 months at three health facilities of Ilala Municipality namely: Amana hospital, Mnazi Mmoja and Buguruni Health Centres. Both quantitative and qualitative data collection methods were used. A questionnaire was administered to 200 HIV positive mothers to collect information and to characterize infants feeding practices. In depth Interview guide was used to explore infant feeding practices to five mothers of the same group.

Results: Exclusive breastfeeding was reported to be 46%. The other feeding practices reported were: mixed feeding 14% and exclusive replacement feeding 6%. Prelacteal and early complementary feeding was reported to be 34%. Exclusive breastfeeding practice was influenced mainly by health workers and mother's perception that breast milk is sufficient for infant's body requirements for the first six months of life. Early cessation of breastfeeding was reported to be result of mother's fear of infecting the child and also infant's HIV test results being negative after DNA-PCR test. However, lack of HIV status disclosure, breast problem, family and social pressures were found to be barriers in practicing exclusive breastfeeding.

Conclusion and Recommendations: HIV positive mothers are faced with multiple challenges as they strive to practice exclusive breastfeeding. Despite nearly half of the mothers reporting practicing exclusive breastfeeding, the rates are still not satisfactory. More extensive and comprehensive approach of infant feeding counseling that embrace all stakeholders, with emphasis to significant others should be put in place in order to increase exclusive breastfeeding rates.

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LIST OF ABBREVIATIONS

ANC	Antenatal care
ARV	Antiretroviral
BBA	Birth before Arrival
BFHI	Baby Friendly Hospital Initiative
CI	Confidence interval
CTC	Care and Treatment Clinic
DED	District Executive Director
DMO	District Medical Officer
DNA-PCR	Deoxyribonucleic acid-polymerase chain reaction
EBF	Exclusive Breast Feeding
HN&HE	Human Nutrition & Home Economics
MTCT	Mother-to-child transmission of HIV
MUHAS	Muhimbili University of Allied Health and Sciences
NVP	Nevirapine
PCR	Polymerase Chain Reaction
PMTCT	Prevention of Mother to Child Transmission of HIV
TBA	Traditional Birth Attendant
TDHS	Tanzania Demographic and Health Survey
UNAIDS	United Nations Programme on HIV/AIDS
OR	Odds Ratio
ORS	Oral Rehydration Salts

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CHAPTER ONE

INTRODUCTION

1.1 Background

Breastfeeding plays a major role in nutrition, health and development for both HIV infected and non HIV infected infants, due to the fact that human milk is the ideal nourishment for infants' survival, growth and development [1]. When the infants are exclusively breastfed for the first six months of life, their immune system is stimulated and this goes hand in hand with protecting them from diseases like diarrhoea and acute respiratory infections, which are considered to be two of the major causes of infant mortality in the developing world [1].When breastfeeding is practiced exclusively, it is associated with a lower risk of HIV transmission than mixed feeding [2,3].

Exclusive Breast Feeding (EBF) which is defined as giving the infant no other food or drink, not even water, apart from breast milk (including expressed breast milk), with exception of drops or syrups consisting of vitamins, mineral supplements or prescribed medicine; when it is practiced for the first six months of an infant's life, is a beneficial intervention in saving children's lives [4,5]. Despite the benefits which results from its practice, EBF rates remain low throughout the world, where globally it is estimated that the rate of exclusive breastfeeding is 35% [6]. Different regions in the world have reported increase of EBF, for instance from 22% (1996) to 30% (2006) in sub-Saharan Africa, East Asia /Pacific, (excluding China) 27% (1996) to 32% (2006) and in Latin America and the Caribbean, (excluding Brazil, and Mexico) 30% to 45%, despite the reported increase of EBF, the rates are still low [4].

However; according to Tanzania Demographic and Health Survey 2010, only 50% of infants at the age below 6 months regardless of their HIV status are exclusively breastfed [7]. This rate suggest some improvement from the previous Tanzania Demographic and

Health Survey of 2005 which indicated that only 41% were exclusively breastfed, still the rates are low with observed variation within and between regions [8].

Coovadia *et al* in their study reported that the greatest risk of HIV transmission from mother to child lies with those infants for whom mixed feeding is practiced, that is feeding on both breast milk and other liquids (such as water, tea, formula, animal milk) or foods (such as porridge or rice) than in those exclusively breastfed[9]. Moreover, mixed feeding has been associated with diseases like diarrhoea due to unhygienic conditions in which infant food is prepared [9]. Complementary feeding which is supposed to be practiced at the age of six months has been reported to start early, whereas in some instances complementary feeding starts as early as below two months of age [9,10,11]. Studies in Zimbabwe and Cote d'Ivoire report early introduction of complementary foods among HIV-exposed infants compared to non-exposed [12,13]. While another study reported infants being introduced to semi-solid and other liquids foods as early as one day after birth [11].

Among the various options of infant feeding in the context of HIV/AIDS, the safest option is exclusive replacement feeding (ERF) ; ERF stands out since when it is practiced, the infant will not be exposed to the virus present in the breast milk hence no HIV infection[4,14]. However, International guidelines currently recommend replacement feeding only when it is acceptable, feasible, affordable, sustainable and safe (AFASS), that is when HIV infected mother is advised to avoid of all breastfeeding, otherwise, EBF is recommended due to the challenges that accompany exclusive replacement feeding [4]. EBF for the first six months of life has favorable outcome of not conveying excess HIV transmission over formula feeding; it is reported that in Africa, replacement feeding that is acceptable, feasible, affordable, sustainable and safe is uncommon, and therefore HIV-positive women are reported to choose breastfeeding [15,16]. This study aims to determine factors influencing exclusive breast feeding among HIV positive mothers in Ilala Municipal Council.

1.2. Problem Statement

Transmission of HIV from mother to child is higher among the mixed fed infants than exclusively breast fed infants. It is estimated that, with Exclusive Breastfeeding (EBF), 13% to 15% deaths of children under 5 years could be averted in low and middle income countries [15,17].

WHO recommends EBF to both HIV exposed and non- exposed infants for the first six months of life, but still EBF rates remain low throughout the world. Globally it is estimated that prevalence of exclusive breastfeeding is 35% [6].

Although there is a reported increased trend of EBF as reported in most regions, the rates varies in the regions for instance; in Sub-Saharan Africa the increase was reported from 22% in 1996 to 30 % in 2006, East Asia /Pacific, (excluding China) from 27% in 1996 to 32% in 2006; Latin America and the Caribbean, (excluding Brazil and Mexico) from 30% in 1996 to 45 % in 2006. Yet, still these rates are low according to WHO recommendations despite the observed increase [4].

Regardless of HIV status, only 50% of infants at the age below 6 months are exclusive breastfed in Tanzania. The rates were reported being high at 80.5% from birth to one month, decreasing to 51.1% at age 2 to 3 months and 22.9 at ages 4 to 5 months with a median duration of EBF 2.4 months at national level [4]. However, studies in Dar es Salaam have also reported exclusive breast feeding rates among HIV positive mothers to be high among infants from birth to 2 months (80%), decreasing rapidly at age of 4 months 34% and low among infants of six months 13.3% with a median duration of EBF at 3 months **[**18,19].

There are number of factors that have been reported to hinder EBF, these include socio-cultural and norms, family and social pressures to mixed feed, customs that require giving water to newborn since every stranger entering the house is to be given water, the

belief that exhaustion and thirst that the infant gets after birth necessitate giving it water and giving infants concoctions just after delivery for protection [20,21,22].

The current international and national guideline encourages a known HIV positive mother to exclusively breastfeed while the infant receives prophylaxis for the first six months of life [23,24]. Continuation of breastfeeding up to two years and beyond is done in cases when child is diagnosed HIV positive whereas if the child is HIV un- infected breastfeeding is done up to 12 months and is stopped gradually ensuring that under both circumstances complementary feeding is introduced at sixth month [23]. In Tanzania, it is a policy that all women who attend ante-natal care should be provided with free HIV counseling and testing, moreover, free provision of Antiretroviral (ARV) is made if their test results are positive [24]. With these national and International efforts, the factors that lead to non- adherence to EBF among HIV positive mothers in Ilala Municipal are not well known.

1.3. Rationale of the study

Most studies conducted in this area were focused on the exclusive breastfeeding practices and did not explore the factors that may lead to such practices. The few studies which looked into the factors influencing EBF were done mostly in rural settings which comprises more of extended families as opposed to the cities culture for example Dar es Salaam whose population has a tendency of nuclear families and more individualistic. In this regard, less has been documented regarding factors that result in low rates of exclusive breastfeeding among HIV positive mothers in Ilala Municipality. Thus, this study intends to add the knowledge on the observed gap in this area by assessing factors affecting EBF practice among HIV positive mothers. The findings of this study are expected to inform practice and policy decisions in the development of appropriate interventions to promote exclusive breastfeeding hence improvement of child health in Dar es Salaam.

1.4. Research questions

In regard to the problem that needs to be researched on, researcher developed three main research questions that need to be answered at the end of this research, the questions were:

1. What is the proportion of HIV positive mothers who practice exclusive breast feeding for the first six months of infant's life?
2. What are the factors that are associated with exclusive breast feeding in the first six months of life?
3. What are the barriers for practicing exclusive breastfeeding during first six months of infant's life for HIV positive mothers?

1.5. Objectives

1.5.1 Broad Objective

To determine factors that influence exclusive breastfeeding practices among HIV positive mothers of infants aged 6-12 months old attending Reproductive and Child Health clinic and care and treatment clinic at Ilala Municipality.

1.5.2 Specific Objectives

1. To determine proportion of HIV positive mothers who exclusively breastfeed their infants for the first six months of their life.

2. To identify factors associated with exclusive breastfeeding during first six months of infant's life among HIV positive mothers

3. To explore barriers for exclusive breastfeeding during first six months of infant's life among HIV positive mothers.

1.6. Conceptual framework

Various factors have been found to facilitate or hinder adherence to EBF. Employed mothers usually get a maternity leave of three months. At the end of the three months they are to resume work, this necessitates introduction of other food to the baby in their absence. But again, the mother whose breast has problems like engorgement, mastitis, cracked or sore nipples will not manage to breastfeeding even if her previous decision was to practice EBF. On the other hand, significant others (husband/ spouse, mother in law, sister, grandmothers, friends and community members), have great role to play in infant feeding especially in the practice of mixed feeding. Lack of funds can lead to the mother's inability to afford good food, which in turn lead to low breast milk production. This insufficient breast milk makes the baby being unsatisfied and end up crying and this will force a mother to introduce other foods before recommended time, whereas lack of proper knowledge on EBF can lead to non EBF practice. The association between exclusive breastfeeding and these factors are shown in figure 1.

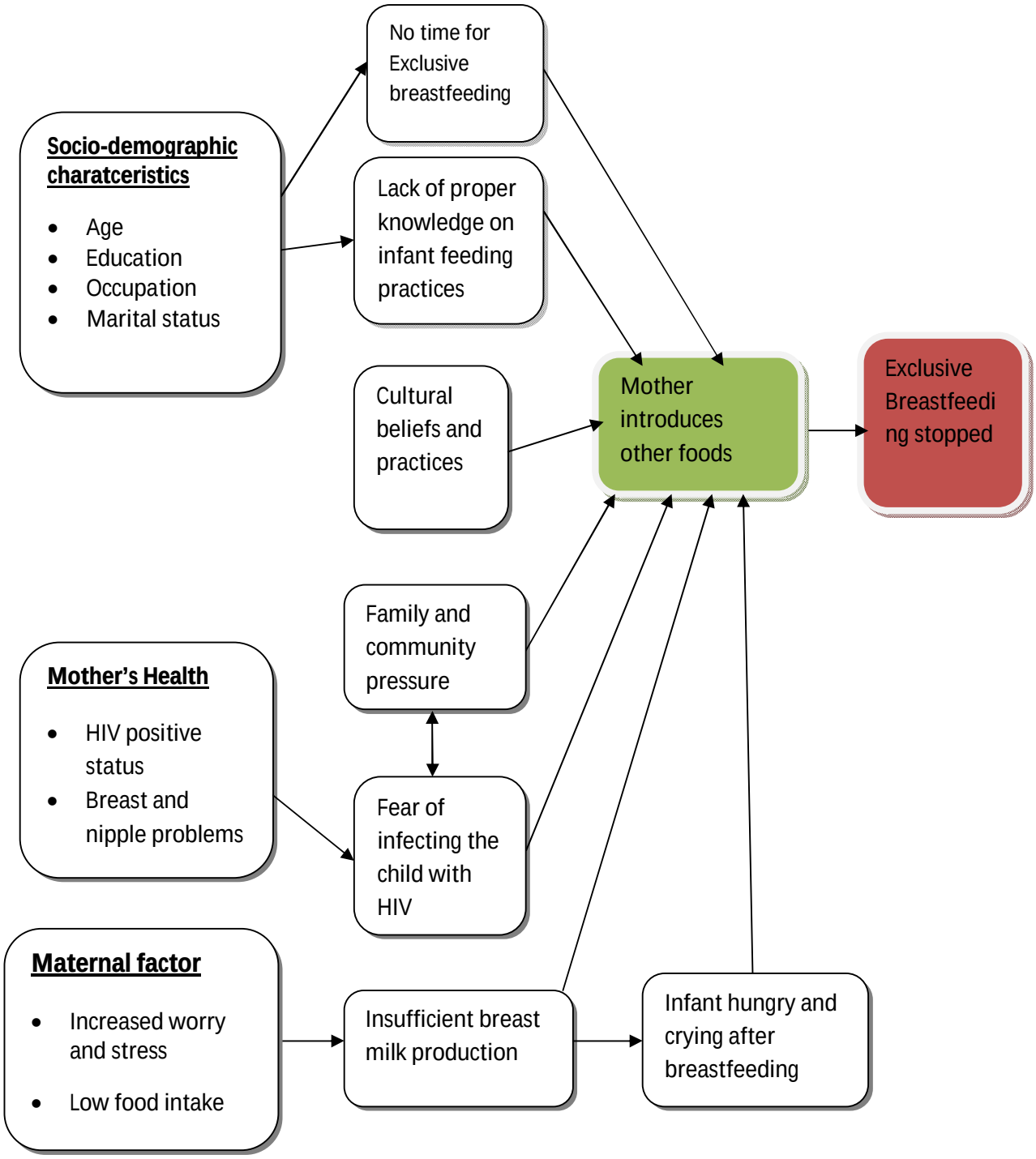


Figure 1: Conceptual Framework

CHAPTER TWO

LITERATURE REVIEW

This chapter is of paramount weight part to provide the useful insight for interpretation of findings. Diverse literatures relevant to the study have been reviewed for this purpose: factors such as socio – demographic (age, occupation, marital status, education level and parity, moreover, predictors to exclusive breastfeeding practice were also reviewed. Others factors include social-cultural factors, service related factors and mother's attitude toward infant feeding practices.

2.0 Infant Feeding Practices

Various infant feeding practices exists worldwide; these include: mixed feeding, exclusive breast feeding, replacement feeding, complementary and pre lacteal feeding. Exclusive breastfeeding and pre lacteal feeding is common in some cultures in the first few days of infant's birth, though as the infant grows exclusive breastfeeding is uncommonly and rarely practiced in Africa [7,11].

2.1. Breast feeding

Breastfeeding is the culture and well accepted practice in Sub Sahara Africa where most of the infants are breastfed [21,25]. In Tanzania almost all infants (97%) are breastfed for some period of time and mothers were reported to initiate breastfeeding within first day [7,21].

2.2. Exclusive breastfeeding trends

Exclusive breast feeding (EBF) coverage of 90% have been reported to avert 13% to 15% of death among children under 5 years of age, despite such benefits EBF practice is low throughout the world with a global rate of 35%. Trends in other regions are not satisfactory either, standing at 30%, in Sub Sahara Africa, East Asia – 30% and Latin America – 45% [4,28].

In Tanzania exclusive breastfeeding for the first six months of infant's life is not widely practiced, the national rate being 50%, regardless of mother's HIV status [7]. There is observed prominent decline as the age of infant progresses, the rates are 80.5% from birth to one month, 51.1% at 2 to 3 months and 22.9% at 4 to 5 months with median duration of 2.4 months at national level [7]. Studies conducted in Dar es Salaam found exclusive breast feeding among HIV positive mothers to be high from birth to 2 months (80%), decreasing rapidly at age 3 to 4 months 34% and lowest among infants of six months 13.3% with a median duration of 3 months [18,19].

Leshabari *et al* in their study reports that exclusive breast feeding beyond three months was found not customary or feasible with a reason that breast milk is not sufficient for child growth but at the same time they report further that mothers were to required to resume work outside their homes which necessitates leaving infants at home [22]. In a study conducted in Uganda comparing infant feeding among HIV positive mothers and the general population, HIV positive mothers were reported to give their infants pre-lacteal feeds which included non- human milk compared to HIV negative mothers [26]. Moreover, pre lacteal practice was reported to be prominent among HIV positive mothers with many children as opposed to their fellows with fewer children; in addition, HIV positive mothers are reported that they are less likely to breastfeed exclusively and practice mixed feeding which is the least safe infant feeding practice for children born to HIV positive mothers [26]. Interestingly, it is reported that if HIV positive mothers breastfeed infant exclusively, the risk of HIV or death is lowered [15]. In this case, for exclusive breast feeding to be successful, support on feeding choice and strong belief in the advantages of breastfeeding should be in place [30].

2.3 Recommended infant feeding Practices

WHO recommends that all infants regardless of their HIV status be breastfed exclusively for the first six months of life, although the infant feeding recommendations to mothers for HIV-positive infant differ from recommendations to mothers of HIV uninfected or of unknown HIV-status [23].

2.4: Recommended infant feeding practices in the context of HIV

The WHO recommends two infant feeding options for HIV exposed infants which are either exclusive breastfeeding or replacement feeding as explained below:

2.4.1: Exclusive breast feeding

Exclusive breastfeeding means to breast-feed infants for the first 6 months of life, introducing appropriate complementary food, and to continue breast feeding for the first 12 months of life. It is further stipulated that, upon reaching 12 months, if child is not HIV-infected or of unknown HIV status breastfeeding need to be gradually stopped. In cases where child is HIV-infected, breastfeeding is to be continued up to 2 years or longer, meanwhile ccomplementary foods are introduced at 6 months.[23]. Moreover, the recommendation is that, all known HIV-exposed infant that is if the mother is enrolled in PMTCT program, DNA- PCR testing is done to the infant at 4-6 weeks of age or first visit to diagnose HIV; when found reactive that is child is HIV positive, it is enrol in CTC/start ART while exclusive breastfeeding is continued [23,27].

2.4.2: Replacement feeding

Replacement feeding is the process of feeding a child who is not receiving any breast milk with a diet that provides all the nutrients the child needs until the child is fully fed on family food. Replacement feeding is the only effective way to prevent mother-to-child transmission of HIV after birth. However, replacement feeding is only recommended if it is acceptable, feasible, affordable, sustainable and safe (AFASS). Nonetheless, when AFASS criteria cannot be met, mothers are advised to exclusively breastfeed and avoid mixed feeding [23].

2.5. Factors influencing Exclusive breastfeeding

Various studies have found number of factors that have been known to influence EBF, the factors include:

2.5.1 Health workers

Hospitals through counselors play a major role in advocating recommended infant feeding practices and has been found to be of paramount importance during antennal visits and mostly soon after delivery in assisting women in their intended feeding choice, decision making as well as actual practice, which lead to lowered risk of mixed feeding [30].However, Doherty et al reports lack of inadequate support from health workers which result in women to change from their intended feeding option as a challenge faced by HIV positive women in sustaining exclusive breastfeeding [31].

2.5.2 Place of delivery

In a study done in Guatemala, it is reported that, place of delivery is associated with early initiation of breast feeding; that is mothers who gave birth at health facility initiate breast feeding early [32]. Moreover; the role of Baby Friendly Hospital Initiation (BFHI) was assessed in a study conducted in Nigeria and it was found that there was increased duration of exclusive breastfeeding of up to 75% from mothers who deliver at BFHI facility as compared to 35% from non BFHI facility [20]. Another study which was done in Ghana by Aidam et al reports further that delivery in maternity homes, private clinics, at home, or with Traditional Birth Attendant (TBA) or spiritual leaders poses a risk for not practicing exclusively breastfeeding within the first 6 months of life as opposed to delivering in government health facilities [33].

2.5.3 Mode of delivery

Studies have reported mode of delivery as one of the predictors of exclusive breastfeeding. In a study by Coovadia et al, on mother to child transmission of HIV-1 infection during exclusive breastfeeding in the first 6 months of life, among other factors vaginal delivery was a predictor of exclusive breastfeeding [9]. Furthermore, in a study done by Zanardo et al, to determine whether elective caesarean delivery have negative effect on breastfeeding they report that, emergency and elective caesarean deliveries are similarly associated with a decreased rate of exclusive breastfeeding compared with vaginal delivery [34] In addition, Maru and Haidaru reports in their study that mothers who delivered by caesarean section were 80% times less likely to practice exclusive breastfeeding [39].

2.5.4 Knowledge of mothers

Attending an urban clinic was found to be the strongest predictor of knowledge on exclusive breastfeeding by mothers with a reason that the health care staffs in urban clinics have better education which is imparted to mothers [21]. Moreover, de Paoli et al assert that the work of health staff in urban setting is better supervised and staffs are exposed to more training opportunities than their rural counterparts hence impart proper knowledge to their client [21]. Furthermore, Aidam et al asserts that health workers are responsible for health education including infant feeding practices and counseling in pre and postnatal period in health facilities hence imparting knowledge to mothers on infant feeding practices [33]. Mothers have been reported to know various means on how HIV is transmitted, this include wounds on the breast hence knowledge that breastfeeding pose higher risk of infecting infant through breast milk. It is further reported that due to the knowledge imparted to them by health workers, some women thought adherence to exclusive breastfeeding guideline eliminate chance of transmitting HIV to the infant while others were reported to believe that breastfeeding always leads to HIV transmission to an infant [36]. Thus, greater part of knowledge of HIV transmission and MTCT are a result of received counseling [37].

2.5.5 Work

In a study conducted in Guatemala on determinants of optimal breastfeeding it has been reported that mothers who worked outside the home are less likely to breastfeed exclusively compared to mother who do not work away from home, thus not working outside the home is important predictor of exclusive breast-feeding [32]. Additionally, Leshabari et al in their study reported that before infant reaches six months mothers had to leave their babies and go to work to supplement family income due to economic difficulty hence failure to practice exclusive breastfeeding [39].

2.6 Barriers for practicing exclusive breastfeeding

A range of studies have found number of factors that have been known to hinder exclusive breastfeeding. Some of these are disclosure of HIV status, economic factors, mother's age, perception of mothers on sufficiency of breast milk and social cultural influence.

2.6.1 Disclosure of HIV status

Disclosure of one's HIV status to sexual partners is highly emphasized for various reasons including increased opportunities for social support. Furthermore, it has been reported that HIV status disclosure to sexual partner is associated with other positive outcome including, acceptance, kindness, strengthening of relationship and decreased anxiety and depression [38].

Despite the benefits accompanying disclosure, still low rates have been reported among pregnant women tested in antenatal care (ANC) in Sub Saharan Africa [38]. In a study done by Leshabari and colleagues demonstrated that HIV-positive mothers feared to disclose their HIV-positive status during breast feeding due to stigmatization; the reason being the strong cultural position that breast feeding is the only acceptable infant feeding method and the only way to fulfill ideals of being good mothers[22]. In circumstances when the husbands are not aware of the HIV status of their wives, they have been

reported to impose on inappropriate infant feeding practices including mixed feeding [39]. Moreover, nondisclosure of HIV status to partners and close members of the family like infant's grandmother lead to non-adherence to exclusive breastfeeding; this is because they have the big role to decide on how infant is to be fed, in addition; studies has been reported that women who disclose their HIV status to their spouses are less likely to practice mixed feeding. [22,39]. Fear of disclosing one's HIV status to spouse comes as a result of what other women have seen to their fellows as a result of disclosure since it sometimes lead to bad outcomes like abandonment, which is closely tied to loss of economic support from partners [39]. Whereas; low economic status of women and their economic dependence on husbands make the life of women worse if divorced which results in raising the child alone and this leads to non disclosure which in turn lead to detrimental feeding practices of infants [39].

2.6.2 Socio-cultural influence

A range of factors have been reported to hinder exclusive breastfeeding; a study report cultural norms of giving infants concoctions and customs such as giving water to every stranger entering the house including newborn [21]. Other studies have reported belief that after birth the infant becomes exhausted and thirst hence need to be rehydrated by fluids mainly water as a result these lead to non adherence to exclusive breast feeding [20-22,33]. However; there is a common practice of feeding infant water sometimes early before breastfeeding with a belief that the baby feels thirsty and breast milk does not quench thirst, belief which is contrary to observational studies that have found breast milk adequate to hydrate infants even in tropical setting hence no additional liquids are required by the infant [40,11]**.**Study from West Africa reported cultural practice of giving infants herbal mixture for their protection and also that breast milk does not contain adequate nutrients for the growth of the young infant which make it necessary to give infant extra food before the recommended age [41]. Furthermore, a study from Zimbabwe reports cultural norm of introducing liquids and solid foods very early to an infant which pose the infant to the great risk of getting HIV [15].

Another study reports that family members and social pressure to introduce other liquids and to mixed feed to infant has been known to have a strong influence on infant-feeding practices, particularly for young mothers [37]. In Tanzania studies reveal that the use of pre lacteal is a norm in both rural and urban settings with belief that it calms the crying baby [43]. A study in Ethiopia has reported that apart from close family members, influence like that of husband and neighbors imposition, have also been reported to pressure mothers to practice mixed feeding, whereas mothers reported increasing pressure from family members to introduce other liquids, and most importantly the fear of being uncovered as HIV positive as reasons for non adherence to exclusive breastfeeding [39].In countries where breastfeeding is a norm, women breastfeed because of fear of stigma and other negative repercussion, this makes it difficult for one to decide on exclusive replacement feeding even when she is capable of doing so since formula feeding is an indication and alerts to the community that one is HIV positive [40,44,45].

2.6.3 Economic factors

Doherty *et al* report that in order to cope with family demand, at some instances mothers had to go out look for job or do household chores such as collecting water and this led to non adherence to EBF; the same is reported by Leshabari *et al* asserting that mothers are expected to leave their children and go to work in order to supplement family income due to life being expensive [22,42]. Lack of funds to purchase infant formula feeds, poor hygienic conditions and risk of social repercussions were more commonly reported as reasons for mothers to opt for breastfeeding rather than exclusive replacement feeding [29,46]. In a study done in Kenya regarding nutrition status and feeding practices of infants born of HIV positive mothers; Ochuma *et al* reports that despite the knowledge that exclusive replacement feeding can prevent infants from acquiring HIV, due to the high price of infant formula, it is difficult to practice exclusive replacement feeding since sustaining supplies is the challenge as a result of the low income to most mothers in populations hence mothers opt to breastfeed though not exclusively [47]. The study further reports that, in situations where mother's household income was high, they were

more likely to practice exclusive replacement feeding which is safest way to prevent infant from HIV infection [47].

2.6.4 Mothers age

Different studies have found that it is difficult to practice exclusive breastfeeding unless the value of it is known to community members, specifically family members. The difficulty is reported to be worse among young or adolescent mothers who frequently depend on advice from families members to practice infant feeding, in addition, for adolescent mothers the opinions on infant feeding from families is highly valued especially in circumstances where they depend on the families for financial and emotional support [48,49]. In their study, Della *et al* report that duration of exclusive breastfeeding increases as the age of the mother increases thus women with older age are more experienced and can practice exclusive breastfeeding compared to the ones with younger age [48]. Furthermore, Thairu *et al* in their study assert that, it is difficult for adolescent mothers to decide on her own how to feed the baby by saying "When adolescent mothers express disagreement, families may insist on their own decisions or, less frequently, implement their preferred feeding practices without the mother's consent. Accommodating the family's wishes may be an adaptive coping strategy as adolescent mothers struggle with the enormous challenge of parenting in the midst of their own development"[49] In a study conducted in Sweden by Hornell *et al,* it is reported that younger women are less likely to breastfeed compared to older mothers, the fact which they attributed to lack of experience in breastfeeding by these younger mothers while a study in Nigeria reports younger mothers being more likely to practice mixed feed unlike older mothers because of their dependency on older family members advice for child rearing [50,41].

2.6.5 Perception of mothers

In study done by Bentley *et al* on perception of the role of maternal nutrition in HIV positive breast feeding women, it was reported that most women perceived exclusive breastfeeding as a factor that may increase the progression of HIV [46]. Other studies have reported that switching to formula feeding as early as one month after birth was a result of mothers perception that they have inadequate milk supply [49,46,52].

CHAPTER THREE

METHODOLOGY

3.1 Study area

The study was conducted in Ilala Municipal which is one of the three Municipalities in Dar es Salaam region with an estimated population of 830,799 projected from 2002 census, with annual increase rate of 4.6% in 2011**.** The Municipal has 26 wards, 102 streets and 156 health facilities. Health service delivery in Ilala Municipal Council are based on curative, preventive and promotive health care and rehabilitative services provided by either private or government owned health facilities. These include 8 hospitals, 12 health centers and 136 dispensaries (government, private and army). At the time of this study, there were 48 CTCs in Dar es Salaam of these 19 in Kinondoni, 17 Ilala and 10 Temeke. The Ilala Municipal was chosen purposeful as it is the second Municipal with highest number in CTCs salaam in Dar es Salaam. Kinondoni district which is have the highest number of CTC in Dar es Salaam have had similar studies done in it hence reason to choose Ilala

The study was conducted in three health facilities namely: Amana Hospital, which is the referral hospital in the Ilala Municipal, Amtulabhai Karimjee Clinic- a Health Centre which is among the largest clinics in Dar es Salaam city located at Mnazi Mmoja area and Buguruni Health centre located at Buguruni area and one of the highly populated wards.

3.2 Study population

The study population comprised of HIV positive mothers who were 18 years or older with infants aged 6–12 months at the time of the study attending CTC and RCH.

3.2.1. Inclusion criteria

All HIV positive mothers having infants aged 6-12 months.

3.2.2. Exclusion criteria

- HIV positive mothers with very sick children
- Sick HIV positive mothers who brought their children at the clinic

3.3. Study design

This was cross-sectional study design which employed both quantitative and qualitative methods in data collection. In this type of study design, either the entire population or a subset thereof is selected, and from these individuals, data are collected to help answer research questions of interest. It is called cross-sectional because the information which is gathered represents what is going on at only one point in time. The advantage of this study design is that in general it is quick and cheap. Since there is no follow up, less resource are required to conduct the study. The disadvantage of this study design is has been stated that: since exposure and disease status are measured at the same time it is not possible to determine the direction of the association. In other words, it is not known if the exposure preceded the disease and is therefore a potential cause of disease [57].

3.4 Sampling technique

Purposive sampling technique was used to get health facilities with high attendance in the Municipality where Amtulabhai Karimjee Clinic, Buguruni Health centre and Amana Hospitals were selected. These government health facilities were first and foremost selected on the basis of the availability of CTC, PMTCT and RCH services for the mothers and exposed infants and also due to large number of client flow. The three health facilities were purposively selected in consultation with the Ilala Municipal Research Coordinator.Thereafter, convenient sampling procedure was used to select study participants; which mean that all HIV positive mothers with infants aged 6-12 months visiting health facility for vaccination or those visiting care and treatment clinic for treatment or follow up, were eligible to participate in the study.

3.4.1. Quantitative method

Questionnaires with closed and open ended questions were used by researcher and research assistants to interview mothers. Before commencing the interview, mothers were approached by CTC and RCH clinic staffs that were nurses, informed of the study and asked to participate voluntarily. Upon agreeing to be interviewed the mothers were interviewed until the required number of study respondents was reached. A total number of 200 mothers which was the requirement were interviewed.

3.4.2. Qualitative method

A semi-structured interview guide containing questions to explore infant feeding practices was used. The tool was adopted from qualitative studies infant feeding tools and modified [36]. Questions for in depth interview which were in English were asked in Kiswahili as it is the national language by principal investigator. The in-depth interviews which aimed at drawing out individual perceptions, norms, experiences and barriers with infant feeding practices were conducted. All HIV positive mothers with infants aged 6-12 months who were eligible to participate in the study, were informed about the aim of the study. Informants for in-depth interviews were selected conveniently with consideration that they met the eligibility criteria and willing to participate since the interview took longer time unlike in quantitative data collection method. Five mothers were recruited, two from Amana Hospital, two from Mnazi Mmoja Health Center and one from Buguruni Health Centre. These individual interviews were tape recorded and written (note taking). The interviews were conducted until saturation or point of redundancy of information was reached (meaning that when there was no new information which was being generated from the interview no more interviews were conducted).

The qualitative data helped in getting information which facilitated provision of broader view, and to facilitate the interpretation of the quantitative data. The quantitative and

qualitative data were analyzed differently and thereafter combined during the presentation and interpretation of the results.

3.5. Sample size

This was determined by using the formula: Where

$$\mathbf{n = \frac{z^2 p(100-p)}{\varepsilon^2}}$$

n = the required minimum sample size

p= estimated prevalence of HIV positive mothers who breastfeed exclusively up to 6 months of infants age (which is 13% as per study by Young et al and Manji, KP[18,19])

ε = margin of error on p (set at 5)

z= standard normal deviate corresponding to 95% confidence level (=1.96)

$$\mathbf{n = \frac{(1.96)^2 13\ (100 - 13)}{(5)^2} = 174}$$

10% was added to cater for non respondent individuals.

Adjusting for non – response = n/ (1-L) which is 174/0.9 = 193 figure rounded to be 200.

3.6 Definition of terms

Exclusive Breastfeeding

Giving infant breast milk only and prescribed medicine, vitamin/mineral drops, syrup, but no water, other liquids, or food to the infants for the first six months of life

Mixed Feeding

Giving the baby some breast feeds, and some artificial feeds, either milk or cereal or other foods.

Prelacteal feeding

Means administration of any food or drinks before the first breastfeed.

HIV Exposed Infants

Refer to those infants born by HIV infected mothers

Replacement Feeding

Giving an infant who is not receiving any breast milk a nutritionally adequate diet until the age at which the child can be fully fed on family food.

3.7. Data collection tools

Quantitative data collection was conducted using a structured questionnaire to obtain all of the required information. These questionnaires were developed in English thereafter translated in Kiswahili for easy use since the majority of the target population speaks Kiswahili, which is the national language. The questions were designed to allow mothers to express their ideas on various issues related to exclusive breastfeeding.

Qualitative data collection was conducted using semi structured in depth interview concerning infant feeding practices.

3.8 Variables

3.8.1 Dependent variable

Exclusive breastfeeding was the dependent variable and measured as a proportion of mothers who breastfed their infants exclusively for the first six months of life. Mother of infants aged 6-12 months were asked various questions to determine if they exclusively breastfed their infants or not.

3.8.2 Independent variables

The independent variables in this study were socio demographic characteristics like age, education level, marital status, parity and occupation, .Other variables included knowledge of mothers on exclusive breast feeding, beliefs, perception, socio-cultural influence in infant feeding, disclosure of HIV status, place of delivery and mode of delivery.

3.9. Training of Research Assistants

Three female research assistants were recruited for data collection exercise. Onsite training was conducted for the research assistants with the aim of making them understand what was to be done and also to familiarize with the aim of study and terms used in infant feeding. During the training they were taught on ethics of the study.

3.10. Pre-testing of Questionnaires

The questionnaire for data collection was pre tested at Magomeni Health Centre in Kinondoni Municipal where the study was not going to be conducted. The pretesting was done to ensure that questions were clear and allowed gathering of information needed for the study. The questions which showed ambiguity during pre testing were revisited and modified as required; moreover more questions were added to cater for information needed for the study.

3.11. Procedure of collecting data

Information from respondents was collected using the questionnaire. Mothers were first asked for their consent to participate in the study. Upon agreeing to participate in the study, a research assistant and principal investigator administered a questionnaire on current and previous (recalled) infant feeding practices and responses were recorded. A total of 200 women were interviewed; where each interview took about 10 to 15 minutes depending on mother's speed of replying and calmness of the infant. For qualitative data collection the principle investigator interviewed 5 participants, tape-recorded and also responses were written in a note book.

3.12. Data Processing and analysis

Data was edited for accuracy, readability, consistence and completeness; thereafter it was coded and entered into a computer using software SPSS (Statistical Package for the Social Sciences) version17.0. First, Univariate analysis was done to determine various proportions including: the proportions of HIV positive mothers, who practiced exclusive breastfeeding, mixed feeding, replacement feeding and other types of infant feeding. Bivariate analysis was done to measure association between the dependent variable which is exclusive breastfeeding and the independent variables. Variables which showed significant association ($p<0.05$) to the dependent variable (EBF) were further analyzed in logistic regression model to identify factors that were true associated with exclusive breastfeeding.

Data collected from in-depth interview was transcribed and translated from Kiswahili to English. The interview (transcribed text and written notes) was read several times to clear any ambiguity. Data was then coded and themes were then presented according to their relation to study objectives.

3.13. Ethical considerations

Ethical clearance was sought from Muhimbili University of Health and Allied Sciences (MUHAS) at the Directorate of Research and Publications. Thereafter; research permit was sought from the office of Municipal Medical Officer of Ilala who gave permission for research to be conducted at three health facilities (Amtulabhai Karimjee Clinic, Buguruni health centre and Amana Hospital). Due to the extreme sensitivity of the research topic ethical issues were strictly considered. Participants were asked to participate voluntarily and were also free to withdraw from the study at any time. Participants were assured of anonymity and confidentiality throughout the study. The informed consent was sought from study participants prior to their participation in the study and the aim of the study was well explained to them. Most participants gave their consents to participate in the study. Two mothers refused to participate in the study when they were approached by research assistant with a reason that they had to hurry home and prepare food and two withdrew because babies were crying consistently. In order to ensure confidentiality and anonymity, no participant name was recorded; instead each participant was identified by a number during the interview.

3.14 Study Limitations

This study had a number of limitations. The study subjects were those attending CTC and RCH, which may not be a representative of the general population of HIV positive mothers with infants aged 6-12 months. Moreover, there is possibility that the responses of the study subjects were biased. The responses as regards to infant feeding practices could have been a result of social desirability. This was overcome by explaining the purpose of the study clearly to the study participants and by assuring them that no matter the type of feeding a mother practiced, no negative consequences will befall her as a result of her practice. Moreover; recall bias as to what a mother could have fed the baby

throughout infancy period. However, this limitation was overcome by reducing the time to one year and all mothers were able to recall well what the infant was fed from birth to time of data collection.

CHAPTER FOUR

RESULTS

This chapter presents the findings from 200 respondents, of these 28% were from Amana Hospital, 51% from Amtulabhai Karimjee Clinic (famously known as Mnazi Mmoja) Health Centre and 21% from Buguruni Health Centre.

4.1. Socio-demographic characteristic of the study population

A total of 200 HIV positive mothers with infants aged 6 – 12 months attending Care and treatment clinic (CTC) and Reproductive and child health clinic (RCH) in the three health facilities of Ilala Municipality were interviewed. Their ages ranged between 18 to 44 years, with a mean age being 30.6 (SD=5.4). Among these 126 (63%) were married, 16 (8%) living with partner (cohabiting), 36 (18%) single, 15 (7.5%) divorced and 7 (3.5%) widows. The parity of the respondents: 22% were primiparous while 78% were multiparous as summarized in table 1. Most of them 148 (74 %) had finished primary school, 34 (17%) finished Secondary school, 4 (2%) had finished college while 14(7%) had no formal education. Majority 99 (49.5%) were housewives, 80 (40%) businesswomen, 18 (9%) employed and the remaining 3 (1.5%) farmers as shown in table 1.

Infants were of 6-12 months; their mean infant age at the time of interview was 8.6 months (SD =2.2). Out of these 93 (46.5%) were boys and 107 (53.5%) girls.

Table 1: Socio- demographic characteristics of study participants (n=200)

Variables	Response (n)	Percentage of respondents
Age group (in years)		
18-24	30	15
25-31	79	39.5
32-38	80	40
≥ 39	11	5.5
Marital status		
Married	126	63
Single	36	18
Divorced	15	7.5
Cohabiting	16	8
Widow	7	3.5
Education level		
No formal education	14	7
Primary education	148	74
Secondary and above	38	19
Occupation		
Employed	18	9
Businesswoman	80	40
Farmer	3	1.5
Housewife	99	49.5
Parity		
Primiparous	44	22
Multiparous	146	78

4.2 Infant feeding practices among study participants

Infant feeding practices were assessed; these included exclusive breastfeeding, mixed feeding, replacement feeding and prelacteal feeding. Data shows that mothers opted for one or the other practice for different reason. In this study, data shows that majority of infants 188 (94%) were breastfed while few 6% were never breastfed. Results on various infant feeding practices are given as follows:

4.2.1. Exclusive breastfeeding.

Mothers were categorized in two groups: first, as practicing exclusive breastfeeding if the infant was fed on breast milk only for the first six months of life, and second not practicing exclusive breastfeeding if the mother gave infant breast milk and other foods/liquids, or did not breastfeed exclusively for the first six months of life. Data shows that exclusive breastfeeding (EBF) was practiced by 93 (46%) of the mothers, the remaining mothers 107 (54%) did not breastfeed exclusively as shown in figures 2.

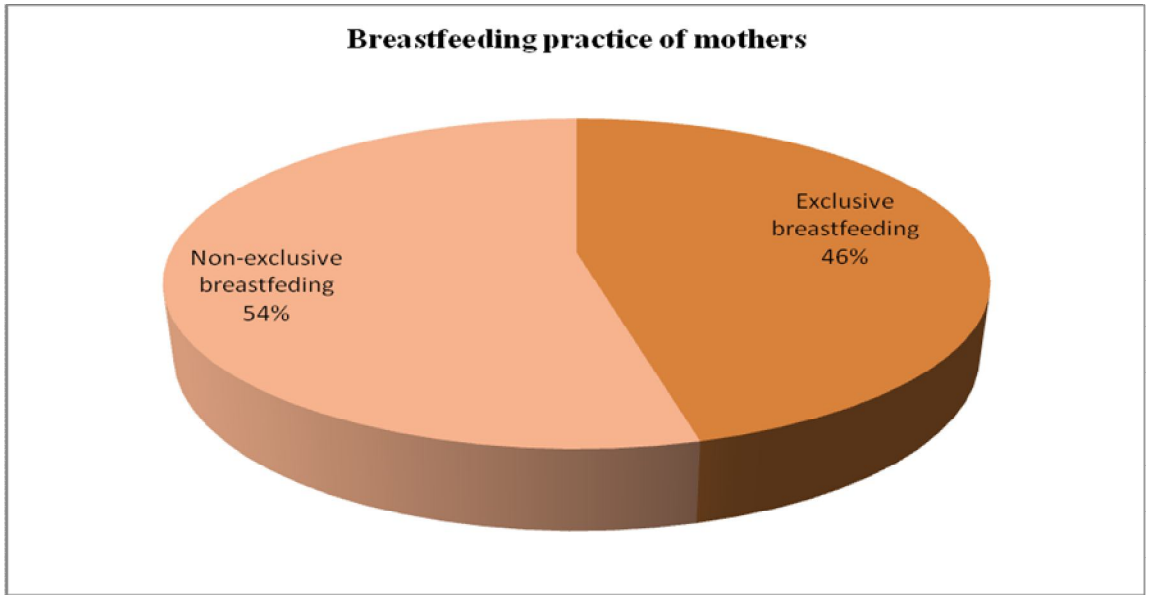


Figure 2: Breastfeeding status among HIV exposed infants

The rates of exclusive breastfeeding were high at the beginning of the baby's life after birth, data shows that most of infants (94%) were exclusively breastfed during first month, however; these rates started to decline as the age of infant increases as summarized in figure 3.

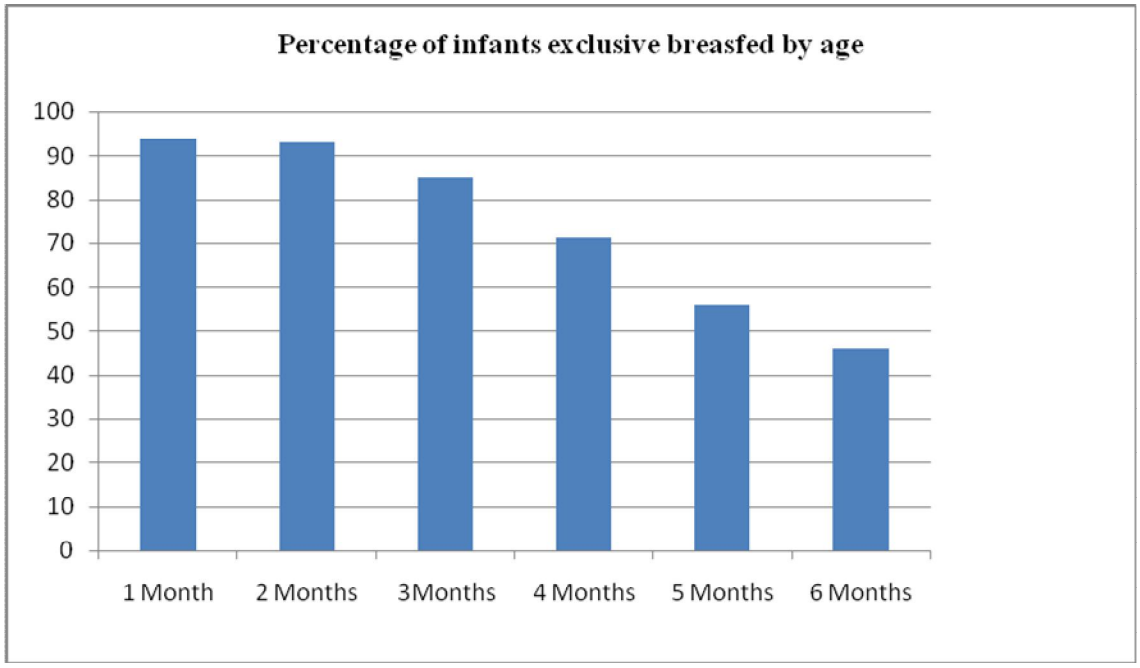


Figure 3: Percentage of infants exclusively breastfed by age

4.2.2 Replacement Feeding

Only few infants 12 (6%) were never breastfed. Mothers opted for replacement feeding (ERF), where the baby was given either infant formula or cow's milk.

4.2.3 Mixed feeding

Out of 200 respondents, 28 (14%) gave their infants breast milk and other foods or liquids before six months of infant's life. These other foods were reported to be porridge, juice, tea, milk, mashed potatoes, soft *ugali* or rice.

4.2.4 Other feeding practices

This category include mothers who gave their infants liquids or food before initiating breastfeeding (prelacteal feeding) and mothers who weaned their infants early before six months (early cessation of breastfeeding). Data shows that out of 67 infants who fell in this category; 13 were prelacteal fed while the remaining 56 were stopped from breastfeeding (early cessation) before six months.

Table 2: Distribution of feeding practices among HIV positive mothers (n=200)

Feeding Practice	Number	Percent
Exclusive breastfeeding	93	46
Exclusive Replacement Feeding	12	6
Mixed Feeding	28	14
Other feeding*	67	34
Total	**200**	**100**

*Other feeding include prelacteal and early cessation of breastfeeding

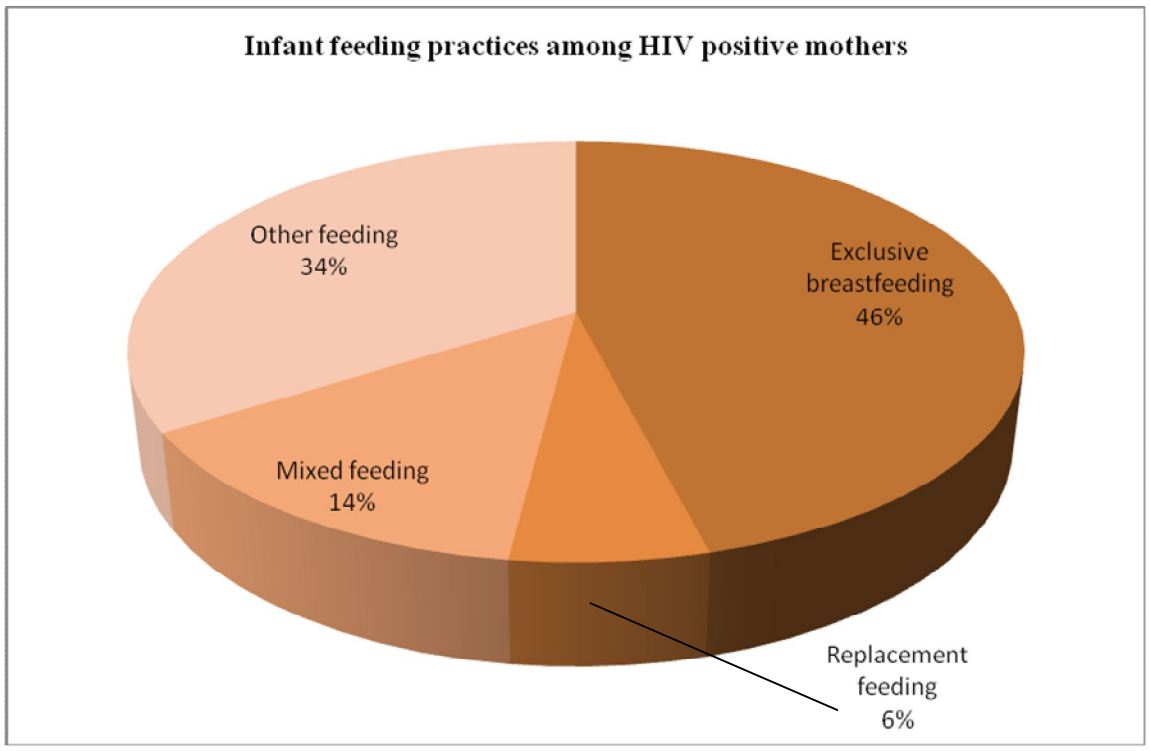


Figure 4: Showing Infant feeding practices

4.3 Factors Influencing Exclusive Breastfeeding

Diverse factors were found to influence exclusive breastfeeding as will be presented. The socio-demographic data were analyzed, where findings show that exclusive breastfeeding was practiced more by mothers who were at age group of 25-31 by 38.7%, as compared to other age groups. The observed difference was not statistically significant (p= 0.43). Other parameters of socio-demographic characteristic: education level, marital status, Occupation and parity showed no statistical significance to exclusive breastfeeding as shown in table 3

Table 3: Rate of exclusive breastfeeding and non-exclusive breastfeeding practice by socio-demographic characteristics (n=200)

Variables	Response	Exclusive breastfeeding		χ^2	P- value
		Yes (%)	No (%)		
Age of mothers	18-24 years	18 (19.4)	12 (11.2)		
	25-31 years	36 (38.7)	43 (40.2)	2.74	0.43
	32-38	34 (36.60	46 (43)		
	39 +	5 (5.4)	6 (5.6)		
Education level	No formal educ.	7 (7.5)	7 (6.5)		
	Primary educ.	69 (74.7)	79 (73.8)	0.11	0.94
	Secondary educ. +	17 (18.3)	21 (19.6)		
Marital Status	Married	59 (63.4)	67 (62.6)		
	Single	14 (15.1)	22 (20.6)		
	Divorced	8 (8.6)	7 (6.5)	3.67	0.44
	Cohabiting	10 (10.8)	6 (5.6)		
	Widow	2 (2.6)	4 (4.7)		
Occupation	Employed	7 (7.5)	11 (10.3)		
	Farmer	2 (2.2)	1 (0.9)	1.13	0.76
	Business	36 (38.7)	44 (41.1)		
	Housewife	48 (51.6)	51 (47.7)		
Parity	Primiparous	23 (24.7)	21 (19.6)	0.75	0.39
	Multiparous	70 (75.3)	86 (80.4)		

4.3.1 Knowledge on Exclusive breastfeeding

Mothers were categorized in two groups, first group: that is having knowledge on EBF if a mother could define EBF properly (that is how it is done and duration is), second group: not having knowledge if she could not define it properly. In this regard, mothers who were able to define it as breastfeeding only without any additional food or liquid for first six months of infant's life were considered as having knowledge on EBF. The results show that majority 158(79%) knew what EBF is, with few (11.5%) though managed to defined how it is done correctly, missed and reported the duration of EBF as four and three months, whereas (9.5%) reported not knowing what it is as indicate in table 4

Table 4: Knowledge of study participants on EBF (n=200)

Response	Number	Percentage
Breastfeeding infant without giving any food or liquid for the first six months.	158	79
Breastfeeding infant without giving any food or liquid for the first four months	19	9.5
Breastfeeding infant without giving any food or liquid for the first three months	4	2
I don't Know	19	9.5

However, for those who ever breastfed their infants, the results show that majority 148(78.7%) knew what EBF is, with few (11.6%) though managed to defined how it is done correctly, reported the duration of EBF as four and three months, whereas (9.6%) reported not knowing what it is as indicate in table 5

Table 5: Knowledge of mothers who ever breastfed their infants on EBF (n=188)

Response	Number	Percentage
Breastfeeding infant without giving any food or liquid for the first six months	148	78.7
Breastfeeding infant without giving any food or liquid for the first four months	19	10
Breastfeeding infant without giving any food or liquid for the first three months	3	1.6
I don't Know	18	9.6

In regard to mothers who practiced breastfeeding, exclusive breastfeeding showed significant associations with: mother believing that breast milk is sufficient for infant for the first six months of life ($p<0.001$) and having knowledge on exclusively breastfeeding (that is the duration that mother is required to breastfeed her baby without mix feeding) ($p = 0.001$). Moreover, significant association to exclusive breastfeeding was present with mothers being shown attachment of the infant to the breast ($p = 0.02$) and disclosure of one HIV status to husband/spouse ($p=0.01$). Significantly, those who were influenced by health workers practiced exclusive breastfeeding ($p< 0.001$). Although ANC attendance exposed mother to breastfeeding education, results show that it had no significant association with practicing exclusive breastfeeding ($p= 1.00$). Husbands influence on Infant feeding had no significant association with EBF **(**$p = 0.08$) as presented in table 6.

Table 6: Rate of Exclusive Breastfeeding practice by some variables in the sample characteristics (n=188)

Variable	Response	Exclusive breastfeeding status		χ^2	P-value
		Yes (%)	No (%)		
ANC attendance	Yes	88(98.9)	98(99)	0.00	1.000
	No	1(1.1)	1(1)		
BM sufficient for 6 months	Yes	71(79.8)	49(49.5)	18.61	**<0.001***
	No	18(20.2)	50(50.5)		
EBF knowledge	Yes	80(89.9)	68(70.1)	11.17	**0.001***
	No	9 (10.1)	29 (29.9)		
Disclosure	Yes	80(89.9)	89(89.9)	0.00	0.99
	No	9(10.1)	10(10.1)		
Disclosure to husband	Yes	60(69.8)	50(55.6)	5.56	**0.01***
	No	26(30.2)	45(47.4)		
Husband influence on infant feeding	Yes	7(7.9)	16(16.2)	2.90	0.08
	No	82(92.1)	83(83.8)		
Knowledge of BF benefits	Yes	36(42.9)	51(57.3)	3.60	**0.05***
	No	48(57.1)	38(42.7)		
Influence of health worker on EBF	Yes	71(79.8)	43(43.4)	25.93	**< 0.001***
	No	18(20.2)	56(56.6)		
Shown attachment	Yes	72(80.9)	66(66.7)	4.86	**0.02***
	No	17(19.1)	33(33.3)		
BF problem	Yes	3(3.4)	14(14.1)	4.39	**0.01****
	No	86(96.6)	85(85.9)		
Place of delivery	Yes	84(94.4)	97(98)	1.74	0.41
	No	5(5.6)	2(2)		

BM-Breast Milk, BF- Breastfeeding, ANC- Antenatal clinic, * statistically significant, ** Fisher's exact test

Most of the study respondents (90%) reported disclosing their HIV status to various people including husbands/spouses, one's own mother, aunts, and siblings; some disclosed to one person while others disclosed to more than one person. More than half (65.7%) of the study participants reported disclosing their HIV status to husband/spouse. Though, disclosure of one's HIV status showed no significant association to exclusive breastfeeding (p=0.99), disclosure of HIV status to one's husband/spouse was statistically significant to exclusive breastfeeding (p=0.01).

4.3.2 Antenatal clinic attendance and Breastfeeding education

Almost all (99%) of the mothers who were interviewed had attended antenatal clinic during their pregnancy, with only (1%) not attending. Those who attended antenatal clinic were offered HIV counseling and testing. Furthermore, most (90.5%) reported being given health education which included topics on breastfeeding. Respondent mentioned being taught one or more than one topics and these included benefits of breastfeeding infants as reported by (47%), how to position the baby when breastfeeding and attachment of the baby to the breast (26%), benefits of exclusive breastfeeding in the context of HIV (69%), management of breast problem (24%) and expressing breast milk (3%) . Respondent indicated that breastfeeding education was given mainly by health workers who are either doctors or nurses but mostly nurses at antenatal care clinics or labour wards. Few (9.5%) of the respondents reported not getting breastfeeding education during their antenatal care visit though they heard news from either friends, relatives or through media.

In logistic regression analysis, results showed that those who had knowledge on exclusive breastfeeding were 6 times more likely to breastfeed exclusively than the ones who had no knowledge on exclusive breastfeeding (Adjusted OR = 6.02, 95% CI= 1.78-20.30). Furthermore; those mothers who believed that breast milk only is sufficient for infant for six months of life were 2.8 times more likely to exclusively breastfeed their infants than those in the referent group (Adjusted OR = 2.8, 95% CI= 1.18-1.19). The results are summarized in table 7.

Table 7: Logistic regression on the factors influencing exclusive breastfeeding and non exclusive breastfeeding

Variable	Response	Crude		Adjusted	
		OR (95%CI)	P value	OR (95%CI)	P value
Age	18-24	1		1	
	25-31	1.8 (0.44-7.25)	0.40	0.57(0.23-1.37)	0.21
	32-38	1.02(0.29-3.65)	0.96	0.45(0.18-1.10)	0.08
	≥ 39	0.86 (0.24-3.07)	0.87	0.56(0.13-2.34)	0.43
Education level	No formal educ.	1		1	
	Primary educ.	1.23(0.36-4.21)	0.94	2.25(0.41-12.2)	0.34
	Secondary +	1.07(0.52-2.20)	0.83	0.84(0.27-2.53)	0.90
Marital status	Married	1		1	
	Single	0.72(0.33-1.53)	0.40	1.82(0.33-9.91)	0.48
	Cohabiting	1.89(0.64-5.52)	0.24	1.20(0.19-7.34)	0.84
	Divorced	1.29(0.44-3.79)	0.63	3.76(0.54-26.16)	0.18
	Widow	0.45(0.08-2.42)	0.35	2.37(0.33-16.88)	0.38
Occupation	Employed	1		1	
	Farmer	3.14(0.23-41.50)	0.38	2.46(0.17-34.66)	0.50
	Business	1.28(0.45-3.65)	0.63	1.24(0.41-3.72)	0.69
	Housewife	1.47(0.53-4.12)	0.45	1.36(0.46-3.97)	0.57
Parity	Primiparous	1		1	
	Multiparous	0.74(0.38-1.45)	0.38	0.66(0.23-1.84)	0.43
ANC attendance	No	1		1	
	Yes	1.15(0.07-18.68)	0.92	0.73(0.03-13.55)	0.83
BM sufficient for 6 months	No	1		1	
	Yes	0.21(0.11-0.41)*	0.00	2.84(1.18-1.91)*	0.01
EBF Knowledge	No	1		1	
	Yes	0.25(0.11-0.57)	0.00	6.02(1.78-20.30)*	< 0.001

* Statistically significant, BM- breast milk; EBF- exclusive breastfeeding, ANC-Antenatal care

Table 8 summarizes further various factors which are associated with exclusive breastfeeding. Although disclosure of HIV status to husband/spouse, health workers influence on breastfeeding, mother being shown attachment, and mother having her own decision on how to feed her infant were associated with exclusive breastfeeding in bivariate analysis, only health workers influence and mother having decision on infant feeding retained significant association in multivariate logistic regression analysis. The results showed that mothers who had decision on infant feeding practices were 3 times more likely to practice exclusive breastfeeding than the referent group (Adjusted OR = 3.1, 95% CI =1.13-8.50) while mothers who were influenced by health worker on breastfeeding practice were 5.2 times more likely to practice exclusive breastfeeding than those who were not influenced by health workers (OR= 5.2, 95% CI = 2.72- 9.97). However, mothers who had breast problems were 2.8 times less likely to practice exclusive breastfeeding (OR = 0.345, 95 CI = 0.078-1.529**).**

Table 8: Logistic regression on the factors associated with exclusive breastfeeding

Variable	Response	Crude		Adjusted	
		OR(95% CI)	**P value**	**OR(95% CI)**	**P value**
Disclosure to husband/spouse	No	1		1	
	Yes	0.48(0.26-0.88)*	0.01	1.45(0.58-3.58)	0.41
Husband/spouse influence on EBF	No	1			
	Yes	2.07(0.85-5.06)	0.10	0.87(0.75-3.04)	0.83
Health worker influence on EBF	No	1		1	
	Yes	0.20(0.10-0.38)*	0.00	0.18(0.07-0.46)*	<0.001
Shown attachment	No	1		1	
	Yes	0.36(0.18-0.69)*	0.02	1.27(0.49-3.28)	0.06
Breast problem	No	1			
	Yes	3.07(0.96-9.79)	0.15	0.34(0.07-1.52)	0.09
Knowledge on benefits of BF	No	1		1	
	Yes	1.41(0.79-2.52)	0.24	0.40(0.18-6.84)	0.30
Mother's decision on IF[a]	No	1		1	
	Yes	3.40(1.67-6.93)	0.00	3.10(1.13-8.50)*	0.02

*Statistically significant, [a]Infant Feeding

4.3.3 Place of delivery, mode of delivery and initiation of breastfeeding

Data shows that most (96.5%) of deliveries took place at health facilities while few (1.5%) and (2%) took place at home and on the way to health facility respectively. Majority of the respondents (86.5%) had normal deliveries which were assisted by either nurses or doctors while (13.5%) had caesarean section.

Among 188 respondents who reported to have breastfed their infants (72%) reported initiating breastfeeding within an hour after delivery. Forty (21%) reported delaying for more than one hour while few (7%) delayed for more than a day. Early initiation; that is within one hour was done mostly by those who had vaginal delivery by 69%, while for all who delayed (more than one hour and more than a day) 43% had caesarean section.

4.4 Barriers for practicing exclusive breastfeeding

Mothers who practice exclusive breastfeeding, especially those with HIV/AIDS encounter various barriers. The reported barriers by mothers include:, fear of infecting the baby, lack of disclosure of mother's HIV status, health workers messages in regard to exclusive breastfeeding, breast problem, poor knowledge on importance of breastfeeding and exclusive breastfeeding. These were found to hinder the practice even in circumstances where the mother opts to practice exclusive breastfeeding. The findings from quantitative and qualitative are presented to show the similarity and contradiction of data obtained from the two data collection method.

4.4.1 Lack of knowledge on importance of breastfeeding and EBF

Most respondents reported having knowledge on breastfeeding and exclusive breastfeeding, while few had poor or no knowledge. The knowledge was mainly gained from health facilities during antenatal and post natal clinic visits. Most of the infant feeding education which leads to knowledge is acquired from the health workers at health facilities, as this mother says during in-depth interview:

*"Whenever you attend antenatal clinic, they (health workers) teach you about breastfeeding and emphasize on exclusive breastfeeding practice. When you deliver and start attending CTC, they will keep on teaching you about breastfeeding, asking if you are breastfeeding and if you do; they will enquire if you practice exclusive breastfeeding" (**Informant, no.1, 34 years old, no formal education)***

Furthermore, colostrum was reported by 58.7% to be nutritious, and having all nutrients the infant requires, protection against diseases was reported by 41.3% and 13.4% reported that they did not know its importance.

However, during in- depth interview, there seemed to be gap in knowledge concerning the importance of breast milk especially colostrum where a mother did not perceive colostrum as being important to the infant. She says that the milk is dirt and her infant cannot feed on it, therefore she would always express it out before breastfeeding the infant as she narrates.

*"They (nurses) told us that the first yellowish dirty milk is good for the baby, I do not believe them because even if you squeeze it you can see how dirty it looks and you cannot let your child suck it. I squeezed it out behind their back and I breastfeed my child, I did that for several days and stopped when the milk became clear. I have done it to my older children and they are okay" **(Informant No.1, 34 years old, no formal education).***

Regarding sufficiency of breast milk, results show that 61.7% of the respondents said that breast milk is sufficient for the baby for the first six months while others (37.8%) reported that it is not sufficient. On the other hand, when asked to define exclusive breastfeeding, most of the respondents (79%) defined exclusive breastfeeding correctly that is, giving infant breast milk only for the first six months of life, while (11.5%) defined exclusive breastfeeding as giving infant breast milk only for three or four months and the remaining (9.5%) did not know what exclusive breastfeeding is hence failed to define it

The number of times for feeding infants per day was reported to be on demand by 78%, while others said the infant should be breastfed 3-6 times (15.9%) with few (6.1%) mentioned less than three times.

4.4.2 Significant others

When a HIV positive mother live with family she can face pressure from relatives instructing her on how the infant should be fed. Even in circumstances where the mother opt to breastfeed exclusively; it becomes difficult for her since she has no final say on how the infant should be fed. During in depth interview, mothers gave their experiences in relation to exclusive breastfeeding with various people as narrated below:

4.4.2.1 Mother in law

Mothers in laws are reported to take great responsibility of their grand children especially in feeding practices. They tend to believe that they have experience and knowledge hence they take charge on how the infant should be fed. The situation is worse when they are not aware of the HIV status of the daughter in law, they will usually force mothers to practice inappropriate feeding practices to the grandchild. This is narrated by a mother who had to stop breastfeeding knowing the risks of mix feeding as the mother in law insisted that she mixed feed.

"My mother in law said she is not satisfied with the health of her grandson, to fatten him, thin porridge should be made for him to add on breastfeeding. Because she was insisting, I stopped breastfeeding my child at the age of two months to give way to complementary feeding since I was forbidden to mix feed at the clinic before six months" ***(Informant no. 3, 29 years old with primary education)***

4.4.2.2 Sister in law

Other important people like sister in law and spouses were found to have important role in infant feeding practices; they sometimes stood out like barriers for exclusive breastfeeding.

"My sister in law gave my baby local herbs when the baby was three weeks old to calm the baby's stomach when it was crying persistently and the cries stopped. I could not stop her because this is the common practice in our tribe." ***(Informant no.3 aged 29 with primary education)***

When asked if she stopped breastfeeding she said " *When I reported this to nurse and asked for advice she told me to continue breastfeed without giving the baby anything, so I continue to breastfeed exclusively and stopped at five months"* ***(Informant no.3, 29years old with primary education)***

4.4.2.3 Neighbours/fellow tenants and other community members

Among the significant others neighbors and other community members have influence on how infant is to be fed. They are sometimes in a position to convince mothers to feed infants as they see it proper as narrated by this mother:

"Sometimes they (neighbors) were saying that in this city it is very hot and breast milk cannot quench thirst. They even challenge you by saying "drink milk and see if you can go without water, each of those has its own importance". It needs courage to argue with them and at some point you have to lie to them that you have already given the baby water" ***(Informant no.1, 34 years old with no formal education)***

4.5. Breast problem

Few (9%) of the 188 respondents who breastfed their infants, reported having breast problems which varied from mastitis (35.3%), cracked and sore nipples (29.4%), abscess and fungus (17.6%) and (17.6%) respectively. For those who faced breastfeeding

problems most (88%) went to health facilities for advice and (12 %) decided to manage the problem by expressing breast milk. Having breast problem hindered exclusive breastfeeding as was reported by 74% of the respondents who had the problem.

4.6 The health workers

For mothers to breastfeed exclusively, they need support from their husbands/spouses and significant others. The breastfeeding education which is given by health workers in antenatal care clinic focuses on different feeding options. Mothers are told to opt for desired feeding practice though emphasis is put on exclusive breastfeeding for those who opt to breastfeed. In this study, their role was evident since among the mothers who breastfed their infants exclusively, 68 (76%) were influenced by them. However, in the era of HIV, health workers who are always giving information on infant feeding are believed by mothers to be knowledgeable and correct in regard to infant feeding practices, hence influencing feeding choices.

The results for in depth interview reveal the same, where one mother confess that she breastfed her baby for six months as directed by health workers.

"If the nurses find out that you do not intend to breastfeed for six months, they insist that you do it because your breast milk is the best food for your child and that if you do that without mixing with anything, your child will not be infected. I followed the rule and the results for my baby came out that she does not have HIV ***" (Informant no 1, 34 years old with no formal education).***

However; breastfeeding education from health worker can sometimes lead to early cessation of breastfeeding or exclusive breastfeeding practice. The health workers themselves sometimes do not believe in what they are teaching hence give contradictory messages as stated by one mother:

'The nurse said, though they (nurses) are required to tell us to breastfeed exclusively for six months, it is very dangerous practice, because the baby can get virus from breast

*milk. Having fear of infecting my child, I decided not to breastfed and fed infant formula."**(Informant no.5, 44 years old with college education,)***

Furthermore, the messages that mothers are given by health workers put them in dilemma on feeding options to choose, as a mother keeps on narrating during in-depth interview

"Though they (nurse) told us that if we give the baby breast milk only for six months they will not be infected, it requires courage to do it because you cannot feed your baby on the milk that has virus and expect it to come out uninfected. Sometimes their messages are contradictory, at one point they tell you breast milk has virus but then again they advise you to feed the baby on it. To avoid infecting your baby, it is better you give it infant formula, if you cannot afford it try cow's milk or just porridge because even without milk children do grow" ***(Informant no.5, 44 years old with college education)***

The results show that, health workers are not very familiar or do not give education on expressed breast milk, which makes it to appear as a new topic. In this study only few (4%) reported that expressing breast milk was mentioned briefly by health workers during counseling. During in- depth interview, one mother said:

"During counseling the nurses said that you can express breast milk and give it to the baby after boiling it briefly at some temperature which I cannot remember .She said expressing it requires pump (which is somehow expensive). The information to me implied that this is something difficult to practice" ***(Informant no.2, 22 years old with primary education)***

When another mother was asked why she did not take the option of expressing her breast milk for her baby, she said: *"it is my first time to hear of such a thing, if I had known earlier I would have done that, even for a few months"* ***(informant no.5, 44 years old with college education)***

4.7 Disclosure of HIV status

Majority of respondent 178 (89%) managed to disclose their HIV status, with larger proportion (65.7%) reported disclosing their HIV status to husband/spouse. However, few 22 (11%) did not disclose their HIV status to anyone they are related to.

Findings of in-depth interview show that disclosure of one's HIV status to husband or spouse can come with either positive or negative response. Some mothers after either seeing or hearing of experience of fellow mothers after disclosure and its consequences, decide not to disclose their HIV status. Not disclosing ones HIV status to a husband/spouse can lead to detrimental feeding practices as narrated by the mother:

"When I told my husband that I am HIV positive he left me. I remarried and cannot bring myself to tell my new husband of my HIV status, he might leave me the way my first husband did. Because of this I could not refuse him giving my three months baby food when he was eating, I didn't stop breastfeeding and do not know what will become of this baby" ***(informant no.4, 26 years old with secondary education)***

However, when HIV positive mothers practice mixed feeding, they are aware of the dangers of such practice, that it can lead to infant getting HIV. A mother, who opts to breastfeed exclusively, might be forced to mixed feed for the sake of hiding her HIV status as further narrated by the mother:

"It is not that one does not want to breastfeed exclusively, but sometimes the setting is not encouraging. To mix feed can make the child get this disease, but also to tell him I have this disease can chase him away, so what can one do? It is even more difficult when you are jobless like me and depend on your spouse for survival. For our (my son and I) survival I have decided not tell him of my HIV status" ***(Informant no.4, 26 years old with secondary education)***

However, different opinions were given over disclosure and these opinions were sometimes influenced by previous experiences as this mother says:

"I have seen how mothers are treated badly when they decide to tell the people around them or spouse of their HIV status. In my opinion if it is possible and they know husbands will not be supportive, it is better to keep your status to yourself" ***(Informant no. 1, 34 years old with no formal education)***

In some circumstances disclosure of one's HIV status, especially to spouse has been reported to come out with positive results as narrated by this mother:

"When I told my husband that I have the virus, he was very supportive and said we will use infant formula to keep the baby safe from the infection" ***(Informant no. 5, 44 years with college education)***

4.8 Other reasons

Cessation of breastfeeding was done early by some respondents, at the age of one month's time, 9 mothers had stopped breastfeeding their infants. Upon reaching the age of 5 months, half (50.5%) of the mothers had stopped breastfeeding. Various reasons for early cessation of breastfeeding before the age of six months were: fear of infecting the child with virus (67%), mothers believing that their breast milk was not sufficient (9%), work away from home (4.3%), breast problem (2.1%) and having good HIV test results (DNA-PCR negative) meaning that the infant is not HIV positive (8.5%).

However, in depth interview, one mother confesses stop breastfeeding because the test result came out that the baby is not infected as narrated by the respondent:

When results came out that my baby is not HIV positive, I stopped breastfeeding before six months, for the fear that if I continue the child will be infected, why would you continue breastfeeding while breast milk have the virus ***(Informant no. 2, 22 years old, primary education)***

CHAPTER FIVE

DISCUSSION

The findings of this study highlighted the proportion of EBF among HIV-positive mothers, identified factors that are associated with EBF and explored barriers to EBF simultaneously. The findings suggest a need of more support and strengthened counseling for mothers to be able to breastfeed exclusively for the recommended 6 months. It has been shown that EBF is more influenced by health workers, mother's own decision to practice EBF, disclosure to spouse and proper knowledge about EBF than informed choice of individual mothers.

The results of this study are similar to other previous studies in Tanzania and elsewhere in Sub-Sahara African countries that have showed that breastfeeding is the culture and well accepted practice where most of the infants are breastfed at one point in time [22,25,47]. In this study it was found that most mothers (94%) breastfed their babies, the finding which is consistent with that of study by de Paoli et al and the demographic health survey where it was noted that, almost all (98%) babies in Tanzania are breastfed for some period of time regardless of mothers' HIV status [7,21]. It was found in this study that most mothers (71%) initiated breastfeeding within one hour after birth, which is the recommended time [23]. The same results has been reported by other studies where it is stated that, majority of mothers initiate breast feeding at birth and sometimes within the first day with a reported longer duration of breastfeeding of up to 24 months [7,47].

In this study, the rate of exclusive breastfeeding among HIV positive mothers in Ilala Municipal was found to be 46% which is relatively higher compared to those reported in other studies 13.3%, 16%, 30.6% and 40% in Tanzania, Kenya, Ethiopia and Uganda respectively [18,47,39,53]. This observed difference may be due to the strengthened PMTCT services. However, the duration of exclusive breastfeeding decreased as the age of the infant increase, being higher in the first months of life and going down as the child grow, the same has been reported in other studies [7,18,19].This could be a result of mothers being unsure whether their breast milk is sufficient to meet infant's body requirement for the first six months as well as fear of infecting the child.

In this study health workers were found to play dual roles, first they were reported to have great influence on infant feeding choices by 58.5%, leading in facilitating adherence to exclusive breastfeeding through education given to all pregnant women and more specifically HIV positive mothers, secondly, the messages that were given by health workers were putting mothers in dilemma and led mothers to decide against EBF practice. During in- depth interview, mothers reported having dilemma to either breastfeed exclusively or otherwise because of health workers telling them of the danger of breast milk that it has virus hence prolonged feeding baby on it might infect the baby. This portrayed the health workers as barrier to exclusive breastfeeding by not promoting it through their contradicting messages and also by not believing in benefits that accompany exclusive breastfeeding.

Furthermore, the current study revealed that mothers were given options by health workers to either exclusive breastfeed for 3 or 6 months. This is divergent to the current WHO guideline which advice exclusive breastfeeding to continue up to first six months of infant's life. These findings are consistent with findings of study in Niger where health workers were found to be misinformed about the practice as well as lack of believing in it [55]. This could be due to lack of updated knowledge of health workers in regard to current recommended infant feeding practice. It further imply that, health

workers are not yet applying the new WHO and PMTCT guideline which advice exclusive breastfeeding or replacement feeding for HIV infected mothers. [23,24].

Furthermore, mothers were reported to make their own decision on infant feeding, which is a good habit since one is more likely to adhere to whatever decision she makes. The findings are similar to those found in study done at Windhoek District in South Africa on factors influencing exclusive breastfeeding where almost half of the mothers reported to make their own decision on infant feeding [54]. The mothers decision lead to adherence to exclusive breastfeeding.

The national PMTCT guideline states that women should be counseled about different possible infant feeding options. Mothers are therefore left to choose which option is suitable for them. The choice is often influenced by fear, familial, medical, cultural attitudes, norms and economic capabilities [24,47]. It was found in this study that mothers were more influenced by the health workers suggestions than individual informed choice. This, suggest that health workers need to be updated on the current infant feeding practices in the era of HIV/AIDS.

Disclosure of one's HIV status to sexual partners is highly emphasized for various reasons including increased opportunities for social support [38]. In this study, disclosure to spouse was found to be a predictor to exclusive breastfeeding, mothers who disclosed their HIV status to their husband or spouses managed to adhere to exclusive breastfeeding; similar findings were reported by Maru and Haidaru [39]. However, disclosure can come with adverse reactions like divorce, abandonment and discrimination [38]. According to one respondent during in depth interview, a HIV positive mother who has not disclose her HIV status can face pressure from relatives and even spouse leading to detrimental infant feeding practices even when she opted to breastfeed exclusively. This study found non disclosure of one's HIV status to be a barrier to exclusive breastfeeding and predictor of mixed feeding. The finding is similar to other studies in Ghana and Tanzania [20,56]. The practice becomes difficult because

significant others have great influence in infant feeding practices and not the mother. This implies that there is a need to involve those who are close to the mother in counseling on exclusive breastfeeding especially spouse or husband to sidestep the consequences of mixed feeding.

In the present study, attachment and positioning of the baby to the breast while breastfeeding showed some association with exclusive breastfeeding. Proper attachment of the baby to the breast and good positioning while breastfeeding prevents mothers from getting breast problem such as engorgement, mastitis and cracking of the nipples [23]. It was reported by respondents that after delivery, 75.5% of the mothers who opted to breastfeed were shown how to attach and position the baby to the breast by health workers after delivery. These findings are similar to the results with those of study in South Africa where it is reported that mothers who were shown attachment were more likely to practice exclusive breastfeeding as compared to their colleagues who were not shown [54]. Furthermore, the study reveals that majority 76% of those who had breast problem did not breastfeed exclusively. This suggests a need to strengthen counseling services, where mothers will be taught ways of preventing breast problems.

In this study, the proportion of mixed feeding was found to be low (12%), compared to those reported from HIV positive mothers in Kenya, where proportions were reported to be high at 79% and Ethiopia 15.3% [47, 54]. Mixed feeding is a dangerous practice as it leads to reduction in dietary antigens and pathogens, which are assumed to provoke an inflammatory response or alter the infants gut integrity, when practiced it leads to absence of promotion of beneficial intestinal micro flora by breast milk hence increase the chance of HIV infection [17, 47]. Most of the mothers in this study, even the ones who could not breastfeed exclusively for six months feared mixed feeding, but still some practiced it despite being fore-warned by health workers that it leads to infecting the child. Its practice by these groups though low, still calls for a need to strengthen counseling services by health workers.

Antenatal care clinic attendance which was reported to be high (99%) among respondents exposed them to breastfeeding education. Although most mothers reported to be counseled on breastfeeding at RCH clinic, for some it triggered the practice of exclusive breastfeeding while for some this did not change their practice and led to early cessation with a fear that with prolonged breastfeeding duration, their babies might be infected with the HIV. Similar findings of low adherence to exclusive breastfeeding have been previously reported in sub-Saharan African countries [47]. In this study ante natal care attendance was not associated with EBF which is contrary to the findings reported by a study done in Uganda and South Africa [53,54]

In the current study, the place of delivery, specifically health facilities were a strong predictor of early initiation of breastfeeding, though it did not influence exclusive breastfeeding. This differ from other studies that reported place of delivery (health facility) to be a predictor of exclusive breastfeeding [53,54]. The difference could be attributed to the fact that majority of the mothers (96.5%) delivered in health facilities and only few 3.5% not deliver in health facilities. Usually breastfeeding starts early among mothers who delivered in the health facilities and opt to breastfeeding their infants in cases where there is no problem of illness of the mother or infant. This could be a result of supervision of health workers who most of the time would show mothers how to breastfeed, which include how to position and attach the baby to the breast.

The study findings have limitation that they cannot be generalized due to the small sample size and also due to the fact that it was health facility based. The study participants may have answered questions easily and accurately because they received infant feeding counseling. This bias may have overestimated the rates of exclusive breastfeeding practices while at the same time underestimate the rates of mixed and prelacteal feeding. Regardless of these limitations, study findings provide vital input on infant feeding decisions

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study highlights the factors that contributed to adherence to EBF among HIV positive mothers as: mother's belief that breast milk is sufficient for infant for the first six months of life, health workers influence on breastfeeding specifically EBF, mother's own decision on infant feeding and health workers facilitate immediate initiation of breastfeeding. Other factors were having knowledge on EBF and believing that if one practices it properly, the MTCT through breast milk is almost non- existing. However, barriers were found to be lack of disclosure of one's HIV status, community and family pressure to mix feed as it is a norm, breast problems and contradicting messages of health workers on infant feeding.

These findings suggest a need for a more extensive and comprehensive approach of breastfeeding education and especially of exclusive breastfeeding. These important issues that are related to infant feeding in the presence of HIV, that are brought up by this study, needs to be taken into account by implementers and policy makers for the purpose of accelerating exclusive breastfeeding practice among HIV positive mothers. However, since health workers are the sole supporters of infant feeding practices, in particular exclusive breastfeeding, capacity building should be done to ensure that they have current information and positive attitude towards EBF.

6.2 Recommendations

The following section will discuss recommendations which are based and can be addressed on practice, policy and further research:

6.2.1 Recommendation for practice

In this study it was found the mothers were facing various barriers including information given to them by health workers. Therefore; it is recommended that health workers should provide continuous breastfeeding education to mothers whenever they attend clinics for follow up with emphasis on exclusive breastfeeding to scale up its practice. The education should address beliefs of breast milk being insufficient to meet infant's body requirements; furthermore, health workers should put emphasis to mothers on the need to keep breastfeed even when the results for their infants turn out to be negative considering the benefits that comes with breastfeeding, this is because mothers were found to stop breastfeeding when the DNA-PCR results came out that their infants are HIV negative.

It was reported by some respondents that during their visits at health facilities health education was not given hence lack of the knowledge especially of EBF which can lead to non adherence to it. Health workers should demonstrate baby attachment to the breast and positioning during breastfeeding as much as they can to reduce breast problem incidences. Mothers need to be reminded continuously and have demonstration of the practice for refreshed memories. Also health workers need to address the issue of belief that their breast milk cannot meet baby's body requirements and encourage mothers to breastfeed continuously since breast milk alone is sufficient to suffice the infant's body requirements

6.2.2 Recommendation for policy

Health workers need to be given continuous on job training and refresher courses in areas of: updated knowledge on Infant feeding practices in regard to national and international guidelines to equip them with current knowledge to use during infant feeding counseling sessions. Husbands and spouses should be involved in breastfeeding education concerning advantages of exclusive breastfeeding to the HIV exposed infants in order to avoid detrimental infant feeding practices which are sometimes enforced as a result of their ignorance on recommended infant feeding.

6.2.3 Recommendation for further research

This study assessed factors that influence exclusive breastfeeding from the mother's perspectives due to limited time; therefore further research is needed to assess health workers perspectives to identify related factors in order to inform policy and foster promotion of exclusive breastfeeding.

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APPENDICES

8.1 Appendix 1: Consent Form (English Version)

Informed Consent Form

MUHIMBILI UNIVERSITY COLLEGE OF HEALTH SCIENCES

DIRECTORATE OF RESEARCH AND PUBLICATIONS, MUHAS

CONSENT FORM

ID NO._____

Consent to participate in study:

Hallo, My name is ……, doing research on Factors influencing exclusive breastfeeding among HIV+ mothers for the first six months of infants life aged 6- 12 months in Ilala Municipal, Dar Es Salaam

Aim of the study

To determine factors that influence exclusive breastfeeding practices among HIV positive mothers of aged 6- 12 month old infants attending RCH clinic at Ilala Municipal

What participation Involves

If you agree to participate in this study, you will be required to answer a series of question that have been prepared for the study through interview in order to obtain the intended information. You will be interview for 20-30 minutes.

Confidentiality

All information that will be collected will be kept in private and will be used only for this study. The form will not bear your name but identification number.

Rights to Withdraw and Alternatives

Participating in this study is completely voluntary. You can choose not to participate in this study and even if you have already accept to participated in the study you can quit at any time if you feel so. Refusal to participate or withdrawal from the study will not involve penalty or loss of any benefits.

Who to contact

If you ever have questions about this study, you should contact the study Coordinator or the Principal Investigator **Florence Saka,** from School of public health and social sciences at Muhimbili University of Health and Allied Sciences, P.O. Box 65001, Dar es Salaam. Mobile phone **0715 330 242**

If you have questions which need further clarification, as a participant you have a right to call, call **Prof. Aboud M**, Chairman of the College Reasearch and Publications Committee, P.O. Box 65001, Dar es Salaam. Tel: 2150302-6 and **Dr. S. Leshabari (0784 287062)** who is the supervisor of this study.
Do you agree?

Yes, I agree to participate in this study.…… Signature:…….

I have read/ hear the contents read for me the contents in this form.

Signature of Participant _____ Date of signed consent _____

8.2 Appendix 2: FOMU YA RIDHAA (KISWAHILI VERSION)

CHUO KIKUU CHA AFYA –MUHIMBILI

KURUGENZI YA UTAFITI NA MACHAPISHO

FOMU YA RIDHAA

Namba ya utambulisho: _____

Ridhaa ya kushiriki kwenye utafiti

Habari? Naitwa……., ninakusanya takwimu kwa ajili ya utafiti kuhusu Unyonyeshaji wa maziwa ya mama pekee kwa kipindi cha miezi sita ya mwanzo baada ya mtoto kuzaliwa kwa akina mama walioathirika na Virusi Vya Ukimwi katika Dar Es Salaam

Madhumuni ya Utafiti.

Utafiti huu ni kutika kuainisha ni sababu zipi au vikwazo vipi hasa zinasababisha mama ashindwe kunyonyesh mtoto wake maziwa yake pekee kwa kipindi cha miezi sita ya mwanzo baada ya kuzaliwa, na zipi hasa zinamuhamashisha mama aweze kumnyosha Mtoto wake maziwa yake pekee bila kumchanganyia kitu chochote kwa miezi hiyo sita ya mwanzo kulingana na mila na destuli za jamii yake

Nini kinahitajika ili kushiriki.

Endapo utakubali kushiriki katika utafiti huu inabidi ujibu maswali toka kwenye muongozo wa maswali yaliyotungwa kwa ajili ya utafiti huu. Zoezi hili litachukua takribani dakika 20 hadi 30.

Usiri

Taarifa zitakazokusanywa kupitia dodoso hili zitakuwa ni za siri na hakuna mtu yeyote atakayeambiwa ulichosema. Fomu hii haitahitaji jina lako ila namba ya utambulisho.

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.

Nani wa kuwasiliana naye

Endapo utakuwa na maswali kuhusiana na utafiti huu , unaweza kuwasiliana na Mtafiti mkuu wa utafiti huu **Florence Saka** wa Chuo Kikuu cha Afya na Sayansi ya Tiba Muhimbili, SLP 65001, Dar es salaam, simu ya kiganjani **0715 330 242**. Kama una swali kuhusu staili zako kama mshiriki unaweza kumpigia call **Prof. Aboud M** Mwenyekiti wa kamati ya utafiti na uchapishaji, S.L.P 65001, Dar es salaam, Simu 2150302-6

Sahihi:

Je umekubali?

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

Mimi _____ nimesoma maelezo ya fomu hii.Maswali yangu yamejibiwa. Nakubali kushiriki katika utafiti huu

Sahihi ya mshiriki……

Sahihi ya shahidi (Kama Mshiriki hawezi kusoma/kuandika)

Sahihi ya mtafiti msaidizi…….

Tarehe ya kutia sahihi ya Kushiriki……

8.3 Appendix 3: Questionnaire (English Version)

FACTORS INFLUENCING EXCLUSIVE BREAST FEEDING AMONG HIV POSITIVE MOTHERS AT ILALA MUNICIPAL.

1. Date of interview ___/__/ 2012 2. Interviewers initials _____

3. Questionnaire no. _____ 4. Respondents No. _____

5) Name of health facility

_____

SECTION 1: SOCIO – DEMOGRAPHIC INFORMATION (circle the correct answer/fill in space provided)

A. Mother's information

1.	How old are you? (Age in years)	Years…….	
2.	What is your marital status?	1) Married 2) Single 3) Cohabiting 4) Divorced 5) Widow	
3.	What is your highest level education?	1) No formal education 2) Primary school 3) Secondary school 4) College and above	
4.	What is your occupation?	1) Employed 2) Farmer 3) Business 4) None 5) Others specify……..	

5.	If working away from home, do you take the baby with you?	1) Yes 2) No	
6.	How many children do you have?	1) One 2) More (state the number)……	
B. Infants Information			
7.	How old is your child?.....	…….(Months)	
8.	Sex of your child?	1) Male 2) Female	
9..	Birth weight of a child (**verify by using RCH card if available**)	……/ kg	
10.	Where did you deliver this child	1)Hospital/Health facility 2) Home 3) Traditional Birth Attendant 4) Others specify	
11.	What was the mode of delivery	1) Normal delivery 2) Caesarean section 3) Assisted delivery	
12.	Who assisted you during delivery	1) Health worker 2) TBA 3) Relatives 4) Others specify	

SECTION 2: INFANT FEEDING PRACTICES

13.	Is this your 1st, 2nd or 3rd child? **(if 1st child go to qn.17)**	Specify …….	
14.	If not your 1st child, did you breast feed the older child?…….	1) Yes 2) No	

15.	If yes, for how long?	……. Months/days	
16.	If no 15, why?	1) Going back to work 2) I had no HIV 3) Breast milk was not enough 4) Others	
17.	Have you ever breastfed this child? **(if no. go to qn. 22)**	1) Yes 2) No	
18.	When did you initiate breastfeeding your child for the first time after delivery?	1. Immediately after delivery 2. Within 1 hour 3. 2-3 hours 4. Days (mention) ……..	
19.	If delayed more than one hour, what were reasons that made you delay in breastfeeding initiation?	1. Caesarian section 2. Baby was sick 3. Mother was sick 4. Delayed milk secretion 5. Others (mention)…….	
20.	Do you currently breast feed your child?	1) Yes 2) No	
21.	If the baby is still breastfeeding do you give your child any other food or liquid like water/juice apart from breast milk	1) Yes 2) No	
22.	After delivery, did you give your baby anything to eat/drink before starting breastfeeding?	1) Yes 2) No	
23.	If yes, what did you give your baby?	1) Water 2) Thin porridge 3) Milk 4. Others (specify)……	
24.	Who advised you to provide your child with such type of food/ fluid?	1) My own decision 2) Grand parents 3) Friends	

		4) Others (specify)	
25.	What were the reasons for introducing such food before starting breastfeeding?	1) Milk was not coming out 2) Sore nipples 3) Illness of the mother 4) Illness of the child 5) Other specify	
26.	When did you start introducing extra foods / drinks including water to your child?	1) Less than 1 month 2) 1 to 3 months 3) 4 to 5 months 4) 6 months	
27.	If your child is not currently breastfeeding, how old was the child when you stopped breastfeeding him/her?	……..months	
28.	Why did you stopped breastfeeding	1) The milk was not enough 2) Work away from home 3) Breast problems 4) Fear of infecting the child 5) Others (specify)	
29.	Who influenced your decision on your feeding practice?	1) Husband/spouse 2) My mother 3) Mother in law 4) Health worker 5) My own decision 6) Others mention ……. ……..	

SECTION 3: SOURCES OF INFORMATION ON EXCLUSIVE BREASFEEDING

30.	During pregnancy did you attend Ante Natal Clinic? **(if no go to qn no. 32)**	1) Yes 2) No	
31.	Did anyone talk to you about breastfeeding?	1) Yes 2) No	

32.	What were you told about breast feeding	1) Benefits of breastfeeding 2) Positioning of the baby 3) Exclusive breastfeeding 4) Management of breast problem 5) Expression of breast milk 6) Others (mention)…….. ……..	
33.	Have you ever heard about exclusive breastfeeding? **(if no. go to qn. No. 36)**	1) Yes 2) No	
34.	If yes, where did you get the information from?	1. Health workers 2. Media 3. Relatives 4. Others (specify)……	
35.	What do you understand by the term exclusive breast feeding	…… …… ……	
36.	Did anyone show you how to breast feed?	1) Yes 2) No	
37.	Who showed you how to breastfeed?	1) Health workers 2) Relatives 3) Others (specify)……	
38.	Did anyone show you how to attach the baby to the breast?	1) Yes 2) No	
39.	Who showed you how to attach the baby to the breast?	1) Health workers 2) Relatives 3) Others (specify)……	

SECTION 4: KNOWLEDGE OF MOTHER ON EXCLUSIVE BREASTFEEDING

40.	What is the importance of yellowish milk (colostrums)	1) Nutritious 2) Protection against diseases 3) I don't know 4) Other (mention)……	
41.	Do you think breast milk alone is sufficient for the baby for 0-6 months?	1) Yes 2) No	
42.	If no, for how long is breast milk sufficient for the baby?	1) 1 month 2) 2 months 3) 3 months 4) 4 months 5) 5 months	
43.	How many times per day should the baby be breastfed	1) 3- 4 times 2) 5-6 3) On demand 4) Other (mention)…….	
44.	What is the appropriate time to start complementary foods?	1) Less than 1 month 2) 1 to 3 months 3) 4 to 5 months 4) 6 months	

SECTION 5: BARRIERS TO EXCLUSIVE BREASTFEEDING

45.	Have you disclosed your HIV status to anyone?	1) Yes 2) No	
46.	To whom did you disclose your status	1) Husband/Spouse 2) My mother 3) My in laws 4) Others	
47.	Did you experience any	1) Yes	

	breastfeeding problems?	2) No	
48.	If yes, What was the problem	1) Abscess 2) Mastitis 3) Sore/cracked nipples 4) Others (mention)…….. ……	
49.	How did you manage the problem?	1) Express breast milk 2) Went to hospital for advice 3) Rub local herbs on it 4) Others (mention)……. …….	
50.	What do you think are the reasons for mothers not breastfeeding exclusively?	1) Lack of information 2) Work demand 3) Insufficient breast milk 4) Traditions and cultural beliefs 5) Other (mention) …….. ……..	

8.4 Appendix 5: Questionnaire (Kiswahili Version)

DODOSO LA UTAFITI JUU YA UNYONYESHAJI WA MAZIWA YA MAMA PEKEE KWA KIPINDI CHA MIEZI SITA YA KWANZA BAADA YA MTOTO KUZALIWA KWA AKINA MAMA WALIOATHIRIKA NA VIRUSI VYA UKIMWI KATIKA MANISPAA YA ILALA.

1. Tarehe ya mahojiano_____/_____/2012 2. Kifupi cha jina la anaehoji_____

3.Namba ya Dodoso_____ 4.Namba ya Mhojiwa_____

5. Jina la kituo cha Huduma_____

SEHEMU 1: TAARIFA ZA KIDEMOGRAFIA

KIPENGELE A: TAARIFA BINAFSI ZA MAMA NA MTOTO

1.	Umri wako ni miaka mingapi	_____(**Andika miaka kamili**)	
2.	Je hali yako ya ndoa kwa sasa ikoje?	A) Nimeolewa B) Sijaolewa C) Nimeachika D) Naishi na mwenza E) Mjane	
3.	Kiwango cha juu cha elimu	1) Sijasoma 2) Elimu ya msingi 3) Elimu ya sekondari 4) Chuo	
4.	Unafanya kazi gani?	A) Nimeajiriwa B) Mkulima C) Mfanya biashara D) Kazi nyingine (taja)_____	

5.	Kama unafanya kazi/shughuli zako mbali na nyumbani, je, huwa unaenda na mtoto wako kwenye shughuli zako?	1) Ndio 2) Hapana	
6.	Una watoto wangapi?	1) Mmoja 2) Zaidi ya mmoja (taja idadi)…….	
KIPENGELE B: TAARIFA ZA MTOTO			
7.	Mwanao ana umri gani?	_____(miezi)	
8.	Jinsi ya mtoto?	1. Me 2. Ke	
9.	Uzito wa mtoto alipozaliwa	_____kilo(**Hakikisha kama ana kadi ya kliniki)**	
10.	Ulijifungulia wapi mtoto huyu?	1) Hospitali 2) Nyumbani 3) Kwa mkunga wa Jadi 4) Kwingineko (taja)……..	
11.	Ulijifunguaje?	1) Kawaida 2) Oparesheni 3) Kwa kusaidiwa	
12.	Nani alikusaidia wakati unajifungua?	1)Nesi/ daktari 2) Mkunga wa jadi 3) Ndugu Wengineo Taja ……	

SEHEMU YA 2: TAARIFA ZA ULISHAJI WA MTOTO ULIVYOFANYIKA

13.	Je, huyu ni mtoto wako wa ngapi? **(Kama sio wa kwanza, nenda swali no.17)**	Taja idadi……	
14.	Kama sio wa kwanza, je, ulimnyonyesha mtoto wanaefutana?	1) Ndio 2) Hapana	
15.	Kama ndio, ulimnyonyesha kwa	……siku/miezi	

	muda gani?		
16.	Kama hapana, kwa nini?	1) Ilibidi nirudi kazini 2) Sikuwa na maambukizi 3) Maziwa yalikuwa hayatoshi 4) Mengineyo	
17.	Je, umewahi kumnyonyesha huyu mtoto? **(kama hapana nenda swali no. 22)**	1) Ndio 2) Hapana	
18.	Kwa mara ya kwanza baada ya kujifungua, ulimpa ziwa baada ya muda gani kupita?	1) Mara tu baada ya kujifungua 2) Ndani ya saa moja 3) Masaa 2-3 4) Baada ya siku……(taja)	
19.	Kama alichelewa zaidi ya saa moja, ni sababu zipi zilipelekea achelewe?	1) Uzazi wa opareshen i 2) Mtoto alikua mgonjwa 3) Mama alikua mgonjwa 4) Maziwa yalichelewa kutoka 5) Sababu nyingine (taja)…… …….	
20.	Kwa sasa huyu mtoto ananyonya?	1) Ndio 2) Hapana	
21.	Kama mtoto bado ananyonya, unampa chakula chochote au kinywaji zaidi ya maziwa yako?	1) Ndio 2) Hapana	
22.	Baada ya kujifungua, ulimpa mwanao chochote kabla ya kuanza kumnyonyesha?	1) Ndio 2) Hapana	
23.	Kama jibu ni ndio, ulimpa nini?	1) Maji 2) Uji mwembamba 3) Maziwa 4) Vingine (taja)……	
24.	Nani alikushauri kumpa aina hiyo ya chakula/kinywaji?	1) Maamuzi yangu binafsi 2) Bibi zake 3) Marafiki 4) Wengineo (wataje)……	
25.	Ni sababu zipi zilikufanya umwanzishie chakula/kinyaji	1) Maziwa yalikua hayatoki 2) Chuchu zilichubuka	

	kabla ya ziwa?	3) Ugonjwa wa mama 4) Ugonjwa wa mtoto 5) Mengineyo (taja)……	
26.	Ulianzisha vyakula/vinywaji vya ziada muda gani baada ya mtoto kuzaliwa?	1) Chini ya mwezi 1 2) Mwezi 1-3 3) Miezi -5 4) Mezi 6	
27.	Kama mtoto wako hanyonyi kwa sasa, alikua na umri gani ulipomwachisha?	Miezi …….	
28.	Kwa nini ulimwachisha?	1) Maziwa yalikua hayatoshi 2) Nafanya kazi mbali na nyumbani 3) Matatizo ya maziwa 4) Woga wa kumwambukiza virusi 5) Sababu nyingine (taja) ……..	
29.	Nani alikushawishi namna ya kumlisha mtoto	1) Mume/ mwenza 2) Mamangu 3) Mama mkwe 4) Watumishi wa afya 5) Uamuzi wangu binafsi 6) Wengineo (taja)……	

SEHEMU YA 3: CHANZO CHA TAARIFA ZA UNYONYESHAJI

30.	Je, ulihudhuria kliniki ya mama na mtoto wakati wa ujauzito?	1) Ndio 2) Hapana	
31.	Je, ulizungumziwa chochote kuhusu unyonyeshaji?	1) Ndio 2) Hapana	
32.	Uliambiwa nini?	1) Faida za unyonyeshaji 2) Namna ya kumweka mtot kwenye ziwa 3) Unyonyeshaji maziwa ya mama tu 4) Kushughulika matatizo ya ziwa 5) Ukamuaji wa maziwa ya mama 6) Mengineyo (taja)…….	

33.	Je, umewahi kusikia kuhusu unyonyeshaji wa maziwa ya mama tu? **(kama hapana nenda swali no 36)**	1) Ndio 2) Hapana	
34.	Kama ndio ulipata wapi taarifa hizi	1) Kwa watumishi wa afya 2) Vyombo vya habari 3) Ndugu 4) Wengineo (tajta)……..	
35.	Unaelewa nini kuhusu neno unyonyeshajiwa maziwa ya mama pekee?	…… …… ……	
36.	Je, kuna mtu yeyote alikuonyesha/kukufundisha namna ya kumnyonyesha mtoto?	1) Ndio 2) Hapana	
37.	Nani alikuonyesha/kukufundisha?	1) Watumishi wa afya 2) Ndugu 3) Wengineo (taja)……..	
38.	Kuna mtu yeyote aliekuonyesha/kukufundisha namna ya kumweka vizuri mtoto kwenye ziwa?	1) Ndio 2) Hapana	
39.	Nani alikuonyesha/kukufundisha?	1) Watumishi wa afya 2) Ndugu 3) Wengineo (taja)……..	

SEHEMU YA 4: UFAHAMU/UELEWA KUHUSU UNYONYESHAJI WA MAZIWA YA MAMA TU

40.	Ni nini umuhimu wa maziwa ya kwanza ya njano yanayotoka mara baada ya kujifungua?	1) Ni lishe bora 2) Yanazuia magonjwa 3) Sijui 4) Sababu nyingine (taja) …….	
41.	Je, unafikiri maziwa ya mama tu yanamtosha mtoto kwa miezi 6 ya mwanzo toka kuzaliwa?	1) Ndio 2) Hapana	
42.	Kama hapana unafikiri maziwa ya mama yanaweza kumtosheleza	1) Mwezi 1 2) Miezi 2	

	mtoto muda gani?	3) Miezi 3 4) Miezi 4 5) Miezi 5	
43.	Mtoto anahitaji kunyonyeshwa mara ngapi kwa siku	1) Mara 3-4 2) Mara 5-6 3) Kila anapohitaji 4) Muda mwingine (taja)……..	
44.	Ni muda gani muafaka kwa kuanza kulikiza?	1) Chini ya mwezi 1 2) Mwezi 1 mpaka 3 3) Miezi 4 mpaka 5 4) Miezi 6	

SEHEMU YA 5: VIZUIZI VYA UNYONYESHAJI

45.	Je, umewahi kumshirikisha mtu yeyote juu ya hali yako ya maambukizi	1) Ndio 2) Hapana	
46.	Ulimshirikisha nani?	1) Mume/mwenza 2) Mama yangu 3) Wakwe zangu 4) Wengineo	
47.	Ulipata matatizo yoyote ya ziwa wakati wa kunyonyesha?	1) Ndio 2) Hapana	
48.	Kama ndio ulipata matatizo gani?	1) Jipu kwenye ziwa 2) Ziwa kuuma (mastitis) 3) Michubuko kwenye chuchu 4) Mengineyo (taja)……..	
49.	Ulikabiliana vipi na tatizo hilo?	1) Nilikamua maziwa 2) Nilienda hospiatli kuapata ushauri 3) Nililipaka ziwa dawa ya kienyeji 4) Mengineyo (eleza)……	
50.	Kwa maoni yako unafikiri ni sababu zipi zinazopelekea akina mama kutonyonyesha watoto maziwa yao tu kwa kipindi cha miezi 6 ya mwanzo baada ya kujifungua?	1) Kukosa elimu sahihi ya unyonyeshaji 2) Kazi/ajira 3) Maziwa kutomtosheleza mtoto 4) Mila na desturi 5) Kuogopa kumwambukiza mtoto 6) Mengineyo (taja)……	

8.5 Appendix 5: In- depth interview guide

Probe and then record

Background Information	
Name :	No. of living children- Boys____ Girls ____
Age (in years) :	Sex - Boy / Girl
Education :	Age of the infant (months)
Knowledge on Breastfeeding	
When the infant should start breastfeeding? Why ?	
Whether pre-lacteal feeding should be given to babies: If yes why?	
How long infant should be breastfed, probe the duration for only breast milk? why?-	
Breast milk with water,	

why?-
Breast milk with other food and supplements, why?
Current breastfeeding practices
When did you start breastfeeding? If delayed, why? If at desired time, who advised for this?
Did anything given to baby other than breast milk since birth? If yes, what, why? Its quantity and frequency?
Whether faced any problems in initiation and continuation of breastfeeding? What problem? What support is needed to overcome the problem?
Do the amount of milk is perceived to be sufficient?

If no, perceived corrective action by the mothers?
Whether mother has been advised on breastfeeding practices by anyone? If yes, from whom and type of advice received from each one of them?
Is there any change in the breastfeeding practices adopted for older siblings? If yes, what changes and why?
Strengthening capacity of the mother for optimal breastfeeding practices
What sort of information regarding breastfeeding may be helpful for the mother? Who would be the appropriate person to provide the information on breastfeeding? What help/support is needed by mother to follow appropriate breastfeeding practices?

Thank you for your cooperation